RECEIVED: January 5, 2021

REVISED: May 6, 2021

ACCEPTED: June 5, 2021

PUBLISHED: June 23, 2021

Low energy effective field theory operator basis at $d \leq 9$

Hao-Lin Li,^a Zhe Ren,^{a,b} Ming-Lei Xiao,^a Jiang-Hao Yu^{a,b,c,d,e} and Yu-Hui Zheng^{a,b}

^aCAS Key Laboratory of Theoretical Physics, Institute of Theoretical Physics,
Chinese Academy of Sciences,
Beijing 100190, P.R. China

^bSchool of Physical Sciences, University of Chinese Academy of Sciences,
Beijing 100049, P.R. China

^cSchool of Fundamental Physics and Mathematical Sciences,
Hangzhou Institute for Advanced Study, University of Chinese Academy of Sciences,
Hangzhou 310024, P.R. China

^dInternational Centre for Theoretical Physics Asia-Pacific,
Beijing/Hangzhou, P.R. China

^eCenter for High Energy Physics, Peking University,
Beijing 100871, P.R. China

E-mail: lihaolin@itp.ac.cn, renzhe@itp.ac.cn, mingleix@itp.ac.cn,
jhyu@itp.ac.cn, zhengyuhui@itp.ac.cn

ABSTRACT: We obtain the complete operator bases at mass dimensions 5, 6, 7, 8, 9 for the low energy effective field theory (LEFT), which parametrize various physics effects between the QCD scale and the electroweak scale. The independence of the operator basis regarding the equation of motion, integration by parts and flavor relations, is guaranteed by our algorithm [1, 2], whose validity for the LEFT with massive fermions involved is proved by a generalization of the amplitude-operator correspondence. At dimension 8 and 9, we list the 35058 (756) and 704584 (3686) operators for three (one) generations of fermions categorized by their baryon and lepton number violations ($\Delta B, \Delta L$), as these operators are of most phenomenological relevance.

KEYWORDS: Beyond Standard Model, Effective Field Theories

ARXIV EPRINT: [2012.09188](https://arxiv.org/abs/2012.09188)

Contents

1	Introduction	1
2	General framework	3
2.1	Amplitude basis including massive fermions	3
2.2	Amplitude-operator correspondence including massive fermions	5
2.3	The operator basis	8
3	Lists of operators in LEFT	11
3.1	Lists of the dim-5 operators	14
3.2	Lists of the dim-6 operators	14
3.3	Lists of the dim-7 operators	20
3.4	Lists of the dim-8 operators	24
3.4.1	Classes involving bosons only	24
3.4.2	Classes involving two-fermions	24
3.4.3	Classes involving four-fermions	26
3.5	Lists of the dim-9 operators	46
3.5.1	Classes involving two-fermions	46
3.5.2	Classes involving four-fermions	52
3.5.3	Classes involving six-fermions: ψ^6	92
3.5.4	Classes involving six-fermions: $\psi^4\psi^\dagger{}^2$	109
4	Conclusion	157

1 Introduction

The standard model (SM) has been proved to be a success according to current experiment data at the LHC, yet several unsolved basic problems about our universe motivate both theorists and experimentalists to search for new physics beyond the SM, which have yielded a null result up to $\Lambda_{\text{NP}} \sim \text{TeV}$ scale. Under the circumstances, the effective field theory (EFT) provides a model-independent way to parameterize new physics above Λ_{NP} using interactions involving higher dimensional operators at energy scale $< \Lambda_{\text{NP}}$.

While the physics above the electroweak scale Λ_{EW} is described by the standard model effective field theory (SMEFT) [1–7], we also need the low-energy effective field theory (LEFT) below Λ_{EW} , which has gauge symmetry $\text{SU}(3)_C \times \text{U}(1)_{\text{EM}}$ and all the SM fermions but the top quark. Part of the LEFT operators can be derived from the SM by integrating out the massive vectors $W^\pm$, Z , the top quark t and the Higgs boson h . For example, the historical Fermi interactions generated by integrating out the $W^\pm$ boson is essentially a part of the LEFT operators at the dimension-6 level, and had been applied to various processes

like the β decay, the muon decay, and the lepton flavor violation [8–11]. Furthermore, flavor physics such as B -physics and K -physics utilizes these LEFT operators to parameterize new physics contributions in the B and K meson decay processes, e.g. [12, 13]. However, generic LEFT operators are only subject to Lorentz invariance and gauge symmetry, which is far more rich than those derived in the SM.

The low energy probes of new physics, complementary to collider searches for new physics, have been gradually gaining importance. Various low energy processes, such as neutrino-less double beta decay [14, 15], neutron-antineutron oscillation [16–19], nucleon exotic decays [20, 21], dinucleon decays [22], electric dipole moment [23, 24], have been investigated to examine fundamental global symmetries, such as charge conjugate and parity violation, baryon and lepton number violation [25]. Below the electroweak scale, various new physics effects in these low energy processes could be systematically parameterized in the LEFT. For the baryon and lepton number violation,¹ the neutron-anti-neutron oscillation and dinucleon decay process only start to appear at dimension 9 with $(\Delta B, \Delta L) = (\pm 2, 0)$. It is also possible that the dimension 9 operators with $(\Delta B, \Delta L) = (0, \pm 2)$ dominate the neutrino-less double beta decay process [15]. There are also exotic nucleon decay processes dominated at dimension 9 with $(\Delta B, \Delta L) = (\pm 1, \mp 3)$. Therefore, it is necessary to write down the complete set of the higher dimensional LEFT operators. Recently [26–28], the LEFT operators have been written up to dimension 7.

The traditional way to obtain the operator basis is to consider all possible operators, and then eliminate the operator redundancies caused by equation of motion (EOM), integration by parts (IBP), repeated flavor structure and Fierz identities, e.g. [4], which is quite involved when the number of possible structures blows up at higher dimensions. So far the traditional way has been applied to dimension 5, 6 in ref. [26] and dimension 7 in ref. [28], which present the result in the form of a set of operators with complicated flavor relations. On the other hand, the systematical procedure proposed in refs. [1, 2] is capable of generating independent structures of operators automatically, and presents the flavor-specified operators without extra redundancies. However, the procedure makes use of the amplitude-operator correspondence [29], and was designed only for massless amplitudes, which seems to be not compatible with LEFT. In this work, we present the massive amplitudes in the form introduced in refs. [30, 31], which have a one-to-one correspondence to a set of massless amplitudes when the spin $S \leq 1/2$, while the correspondence between massive amplitudes and operators remains valid. Hence we argue that the procedure should work as well for EFTs with massive fermions, such as LEFT.

We sketch the procedure as follows. We first use the amplitude operator correspondence to convert the problem of finding the operator basis into finding the amplitude basis, which is further divided into separate tasks as to find: 1. a basis of Lorentz factors expressed as functions of spinor-helicity variables; 2. a basis of gauge factors expressed in terms of invariant group tensors. The basis of Lorentz factors is generated via the method

¹At dimension 5, we find the only violation pattern is $(\Delta B, \Delta L) = (0, \pm 2)$, while there are $(0, \pm 2)$, $(0, \pm 4)$, $(\pm 1, \pm 1)$, $(\pm 1, \mp 1)$ at dimension 6 and $(0, \pm 2)$, $(\pm 1, \pm 1)$, $(\pm 1, \mp 1)$ at dimension 7. The violation patterns at dimension 8 are the same as that at dimension 6, while there are new violation patterns $(0, \pm 6)$, $(\pm 1, \pm 3)$, $(\pm 1, \mp 3)$, $(\pm 2, 0)$ at dimension 9.

in [2, 32], translated from semi-standard Young tableau (SSYT), which after converting to the operators are automatically free from the IBP and EOM redundancy. Meanwhile, using the Littlewood-Richardson rules, we construct a set of singlet Young tableau of the gauge group indices from the constituting particles, which induces the basis of gauge group factors. A complete and independent flavor-blind operator basis are obtained by direct product of these two factors. Afterwards, we symmetrize the flavor indices of the repeated fields to obtain the so-called p-basis operators, where the ones with permutation symmetries allowed by the flavor number make up our final results as an independent basis of flavor-specified operators. As a key feature, our form of operators include a flavor Young tableau, which indicates the independent components in the Wilson coefficient tensor, hence no more flavor relations are necessary.

In this work, we apply the procedure above to the LEFT. The dimension 5, 6, 7 operator bases are reproduced with new form of flavor structures as indicated above, compared to the previous literature [26, 28]. More importantly, we also generate the dimension 8, 9 operator bases for the first time, which constitutes the main part of this work. We adopt the chiral fermion notation in order to be consistent with other literature [26], as well as to keep the correspondence with the spinor helicity amplitudes explicit.

The paper is organized as follows. In section 2, We introduce the notation and discuss the validity of amplitude-operator correspondence in the massive spinor case. In particular, we describe the main ideas of how to deal with the amplitude bases, group structures and permutation symmetries in section 2.3. In the section 3, We list the complete operator bases in order of dimension from 5 to 9. Our conclusion is presented in section 4.

2 General framework

In this section, we describe the framework of writing down the operator basis of the LEFT. We start by reviewing the massive spinor helicity formalism [30, 31], and then illustrate a one to one correspondence between the massless and massive amplitude basis for particles with spin $S \leq 1/2$. Together with the massive version of the amplitude operator correspondence that we formulate later, we extend the framework for massless EFTs introduced in [1, 2] to include massive fermions, and summarize the procedure of enumerating the complete and independent operator basis of LEFT. We strongly recommend readers to gain preliminary information in refs. [1, 2] where we elaborate the algorithm for enumerating and constructing of operator basis for massless fields, in this work, we only outline the important ingredients of the algorithm in section. 2.3.

2.1 Amplitude basis including massive fermions

Let us first review the massive spinor helicity formalism developed recently in [31], and build the connection between massive spinor and amplitude basis in this subsection. In spinor formalism, a momentum vector can always be decomposed into two spinors, i.e. the spinor helicity variables,

$$p_{\alpha\dot{\alpha}} = p_{\mu}\sigma_{\alpha\dot{\alpha}}^{\mu} = \begin{pmatrix} E + p_3 & p_1 - ip_2 \\ p_1 + ip_2 & E - p_3 \end{pmatrix} = \lambda_{\alpha}^I \tilde{\lambda}_{\dot{\alpha}I}. \quad (2.1)$$

where $\alpha, \dot{\alpha}$ are the $SU(2)_L \times SU(2)_R$ Lorentz indices, I is the little group indices, which is $SU(2)$ for massive particle, and $U(1)$ for massless particle (I can be omitted). Note that $\det p_{\alpha\dot{\alpha}} = p^\mu p_\mu = m^2$. Therefore $p_{\alpha\dot{\alpha}}$ has rank 1 in massless case and rank 2 for massive particles. These indices are raised and lowered by the 2-index Levi-Civita symbols defined as,

$$\epsilon^{12} = -\epsilon^{21} = \epsilon_{21} = -\epsilon_{12} = 1, \quad \lambda^{\alpha I} = \epsilon^{\alpha\beta} \lambda_\beta^I, \quad \lambda_{\alpha I} = \epsilon_{IJ} \lambda_\alpha^J, \quad \tilde{\lambda}^{\dot{\alpha} I} = \epsilon^{\dot{\alpha}\dot{\beta}} \tilde{\lambda}_{\dot{\beta}}^I, \quad \tilde{\lambda}_{\dot{\alpha} I} = \epsilon_{IJ} \tilde{\lambda}_{\dot{\alpha}}^J. \quad (2.2)$$

We normalize the spinors as

$$\lambda^{I\alpha} \lambda_\alpha^J = -m \epsilon^{IJ}, \quad \tilde{\lambda}_{\dot{\alpha}}^I \tilde{\lambda}^{J\dot{\alpha}} = m \epsilon^{IJ}, \quad \lambda_\alpha^I \lambda_{\beta I} = m \epsilon_{\alpha\beta}, \quad \tilde{\lambda}_{\dot{\alpha}}^I \tilde{\lambda}_{\dot{\beta} I} = m \epsilon_{\dot{\alpha}\dot{\beta}} \quad (2.3)$$

In the standard polar coordinates where $p^\mu = (E, p \sin \theta \cos \phi, p \sin \theta \sin \phi, p \cos \theta)$, the general solutions of the spinors are the following,

$$\lambda_\alpha^I = \lambda_\alpha \zeta^{-I} + \eta_\alpha \zeta^{+I}, \quad \text{with } \lambda_\alpha = \sqrt{E+p} \begin{pmatrix} -s_\theta^* \\ c_\theta \end{pmatrix}, \quad \eta_\alpha = \sqrt{E-p} \begin{pmatrix} c_\theta \\ s_\theta \end{pmatrix}, \quad (2.4)$$

$$\tilde{\lambda}_{\dot{\alpha}}^I = \tilde{\lambda}_{\dot{\alpha}} \zeta^{+I} - \tilde{\eta}_{\dot{\alpha}} \zeta^{-I}, \quad \text{with } \tilde{\lambda}^{\dot{\alpha}} = \sqrt{E+p} \begin{pmatrix} c_\theta \\ s_\theta \end{pmatrix}, \quad \tilde{\eta}^{\dot{\alpha}} = \sqrt{E-p} \begin{pmatrix} s_\theta^* \\ -c_\theta \end{pmatrix}, \quad (2.5)$$

where $\zeta^\pm$ satisfy $\epsilon_{IJ} \zeta^{-I} \zeta^{+J} = 1$ and abbreviation $c_\theta \equiv \cos \frac{\theta}{2}$, $s_\theta \equiv \sin \frac{\theta}{2} e^{i\phi}$. $\zeta^\pm$ are determined by the direction along which we take the spin components, for instance $\zeta^+ = (1, 0)$, $\zeta^- = (0, 1)$ mean that we take the spin components along the momentum direction. Because we work in the in-coming convention in this paper, the out-going physical momenta are thus written as in-coming momentum with $E < 0$. For such momentum, we define $\lambda_\alpha^I(-p) = -\lambda_\alpha^I(p)$ and $\tilde{\lambda}_{\dot{\alpha}}^I(-p) = \tilde{\lambda}_{\dot{\alpha}}^I(p)$. In the massless limit, $E - p, \eta, \tilde{\eta} \rightarrow 0$, the $SU(2)$ little group reduces to the transverse $U(1)$ rotation, while I can be omitted. Only two of spinors in eq. (2.4), (2.5) are still valid,

$$\lambda_\alpha = \sqrt{2E} \begin{pmatrix} -s_\theta^* \\ c_\theta \end{pmatrix}, \quad \tilde{\lambda}^{\dot{\alpha}} = \sqrt{2E} \begin{pmatrix} c_\theta \\ s_\theta \end{pmatrix}. \quad (2.6)$$

The resulting Lorentz scalar can be represented by angle spinor brackets and square spinor brackets

$$\langle 1^I 2^J \rangle \equiv \lambda_1^{\alpha I} \lambda_{2\alpha}^J = \lambda_{1\alpha}^I \epsilon^{\beta\alpha} \lambda_{2\beta}^J = -\lambda_{1\alpha}^I \epsilon^{\alpha\beta} \lambda_{2\beta}^J = -\langle 2^J 1^I \rangle, \quad (2.7)$$

$$[1^I 2^J] \equiv \tilde{\lambda}_{1\dot{\alpha}}^I \tilde{\lambda}_2^{\dot{\alpha} J} = \tilde{\lambda}_{1\dot{\alpha}}^I \epsilon^{\dot{\alpha}\dot{\beta}} \tilde{\lambda}_{2\dot{\beta}}^J = -\tilde{\lambda}_{1\dot{\alpha}}^I \epsilon^{\dot{\beta}\dot{\alpha}} \tilde{\lambda}_{2\dot{\beta}}^J = -[2^J 1^I]. \quad (2.8)$$

The same definitions apply to the massless case with the I, J indices removed. The Lorentz invariant amplitude can be constructed from the spinor brackets. The little group representations of each particle constrains the form of amplitude as follows

$$\text{helicity } h \text{ massless particle with spinor variables } (\lambda, \tilde{\lambda}) : \quad \mathcal{A} \sim \begin{cases} \lambda_{\{\alpha\}}^{r-2h} \tilde{\lambda}_{\{\dot{\alpha}\}}^r, & h \leq 0 \\ \lambda_{\{\alpha\}}^r \tilde{\lambda}_{\{\dot{\alpha}\}}^{r+2h}, & h \geq 0 \end{cases} \quad (2.9)$$

$$\text{spin } S \text{ massive particle with spinor variables } (\lambda^I, \tilde{\lambda}^I) : \quad \mathcal{A} \sim \left(\lambda_{\{\alpha\}}^{r+2S-n} \tilde{\lambda}_{\{\dot{\alpha}\}}^{r+n} \right)^{\{I_1 \dots I_{2S}\}}, \quad 0 \leq n \leq 2S \quad (2.10)$$

where $\{\cdot\}$ denotes totally symmetric indices. The total symmetries among the spinor indices are superfluous for the massless amplitudes, while those for massive amplitudes result from the removal of terms with factor of masses via eq. (2.3). For example

$$\langle 1^J 2 \rangle \langle 1^I 3 \rangle [1_J 4] = \left[\left(\lambda_1^{\{\alpha} \lambda_1^{\beta\}} \tilde{\lambda}_{1\dot{\alpha}} \right)^I + \underbrace{\left(\lambda_1^{[\alpha} \lambda_1^{\beta]} \tilde{\lambda}_{1\dot{\alpha}} \right)^I}_{=m_1 \epsilon^{\alpha\beta} \tilde{\lambda}_{1\dot{\alpha}}^I} \right] \lambda_{2,\alpha} \lambda_{3,\beta} \tilde{\lambda}_4^{\dot{\alpha}}. \quad (2.11)$$

By this rule, we have a well-defined dimensionality of the amplitudes as the highest power of spinor brackets in it. Under this definition, the complete amplitude basis at a certain dimension is defined modulo lower dimensional amplitudes. It will be clear shortly that the EOM redundancy of the corresponding operators is eliminated through this removal. Also due to the total symmetry of the spinor indices, the r pairs of little group indices in eq. (2.10) must be contracted between λ^I and $\tilde{\lambda}^I$, because otherwise the amplitude would vanish. Therefore the integer r stands for the number of spinor pairs $(\lambda^{(I)}, \tilde{\lambda}^{(I)})$ in both cases that constitute factors of momentum due to eq. (2.1). The $2S + 1$ choices of n represent independent forms² of contribution the spin- S massive particle could have.

It is easy to observe the correspondence between the massless factor and the massive factor when $S = |h|$ and $n = 0, 2S$, which maps momenta to momenta, and the rest of the massless spinors to massive spinors with totally symmetric little group indices.³ The mapping covers all the possible massive amplitudes only when $S \leq \frac{1}{2}$, in that $n = 0, 2S$ are the only two choices. Therefore, we have the explicit form of the mapping as

$$\begin{aligned} h = 0 \quad \lambda^r \tilde{\lambda}^r &\longrightarrow \left(\lambda^J \tilde{\lambda}_J \right)^r \quad S = 0, \quad n = 0 \\ h = -\frac{1}{2} \quad \lambda^{1+r} \tilde{\lambda}^r &\longrightarrow \lambda^I \left(\lambda^J \tilde{\lambda}_J \right)^r \quad S = \frac{1}{2}, \quad n = 0 \\ h = \frac{1}{2} \quad \lambda^r \tilde{\lambda}^{1+r} &\longrightarrow \tilde{\lambda}^I \left(\lambda^J \tilde{\lambda}_J \right)^r \quad S = \frac{1}{2}, \quad n = 1 \end{aligned} \quad (2.12)$$

For higher spin massive particles, the map could not be established, and our framework would fail. However, it is already enough for us to enumerate the amplitude basis involving massive scalars and fermions by enumerating the massless ones and then simply adding the little group indices according to eq. (2.12).

2.2 Amplitude-operator correspondence including massive fermions

With the massive local amplitude basis in hand, we still need the massive version of the amplitude operator correspondence to finally obtain the operator basis. First we convert the Lorentz indices μ in the operators into the spinor indices α and $\dot{\alpha}$ and we have the

²It is true that λ^I and $\tilde{\lambda}^I$ are not independent due to the Dirac equations. However, given the standard form in eq. (2.10), by removing the terms with factor of masses, the amplitude with various n are indeed independent.

³The mapping is referred to as the “first reduction” in [33], which is claimed to be valid only for the “maximal helicity categories”, namely $n = 0, 2S$. Our formulation is from a different perspective, which better fits in our framework.

following definitions of various notations used in constructing operator basis:

$$\gamma^\mu = \begin{pmatrix} 0 & \sigma_{\alpha\dot{\alpha}}^\mu \\ \bar{\sigma}^{\mu\dot{\alpha}\alpha} & 0 \end{pmatrix}, \quad \Psi = \begin{pmatrix} \xi_\alpha \\ \chi^{\dagger\dot{\alpha}} \end{pmatrix}, \quad \Psi_M = \begin{pmatrix} \zeta_\alpha \\ \zeta^{\dagger\dot{\alpha}} \end{pmatrix}, \quad (2.13)$$

$$\Psi_L = \frac{1-\gamma_5}{2}\Psi = \begin{pmatrix} \xi_\alpha \\ 0 \end{pmatrix}, \quad \Psi_R = \frac{1+\gamma_5}{2}\Psi = \begin{pmatrix} 0 \\ \chi^{\dagger\dot{\alpha}} \end{pmatrix}, \quad (2.14)$$

$$D^\mu = \frac{1}{2}D_{\alpha\dot{\alpha}}\bar{\sigma}^{\mu\dot{\alpha}\alpha}, \quad F_{L\mu\nu} = \frac{1}{4}F_{L\alpha\beta}\epsilon_{\dot{\alpha}\dot{\beta}}\bar{\sigma}^{\mu\dot{\alpha}\alpha}\bar{\sigma}^{\nu\dot{\beta}\beta}, \quad F_{R\mu\nu} = \frac{1}{4}F_{R\dot{\alpha}\dot{\beta}}\epsilon_{\alpha\beta}\bar{\sigma}^{\mu\dot{\alpha}\alpha}\bar{\sigma}^{\nu\dot{\beta}\beta}, \quad (2.15)$$

where ξ, χ, ζ are the Weyl fermions, Ψ and Ψ_M denote the Dirac and Majorana fermion respectively, $F_{L/R} = \frac{1}{2}(F \pm i\tilde{F})$ are the chiral basis of the gauge bosons. Note that in terms of Weyl components, we need a pair of them to represent the independent chiral components of the Dirac fermion, but only one for a Majorana fermion. Nevertheless, all the Weyl degrees of freedom share the same form of spinor wave functions

$$u^I = \begin{pmatrix} \lambda_\alpha^I \\ \tilde{\lambda}_{\dot{\alpha}}^I \end{pmatrix}, \quad \bar{u}_I = (-\lambda_I^\alpha, \tilde{\lambda}_{\dot{\alpha}I}), \quad v_I = \begin{pmatrix} -\lambda_{\alpha I} \\ \tilde{\lambda}_{\dot{\alpha}I} \end{pmatrix}, \quad \bar{v}^I = (\lambda^{\alpha I}, \tilde{\lambda}_{\dot{\alpha}}^I), \quad (2.16)$$

which solve the Dirac equations

$$(\not{p} - m)u^I = 0, \quad \bar{u}_I(\not{p} - m) = 0, \quad \bar{u}_I u^J = 2m\delta_I^J, \quad u^I \bar{u}_I = \not{p} + m, \quad (2.17)$$

$$(\not{p} + m)v_I = 0, \quad \bar{v}^I(\not{p} + m) = 0, \quad \bar{v}^I v_J = 2m\delta_I^J, \quad v_I \bar{v}^I = \not{p} - m. \quad (2.18)$$

We focus on u^I and $\bar{v}^I$ associated with incoming fermions and anti-fermions, since all momenta are incoming in our convention. The amplitudes generated by fermion bilinears are given by the following Feynman rules.

$$\bar{\Psi}_1 \Psi_2 = \bar{\Psi}_{L1} \Psi_{R2} + \bar{\Psi}_{R1} \Psi_{L2} \quad \rightarrow \quad \bar{v}_1^I u_2^J = \lambda_1^{\alpha I} \lambda_{2\alpha}^J + \tilde{\lambda}_{1\dot{\alpha}}^I \tilde{\lambda}_2^{\dot{\alpha} J} = \langle 1^I 2^J \rangle + [1^I 2^J], \quad (2.19)$$

$$\bar{\Psi}_1 \gamma_5 \Psi_2 = \bar{\Psi}_{L1} \Psi_{R2} - \bar{\Psi}_{R1} \Psi_{L2} \quad \rightarrow \quad \bar{v}_1^I \gamma_5 u_2^J = [1^I 2^J] - \langle 1^I 2^J \rangle, \quad (2.20)$$

$$\bar{\Psi}_1 \gamma^\mu \Psi_2 = \bar{\Psi}_{R1} \gamma^\mu \Psi_{R2} + \bar{\Psi}_{L1} \gamma^\mu \Psi_{L2} \quad \rightarrow \quad \bar{v}_1^I \gamma^\mu u_2^J = \langle 1^I | \sigma^\mu | 2^J \rangle + [1^I | \bar{\sigma}^\mu | 2^J], \quad (2.21)$$

$$\bar{\Psi}_1 \gamma^\mu \gamma_5 \Psi_2 = \bar{\Psi}_{R1} \gamma^\mu \Psi_{R2} - \bar{\Psi}_{L1} \gamma^\mu \Psi_{L2} \quad \rightarrow \quad \bar{v}_1^I \gamma^\mu \gamma_5 u_2^J = \langle 1^I | \sigma^\mu | 2^J \rangle - [1^I | \bar{\sigma}^\mu | 2^J]. \quad (2.22)$$

Therefore the amplitude operator correspondence between spinor variables with free little group indices and four-component spinor fields can be read from the second and the last expressions in above equations:

$$\lambda_i^I \rightarrow \psi_i = \Psi_{Li}, \bar{\Psi}_{Ri} \text{ or } \Psi_{Mi}, \quad \tilde{\lambda}_i^I \rightarrow \psi_i^\dagger = \bar{\Psi}_{Li}, \Psi_{Ri} \text{ or } \bar{\Psi}_{Mi}. \quad (2.23)$$

The pair of spinor helicity variables $\lambda_i^J \tilde{\lambda}_{iJ}$ with contracted little group indices can be translated into derivative acting on particle i yielding following correspondences:

$$\lambda_i^{n+2} \tilde{\lambda}_i^n \Leftrightarrow D^n F_{Li}, \quad \lambda_i^n \tilde{\lambda}_i^{n+2} \Leftrightarrow D^n F_{Ri}, \quad (2.24)$$

$$\lambda_i^{n+1} \tilde{\lambda}_i^n, \lambda_i^I \left(\lambda_i^J \tilde{\lambda}_{iJ} \right)^n \Leftrightarrow D^n \psi_i, \quad \lambda_i^n \tilde{\lambda}_i^{n+1}, \tilde{\lambda}_i^I \left(\lambda_i^J \tilde{\lambda}_{iJ} \right)^n \Leftrightarrow D^n \psi_i^\dagger, \quad (2.25)$$

where for completeness we also include the massless case denoted by spinor variables without I or J indices. One may question about the presence of the covariant derivatives generate other local amplitudes with more gauge bosons, which exist in ordinary Feynman rules. However, these vertices are not gauge invariant, and the final gauge invariant amplitudes with contributions from these operators are non-local, and our amplitude operator correspondence applies to local amplitudes only.

Let us take a closer look at the derivatives in eq. (2.24) and (2.25). The total symmetries among the spinor indices in amplitudes are very clear. Otherwise, the resulting amplitude must vanish or reduce the dimension due to the on-shell condition $\lambda_{i[\alpha}^I \lambda_{i\beta]}^J = m_i \epsilon^{IJ} \epsilon_{\alpha\beta}$. Therefore the derivatives acting on each fields in the operators also take the totally symmetric spinor indices. It is easy to see that any pair of anti-symmetric spinor indices if associated with derivatives can be always converted to other types or reduced dimension with EOM and the relation $i[D_\mu, D_\nu] = \sum F_{\mu\nu}$, where we are supposed to have obtained a complete basis:

$$\begin{aligned} D_{[\alpha\dot{\alpha}} D_{\beta]\dot{\beta}} &= D_\mu D_\nu \sigma_{[\alpha\dot{\alpha}}^\mu \sigma_{\beta]\dot{\beta}}^\nu = -\textcolor{red}{D}^2 \epsilon_{\alpha\beta} \epsilon_{\dot{\alpha}\dot{\beta}} + \frac{i}{2} [D_\mu, D_\nu] \epsilon_{\alpha\beta} \bar{\sigma}_{\dot{\alpha}\dot{\beta}}^{\mu\nu}, \\ D_{[\alpha\dot{\alpha}} \psi_{\beta]} &= D_\mu \sigma_{[\alpha\dot{\alpha}}^\mu \psi_{\beta]} = -\epsilon_{\alpha\beta} (\textcolor{red}{D}\psi)_{\dot{\alpha}}, \\ D_{[\alpha\dot{\alpha}} F_{L\beta]\gamma} &= D_\mu F_{\nu\rho} \sigma_{[\alpha\dot{\alpha}}^\mu \sigma_{\beta]\gamma}^{\nu\rho} = 2\textcolor{red}{D}^\mu F_{\mu\nu} \epsilon_{\alpha\beta} \sigma_{\gamma\dot{\alpha}}^\nu. \end{aligned} \quad (2.26)$$

Therefore, the building block in constructing the operator basis is in the following form:

$$\left(D^{r_i - |h_i|} \Phi_i \right)_{\alpha_i^{r_i - h_i}}^{\dot{\alpha}_i^{r_i + h_i}} \in (j_l + r_i - |h_i|, j_r + r_i - |h_i|) \quad (2.27)$$

where the powers of the indices α_i and $\dot{\alpha}_i$ indicate that they are already totally symmetrized, thus the whole object transforms as $(j_l + r_i - |h_i|, j_r + r_i - |h_i|)$ under $sl(2, \mathbb{C}) = su(2)_l \times su(2)_r$, given that Φ transforms as (j_l, j_r) .

The IBP redundancy of operators is solved by the manifest momentum conservation in the amplitude, which can be illustrated by the following example:

$$\langle 1^I 2 \rangle [23^J] = \langle 1^I | p_2 | 3^J \rangle = -\langle 1^I | (p_1 + p_3 + p_4) | 3^J \rangle \sim -\langle 1^I 4 \rangle [43^J]$$

corresponds to the operator equivalence

$$(\psi_1 \sigma^\mu \psi_3^\dagger) D_\mu \phi_2 \phi_4 \sim -(\psi_1 \sigma^\mu \psi_3^\dagger) \phi_2 D_\mu \phi_4,$$

where terms that convert to other type stemming from $\langle 1^I 1^J \rangle = m_1 \epsilon^{IJ}$ by EOM are omitted. Hence, taking momentum conservation into account, the amplitude basis corresponds to an IBP non-redundant basis of operators.

Finally, taking into account the $SU(3)$ group factors $T^{a_1, \dots, a_N}$, the amplitude-operator correspondence can be represented by:

$$T^{a_1, \dots, a_N} \mathcal{B}(\lambda_1^{(I)}, \dots, \lambda_N^{(I)}) \sim T^{a_1, \dots, a_N} \mathcal{B}(\Phi_1, \dots, \Phi_N)_{a_1, \dots, a_N} \quad (2.28)$$

$$\mathcal{B}(\Phi_1, \dots, \Phi_N)_{a_1, \dots, a_N} = (\epsilon^{\alpha_i \alpha_j})^{\otimes n} \left(\tilde{\epsilon}_{\dot{\alpha}_i \dot{\alpha}_j} \right)^{\otimes \tilde{n}} \prod_{i=1}^N \left(D^{r_i - |h_i|} \Phi_{i, a_i} \right)_{\alpha_i^{r_i - h_i}}^{\dot{\alpha}_i^{r_i + h_i}}, \quad (2.29)$$

where $\mathcal{B}$ and T determine the Lorentz structure and gauge structure of the operators respectively, and our goal to find complete and independent operator basis is equivalent to find independent T 's and B 's given the type of the operators. Note that we have suppressed the flavor indices on the right hand side of eq. (2.28) for the moment, and thus call them as “flavor-blind” operators, where we effectively treat all the particles as distinguishable ones, the redundancy related to the repeated fields or equivalently constraints from spin-statistics among the identical particles are tackled in the next section.

2.3 The operator basis

Having established the correspondence, the next step is to construct concrete amplitude basis satisfying momentum conservation and spin-statistics constraint. Such amplitude basis could be translated into operator basis following eq. (2.28).

We start by reviewing the operator classification at different levels as introduced in refs. [1, 2]:

- **Class:** a (Lorentz) class is defined by the numbers of fields of each Lorentz irreducible representations and the definite number of covariant derivatives in a operator.
- **Type:** for each Lorentz Class, an assignment of each Lorentz irreducible representations with SM field contents that conserve the electric charge is called a type.
- **Term (flavor-blind operator):** for each type, we organize operators into different irreducible representations of the symmetric groups of permuting flavor indices of repeated fields. Each irreducible representation corresponds to a term of operators, and our result in the following sections are all presented at this level.
- **Operator (flavor-specified operator):** for each term, when the flavor indices are taken for a specific number in a SSYT of the corresponding Young diagram, it becomes what we called flavor-specified operator.

Since our results are presented at the term level, in the following we briefly summarize the method for finding terms for each type of operators, which has been elaborated in refs. [1, 2]. We encourage readers to refer refs. [1, 2] for details and the systematic explanation of the method. In the following, we first separate the task for finding complete and independent Lorentz and gauge factors, then illustrate how to obtain the term with definite flavor permutation symmetry.

In general, the Lorentz factor of the amplitude, determined only by the helicities of the constituting particles, can be expressed as

$$\mathcal{B} = \langle \cdot \rangle^n [\cdot]^{\tilde{n}}, \quad (2.30)$$

where n and $\tilde{n}$ denote the numbers of λ and $\tilde{\lambda}$ pairs, as shown in eq. (2.29).

To find the complete and independent amplitude basis, we use the method introduced by ref. [32] and further developed by ref. [1]. It is proved in ref. [32] that the amplitudes

modulo total momenta form irreducible representations of $SU(N)$ group are denoted by the primary Young diagrams,

$$Y_{N,n,\tilde{n}} = \left\{ \begin{array}{c} \overbrace{\left[\begin{array}{c} \square \dots \square \end{array} \right]}^n \\ \vdots \\ \underbrace{\left[\begin{array}{c} \square \dots \square \end{array} \right]}_{\tilde{n}} \end{array} \right\}^{N-2} \quad (2.31)$$

where N is the number of particles in the amplitudes. The base vectors of the irreducible representations are given by $SU(N)$ semi-standard Young tableaux (SSYTs). The number of indices i to fill in the Young diagram, denoted by $\#i$, is determined by $\#i = \tilde{n} - 2h_i$, where $\{h_i\}$ denote the set of helicity of the i th particle in the class and are sorted in the order $h_i \leq h_{i+1}$, $i = 1, \dots, N-1$. Going through all possible ways to fill in the numbers and obtain a SSYT will give us the complete and non-redundant amplitude basis expressed by SSYTs. In fact, the Fock's condition of Young tableaux corresponds to IBP and Fierz/Schouten identities of operators. Thus choosing SSYTs means picking out all independent Young tableaux, which corresponds to picking out all independent Lorentz structures of operators.

The SSYTs can be translated to amplitudes using following relations for each columns,

$$\begin{array}{c} \boxed{i} \\ \boxed{j} \end{array} \sim \langle ij \rangle, \quad \begin{array}{c} \boxed{k_1} \\ \boxed{k_2} \\ \vdots \\ \boxed{k_{N-3}} \\ \boxed{k_{N-2}} \end{array} \sim \mathcal{E}^{k_1 \dots k_{N-2} ij} [ij], \quad (2.32)$$

where $\mathcal{E}$ is the Levi-Civita tensor of the $SU(N)$ group. These amplitudes can be further translated to Lorentz structures of operators using amplitude-operator correspondence.

The gauge group factors are expressed by Levi-Civita tensors that contract with the fundamental indices of the fields. Anti-fundamental representation and adjoint representation of fields can be converted to fundamental representation by

$$\begin{aligned} \epsilon_{acd} (\lambda^A)^d G^A &= G_{abc} \sim \begin{array}{|c|c|} \hline a & b \\ \hline c & \\ \hline \end{array}, \\ \epsilon_{abc} u^{\dagger,c} &= u_{ab}^{\dagger} \sim \begin{array}{|c|} \hline a \\ \hline b \\ \hline \end{array}. \end{aligned} \quad (2.33)$$

Following the procedures in ref. [1], the gauge group factors can be obtained by constructing the singlet Young tableau using the modified Littlewood-Richardson rule with the corresponding indices of each field filled in.

Finally, we need to find the flavor structure in the presence of repeated fields. To achieve that, we utilize the basis $b_{x=1,\dots,d_\lambda}^{[\lambda]}$ in the irreducible left ideal of the group algebra $\tilde{S}_m$, which is a set of independent symmetrizers spanning an irreducible representation space of the permutation group S_m . By acting them on the flavor indices of an operator,

we obtain either zero or an irreducible flavor tensor, whose independent components are given by the $SU(n_f)$ SSYT's. We thus express the result as such irreducible tensors in the form $\mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}$, where $\mathcal{Y}_1^{[\lambda]} \equiv b_1^{[\lambda]}$ is the famous Young symmetrizer⁴ and $\mathcal{O}$ is some monomial operator. Take S_3 group for example, we show the action of Young symmetrizer as following

$$\begin{aligned}\mathcal{Y}_1^{[3]} O^{prs} &= \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline p & r & s \\ \hline \end{array} \right] O^{prs} = O^{prs} + O^{rps} + O^{psr} + O^{rsp} + O^{srp} + O^{spr}, \\ \mathcal{Y}_1^{[2,1]} O^{prs} &= \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline s \\ \hline \end{array} \right] O^{prs} = O^{prs} + O^{rps} - O^{srp} - O^{spr}, \\ \mathcal{Y}_1^{[1^3]} O^{prs} &= \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline s \\ \hline \end{array} \right] O^{prs} = O^{prs} - O^{rps} - O^{psr} + O^{rsp} - O^{srp} + O^{spr}.\end{aligned}\tag{2.34}$$

To get all the independent irreducible representation spaces, one must find a collection of operators $\{\mathcal{O}_\zeta\}$ such that $\mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}_\zeta$ are linearly independent and whose linear combinations exhaust all the possible $\mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}$. Such projections form the so-called p-basis of the operators [2]. It is usually highly non-trivial considering the complexity of redundancy relations of the operators. But with the Young tableau basis obtained above, we could find the unique coordinates of any $\mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}_\zeta$ which makes it easy to find the collection $\{\mathcal{O}_\zeta\}$.

In practice, the coordinates of $\mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}_\zeta$ can be obtained by finding the matrix representation of the group elements $\mathcal{D}^T(\pi)$ and $\mathcal{D}^B(\pi)$ on the complete and independent bases of T_i and $\mathcal{B}_j$ obtained by the Young tableau approaches discussed above. As the permutation on the flavor indices is equivalent to permute the gauge and Lorentz structures as discussed in refs. [1, 2]:

$$\underbrace{\pi \circ \mathcal{O}^{\{f_k, \dots\}}}_{\text{permute flavor}} = \underbrace{\left(\pi \circ T_{\text{SU3}}^{\{g_k, \dots\}} \right)}_{\text{permute gauge}} \underbrace{\left(\pi \circ \mathcal{B}_{\{g_k, \dots\}}^{\{f_k, \dots\}} \right)}_{\text{permute Lorentz}}.\tag{2.35}$$

Thus for any operator $\mathcal{O} = C_{ij} T_i B_j$, the permutation yields a transformation of the coordinate C_{ij} :

$$\begin{aligned}\pi \circ \mathcal{O} &= C_{ij} (\pi \circ T_i) (\pi \circ B_j) \\ &= C_{ij} \left(\mathcal{D}^T(\pi)_{ik} T_k \right) \left(\mathcal{D}^B(\pi)_{il} \mathcal{B}_l \right) \\ &= \left(C_{kl} \mathcal{D}^T(\pi)_{ki} \mathcal{D}^B(\pi)_{lj} \right) T_i \mathcal{B}_j.\end{aligned}\tag{2.36}$$

Alternatively, one could obtain the p-basis by inner product decomposition as in refs. [1, 2], where one first finds the irreducible Lorentz factors $\mathcal{B}_x^{[\lambda]}$ and gauge factors $T_x^{[\lambda]}$ and then combine them with the CG coefficients of the permutation group as

$$\mathcal{O}_{(\lambda, x), \zeta} = \sum_{x_1, x_2} C_{(\lambda, x), \zeta}^{(\lambda_1, x_1), (\lambda_2, x_2)} \mathcal{B}_{x_1}^{\lambda_1} T_{\text{SU3}, x_2}^{\lambda_2}.\tag{2.37}$$

To get the final form as $\mathcal{O}_{(\lambda, 1), \zeta} = \mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}_\zeta$, we could simply find the coordinate of $\mathcal{O}_\zeta$ in the p-basis which encode the combination of p-basis amplitudes with $[\lambda]$ symmetry one

⁴In our prescription, $\mathcal{Y}_{i \neq 1}^{[\lambda]} \circ \mathcal{O}$, if not vanishing, belongs to another irreducible tensor $\mathcal{Y}_1^{[\lambda]} \circ \mathcal{O}'$, and should not be counted.

should get from the projection of $\mathcal{Y}_1^{[\lambda]}$. It is then straightforward to select a set $\{\mathcal{O}_\zeta\}$ with independent projections, which we refer to as the “desymmetrization” process in [2].

When we contract the flavor tensor with the Wilson coefficient tensor C_{prs} , the Young symmetrizer could be interpreted as acting on C_{prs} with inverse permutations

$$\sum_{prs} C_{prs} \left(\mathcal{Y}^{[\lambda]} \circ \mathcal{O}^{prs} \right) = \sum_{prs} \left(\overline{\mathcal{Y}^{[\lambda]}} \circ C_{prs} \right) \mathcal{O}^{prs}, \quad (2.38)$$

Thus the result can also be interpreted as the monomial operator $\mathcal{O}$ with symmetrized Wilson coefficient tensor. Note that instead of looking for flavor relations among the Wilson coefficients, we only define Wilson coefficients for the independent entries of the irreducible coefficient tensor $\overline{\mathcal{Y}^{[\lambda]}} \circ C_{prs}$, given by the SSYT of the Young symmetrizer. For example, the independent Wilson coefficients of a $[\lambda] = [2, 1]$ symmetrized p-basis operator $\mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix} \right] \circ \mathcal{O}^{prs}$ are given by the 8 SSYT’s:

$$\begin{aligned} \begin{array}{|c|c|} \hline 1 & 1 \\ \hline 2 \\ \hline \end{array} &\sim C_{112}, & \begin{array}{|c|c|} \hline 1 & 1 \\ \hline 3 \\ \hline \end{array} &\sim C_{113}, & \begin{array}{|c|c|} \hline 1 & 2 \\ \hline 2 \\ \hline \end{array} &\sim C_{122}, & \begin{array}{|c|c|} \hline 1 & 2 \\ \hline 3 \\ \hline \end{array} &\sim C_{123}, \\ \begin{array}{|c|c|} \hline 1 & 3 \\ \hline 2 \\ \hline \end{array} &\sim C_{132}, & \begin{array}{|c|c|} \hline 1 & 3 \\ \hline 3 \\ \hline \end{array} &\sim C_{133}, & \begin{array}{|c|c|} \hline 2 & 2 \\ \hline 3 \\ \hline \end{array} &\sim C_{223}, & \begin{array}{|c|c|} \hline 2 & 3 \\ \hline 3 \\ \hline \end{array} &\sim C_{233}, \end{aligned} \quad (2.39)$$

while all the other components in the tensor C_{prs} are either 0 or related to the above ones by the tensor symmetry $[\lambda]$.

3 Lists of operators in LEFT

In this section, we first exhibit the field content in table 1, and then list all the independent dimension 5, 6, 7, 8 and 9 operators in LEFT, and the number of operators with various lepton number violation $|\Delta L|$, are summarized for each dimension in table 2 and table 3. Although the two-component Weyl spinors are used to construct the operator basis, we changed them into four-component Dirac spinors when presenting the result for user’s convenience. The conversion relations between two-component Weyl spinors and four-component Dirac spinors are as follows.

$$\begin{aligned} \nu_L &= \begin{pmatrix} \nu \\ 0 \end{pmatrix}, & e_L &= \begin{pmatrix} e \\ 0 \end{pmatrix}, & e_R &= \begin{pmatrix} 0 \\ e_c^\dagger \end{pmatrix}, & u_L &= \begin{pmatrix} u \\ 0 \end{pmatrix}, \\ u_R &= \begin{pmatrix} 0 \\ u_c^\dagger \end{pmatrix}, & d_L &= \begin{pmatrix} d \\ 0 \end{pmatrix}, & d_R &= \begin{pmatrix} 0 \\ d_c^\dagger \end{pmatrix}. \end{aligned} \quad (3.1)$$

$$\begin{aligned} \bar{\nu}_L &= (0, \nu^\dagger), & \bar{e}_L &= (0, e^\dagger), & \bar{e}_R &= (e_c, 0), & \bar{u}_L &= (0, u^\dagger), \\ \bar{u}_R &= (u_c, 0), & \bar{d}_L &= (0, d^\dagger), & \bar{d}_R &= (d_c, 0). \end{aligned} \quad (3.2)$$

In the following lists of operators, the ψ ($\psi^\dagger$) in the name of each class indicates a two-component left-handed (right handed) spinor in this class, and the baryon-number and lepton-number violation pattern of each type is listed next to the type as $(\Delta B, \Delta L)$. We label the (anti)fundamental representation of group $SU(3)_C$ and the adjoint representation

of $SU(3)_C$ by the indices $\{a, b, c, d, e, f\}$ and $\{A, B, C, D\}$, respectively, and the indices for flavor of the fermion fields are denoted by $\{p, r, s, t, u, v\}$.

After applying the method introduced in section 2 to LEFT, we are able to obtain the complete basis of independent operators in LEFT at various mass dimensions. In order to compare our result with others, we change the two-component spinors in our building blocks to four-component spinors using the correspondence in eq. (3.1) and (3.2). Furthermore, since the operator basis in LEFT can be different in the literature, the equivalence relations due to Schouten Identity, Fierz Identity and IBP need to be taken into account in the comparison.

To show the conversion between two-component spinors and four-component spinors and compare the result with others, let us take type $\bar{d}_R d_L \bar{u}_R u_L$ as an example. Operators of this type are written as two-component spinors at first,

$$\left(d_{cp}^a d_{rb}\right) \left(u_{cs}^b u_{ta}\right), \quad (3.3)$$

$$\left(d_{cp}^a d_{ra}\right) \left(u_{cs}^c u_{tc}\right), \quad (3.4)$$

$$\left(d_{rb} u_{ta}\right) \left(d_{cp}^a u_{cs}^b\right), \quad (3.5)$$

$$\left(d_{ra} u_{tc}\right) \left(d_{cp}^a u_{cs}^c\right). \quad (3.6)$$

These operators can be converted to the (chiral) four-component spinor notation eq. (3.1), (3.2) using

$$\begin{aligned} \bar{\Psi}_1 \Psi_2 &= \chi_1^\alpha \xi_{2\alpha} + \xi_{1\dot{\alpha}}^\dagger \chi_2^{\dagger\dot{\alpha}}, \\ \Psi_1^T C \Psi_2 &= \xi_1^\alpha \xi_{2\alpha} + \chi_{1\dot{\alpha}}^\dagger \chi_2^{\dagger\dot{\alpha}}, \\ \bar{\Psi}_1 C \bar{\Psi}_2^T &= \xi_{1\dot{\alpha}}^\dagger \xi_2^{\dagger\dot{\alpha}} + \chi_1^\alpha \chi_{2\alpha}, \end{aligned} \quad (3.7)$$

where Ψ s are four-component spinors and ξ s, χ s are left-handed two-component spinors,

$$\Psi = \begin{pmatrix} \xi_\alpha \\ \chi^{\dagger\dot{\alpha}} \end{pmatrix}, \quad \bar{\Psi} = \Psi^\dagger \gamma^0 = \left(\chi^\alpha, \xi_\alpha^\dagger \right), \quad (3.8)$$

and $C = i\gamma^0 \gamma^2 = \begin{pmatrix} \epsilon_{\alpha\beta} & 0 \\ 0 & \epsilon^{\dot{\alpha}\dot{\beta}} \end{pmatrix} = \begin{pmatrix} -\epsilon^{\alpha\beta} & 0 \\ 0 & -\epsilon_{\dot{\alpha}\dot{\beta}} \end{pmatrix}$. Taking eq. (3.3) as an example, the pairs of fields in each parenthesis can be translated into four-components ones of the form $\bar{\Psi}\Psi$ using eq. (3.1) and (3.2), with the first line in eq. (3.7), the two-component notation is directly translated into the four component one: $\left(\bar{d}_{Rp}^a d_{Lrb}\right) \left(\bar{u}_{Rs}^b u_{Lta}\right)$. For the case in eq. (3.6) where the pairs of fields in each parenthesis have the forms of $\Psi\Psi$ or $\bar{\Psi}\bar{\Psi}$ after conversion to four-component ones, the charge conjugate operators C and the proper transposition of spinors need to be inserted properly following the last two lines in eq. (3.7) yielding $\left(d_{Lra}^T C u_{Ltc}\right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^T\right)$. More examples of such conversions can be found in the appendix of ref. [1]. Thus the operators of type $\bar{d}_R d_L \bar{u}_R u_L$ can be presented in four-

component spinors as

$$\left(\bar{d}_{Rp}^a d_{Lrb}\right) \left(\bar{u}_{Rs}^b u_{Lta}\right) = \left(d_{cp}^a d_{rb}\right) \left(u_{cs}^b u_{ta}\right), \quad (3.9)$$

$$\left(\bar{d}_{Rp}^a d_{Lra}\right) \left(\bar{u}_{Rs}^c u_{Ltc}\right) = \left(d_{cp}^a d_{ra}\right) \left(u_{cs}^c u_{tc}\right), \quad (3.10)$$

$$\left(d_{Lrb}^T C u_{Lta}\right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^{Tb}\right) = \left(d_{rb} u_{ta}\right) \left(d_{cp}^a u_{cs}^b\right), \quad (3.11)$$

$$\left(d_{Lra}^T C u_{Ltc}\right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^{Tc}\right) = \left(d_{ra} u_{tc}\right) \left(d_{cp}^a u_{cs}^c\right). \quad (3.12)$$

These operators on the left-hand side are the final form presented in our result in eq. (3.34), where the transpose symbol T is omitted for simplicity.

To compare our bases with their counterparts in ref. [26], Fierz identities in the following equations are needed:

$$\left(d_L^T C u_L\right) \left(\bar{d}_R C \bar{u}_R^T\right) = -\left(\bar{d}_R u_L\right) \left(\bar{u}_R d_L\right) - \left(\bar{d}_R d_L\right) \left(\bar{u}_R u_L\right), \quad (3.13)$$

$$\sum_A (T^A)_{ab} (T^A)_{cd} = \delta_{ad} \delta_{cb} - \frac{1}{N} \delta_{ab} \delta_{cd}, \quad (3.14)$$

and it can be shown that the following basis operators are equivalent to ours

$$\left(\bar{d}_{Rp} d_{Lr}\right) \left(\bar{u}_{Rs} u_{Lt}\right), \quad (3.15)$$

$$\left(\bar{d}_{Rp} T^A d_{Lr}\right) \left(\bar{u}_{Rs} T^A u_{Lt}\right), \quad (3.16)$$

$$\left(\bar{d}_{Rp} u_{Lt}\right) \left(\bar{u}_{Rs} d_{Lr}\right), \quad (3.17)$$

$$\left(\bar{d}_{Rp} T^A u_{Lt}\right) \left(\bar{u}_{Rs} T^A d_{Lr}\right), \quad (3.18)$$

which are exactly the Hermitian conjugate of operators $\mathcal{O}_{ud}^{S1,RR}$, $\mathcal{O}_{ud}^{S8,RR}$, $\mathcal{O}_{uddu}^{S1,RR}$ and $\mathcal{O}_{uddu}^{S8,RR}$ in ref. [26].

In addition to the conversion between two-component and four-component spinors, we used some identities of σ matrices to convert spinor indices to Lorentz indices, for example,

$$F_L^{\alpha\beta} F_{L\alpha\beta} = -\frac{1}{4} F_{L\mu\nu} F_{L\rho\lambda} (\sigma^{\mu\nu})^{\alpha\beta} (\sigma^{\rho\lambda})_{\alpha\beta} = \frac{1}{4} F_{L\mu\nu} F_{L\rho\lambda} \text{Tr} \left(\sigma^\mu \bar{\sigma}^\nu \sigma^\rho \bar{\sigma}^\lambda \right) \quad (3.19)$$

where

$$F_{L\alpha\beta} = \frac{i}{2} F_{\mu\nu} (\sigma^{\mu\nu})_{\alpha\beta} = \frac{i}{2} F_{L\mu\nu} (\sigma^{\mu\nu})_{\alpha\beta}, \quad (3.20)$$

and the following identities are used,

$$(\sigma^\mu \bar{\sigma}^\nu)_\alpha{}^\beta = g^{\mu\nu} \delta_\alpha^\beta - i (\sigma^{\mu\nu})_\alpha{}^\beta, \quad (3.21)$$

$$(\bar{\sigma}^\mu \sigma^\nu)^{\dot{\alpha}}{}_{\dot{\beta}} = g^{\mu\nu} \delta_{\dot{\beta}}^{\dot{\alpha}} - i (\bar{\sigma}^{\mu\nu})^{\dot{\alpha}}{}_{\dot{\beta}}. \quad (3.22)$$

The trace of σ matrices in eq. (3.19) can be simplified in a systematic way using our code and yields

$$\text{Tr} \left(\sigma^\mu \bar{\sigma}^\nu \sigma^\rho \bar{\sigma}^\lambda \right) = 2g^{\mu\nu} g^{\rho\lambda} - 2g^{\mu\rho} g^{\nu\lambda} + 2g^{\nu\rho} g^{\mu\lambda} + 2i\epsilon^{\mu\nu\rho\lambda}. \quad (3.23)$$

Finally we get

$$F_L^{\alpha\beta} F_{L\alpha\beta} = \frac{1}{2} F_L^\mu{}_\mu F_L^\rho{}_\rho - \frac{1}{2} F_L^{\mu\nu} F_{L\mu\nu} + \frac{1}{2} F_L^{\mu\nu} F_{L\nu\mu} - F_L^{\mu\nu} F_{L\mu\nu} = -2F_L^{\mu\nu} F_{L\mu\nu}. \quad (3.24)$$

Fields	$SU(2)_l \times SU(2)_r$	h	$SU(3)_C$	$U(1)_{EM}$	Flavor	B	L
$G_{L\alpha\beta}^A$	$(1, 0)$	-1	8	0	1	0	0
$F_{L\alpha\beta}$	$(1, 0)$	-1	1	0	1	0	0
ν_α	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	1	0	n_e	0	1
e_α	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	1	-1	n_e	0	1
$e_{\mathbb{C}\alpha}$	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	1	1	n_e	0	-1
$u_{\alpha a}$	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	3	$\frac{2}{3}$	n_u	$\frac{1}{3}$	0
$u_{\mathbb{C}\alpha}^a$	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	$\bar{\mathbf{3}}$	$-\frac{2}{3}$	n_u	$-\frac{1}{3}$	0
$d_{\alpha a}$	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	3	$-\frac{1}{3}$	n_d	$\frac{1}{3}$	0
$d_{\mathbb{C}\alpha}^a$	$\left(\frac{1}{2}, 0\right)$	$-\frac{1}{2}$	$\bar{\mathbf{3}}$	$\frac{1}{3}$	n_d	$-\frac{1}{3}$	0

Table 1. The field content of the LEFT, along with their representations under the Lorentz and gauge symmetries. The representation under Lorentz group is denoted by (j_l, j_r) , while the helicity of the field is given by $h = j_r - j_l$. The numbers of lepton flavors, u-type quark flavors and d-type quark flavors are denoted as n_e , n_u and n_d respectively with $n_e = 3$, $n_u = 2$ and $n_d = 3$ in LEFT. Their global charges, baryon number B and lepton number L are also listed. All of the fields are accompanied with their Hermitian conjugates that are omitted, $(F_{L\alpha\beta})^\dagger = F_{R\dot{\alpha}\dot{\beta}}$ for gauge bosons and $(\psi_\alpha)^\dagger = (\psi^\dagger)_{\dot{\alpha}}$ for fermions, which are under the conjugate representations of all the groups.

3.1 Lists of the dim-5 operators

Class $F_L\psi^2$: 6 types

$$\mathcal{O}_{G_L \bar{u}_R u_L}(0, 0) \Big| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \quad (3.25)$$

$$\mathcal{O}_{G_L \bar{d}_R d_L}(0, 0) \Big| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb} \right) \quad (3.26)$$

$$\mathcal{O}_{F_L \bar{u}_R u_L}(0, 0) \Big| i F_L^{\mu\nu} \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \quad (3.27)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L}(0, 0) \Big| i F_L^{\mu\nu} \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra} \right) \quad (3.28)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L}(0, 0) \Big| i F_L^{\mu\nu} \left(\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr} \right) \quad (3.29)$$

$$\mathcal{O}_{F_L \nu_L^2}(0, 2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr} \right) \quad (3.30)$$

3.2 Lists of the dim-6 operators

Class F_L^3 : 1 types

$$\mathcal{O}_{G_L^3}(0, 0) \Big| f^{ABC} G_L^A{}_{\mu\nu} G_L^B{}^\mu{}_\lambda G_L^{C\nu\lambda} \quad (3.31)$$

Dim-5 operators						
N	$(n, \tilde{n})$	Classes	$\mathcal{N}_{\text{type}}$	$\mathcal{N}_{\text{term}}$	$\mathcal{N}_{\text{operator}}$	Equations
3	(2, 0)	$F_{\text{L}}\psi^2 + h.c.$	10 + 0 + 2 + 0	12	76	(3.25)–(3.30)
Dim-6 operators						
N	$(n, \tilde{n})$	Classes	$\mathcal{N}_{\text{type}}$	$\mathcal{N}_{\text{term}}$	$\mathcal{N}_{\text{operator}}$	Equations
3	(3, 0)	$F_{\text{L}}^3 + h.c.$	2 + 0 + 0 + 0	2	2	(3.31)
4	(2, 0)	$\psi^4 + h.c.$	14 + 12 + 8 + 2	78	2362	(3.32)–(3.49)
	(1, 1)	$\psi^2\psi^{\dagger 2}$	40 + 20 + 12 + 0	84	3511	(3.50)–(3.99)
Total		5	56 + 32 + 20 + 2	164	5875	
Dim-7 operators						
N	$(n, \tilde{n})$	Classes	$\mathcal{N}_{\text{type}}$	$\mathcal{N}_{\text{term}}$	$\mathcal{N}_{\text{operator}}$	Equations
4	(3, 0)	$F_{\text{L}}^2\psi^2 + h.c.$	16 + 0 + 4 + 0	32	216	(3.100)–(3.109)
	(2, 1)	$F_{\text{L}}^2\psi^{\dagger 2} + h.c.$	16 + 0 + 4 + 0	24	164	(3.110)–(3.119)
		$\psi^3\psi^{\dagger}D + h.c.$	50 + 32 + 22 + 0	120	4738	(3.120)–(3.171)
Total		6	82 + 32 + 30 + 0	176	5118	
Dim-8 operators						
N	$(n, \tilde{n})$	Classes	$\mathcal{N}_{\text{type}}$	$\mathcal{N}_{\text{term}}$	$\mathcal{N}_{\text{operator}}$	Equations
4	(4, 0)	$F_{\text{L}}^4 + h.c.$	8 + 0 + 0 + 0	14	14	(3.172)–(3.175)
	(3, 1)	$F_{\text{L}}^2\psi\psi^{\dagger}D + h.c.$	16 + 0 + 0 + 0	16	104	(3.181)–(3.188)
		$\psi^4D^2 + h.c.$	14 + 12 + 8 + 2	120	3552	(3.207)–(3.224)
	(2, 2)	$F_{\text{L}}^2F_{\text{R}}^2$	7 + 0 + 0 + 0	9	9	(3.176)–(3.180)
		$F_{\text{L}}F_{\text{R}}\psi\psi^{\dagger}D$	22 + 0 + 0 + 0	30	210	(3.189)–(3.206)
		$\psi^2\psi^{\dagger 2}D^2$	40 + 20 + 12 + 0	168	7061	(3.225)–(3.274)
5	(3, 0)	$F_{\text{L}}\psi^4 + h.c.$	26 + 24 + 14 + 2	290	8024	(3.275)–(3.307)
	(2, 1)	$F_{\text{L}}\psi^2\psi^{\dagger 2} + h.c.$	148 + 80 + 44 + 0	408	16084	(3.308)–(3.443)
Total		13	281 + 136 + 78 + 4	1055	35058	

Table 2. The complete statistics of dimension 5, 6, 7, 8 LEFT operators. N in the leftmost column shows the number of particles. $(n, \tilde{n})$ are the numbers of ϵ and $\tilde{\epsilon}$ in the Lorentz structure. $\mathcal{N}_{\text{type}}$, $\mathcal{N}_{\text{term}}$, and $\mathcal{N}_{\text{operator}}$ show the number of types, terms and Hermitian operators respectively (independent conjugates are counted), while the numbers under $\mathcal{N}_{\text{type}}$ describe the sum of each possible $|\Delta L|$ types/operators with $\mathcal{N} = \mathcal{N}(|\Delta L| = 0) + \mathcal{N}(|\Delta L| = 1) + \mathcal{N}(|\Delta L| = 2) + \mathcal{N}(|\Delta L| = 4)$. The links in the rightmost column refer to the list(s) of the terms in given classes.

Dim-9 operators						
N	$(n, \tilde{n})$	Classes	$\mathcal{N}_{\text{type}}$	$\mathcal{N}_{\text{term}}$	$\mathcal{N}_{\text{operator}}$	Equations
4	(3, 2)	$F_{\text{L}}^2 \psi^2 D^2 + h.c.$	16+0+4+0+0+0	56	380	(3.444)–(3.453)
		$F_{\text{L}} F_{\text{R}} \psi^2 D^2 + h.c.$	20+0+4+0+0+0	32	216	(3.454)–(3.465)
		$F_{\text{L}}^2 \psi^{\dagger 2} D^2 + h.c.$	16+0+4+0+0+0	32	216	(3.466)–(3.475)
		$\psi^3 \psi^{\dagger} D^3 + h.c.$	50+32+22+0+0+0	234	9344	(3.516)–(3.567)
5	(4, 0)	$F_{\text{L}}^3 \psi^2 + h.c.$	22+0+6+0+0+0	84	542	(3.476)–(3.489)
	(3, 1)	$F_{\text{L}}^3 \psi^{\dagger 2} + h.c.$	10+0+2+0+0+0	16	108	(3.490)–(3.495)
		$F_{\text{L}} \psi^3 \psi^{\dagger} D + h.c.$	94+64+38+0+0+0	1150	43002	(3.568)–(3.665)
	(2, 2)	$F_{\text{L}} F_{\text{R}}^2 \psi^2 + h.c.$	32+0+8+0+0+0	68	434	(3.496)–(3.515)
		$F_{\text{R}} \psi^3 \psi^{\dagger} D + h.c.$	94+64+38+0+0+0	862	32208	(3.666)–(3.763)
	6	(3, 0)	$\psi^6 + h.c.$	30+42+24+10+8+2	908	88136
(2, 1)		$\psi^4 \psi^{\dagger 2} + h.c.$	272+318+184+34+12+0	3012	529998	(3.822)–(3.1231)
Total		22	656+520+334+44+20+2	6454	704584	

Table 3. The complete statistics of dimension 9 LEFT operators. The numbers under $\mathcal{N}_{\text{type}}$ describe the sum of each possible $|\Delta L|$ types/operators with $\mathcal{N} = \mathcal{N}(|\Delta L| = 0) + \mathcal{N}(|\Delta L| = 1) + \mathcal{N}(|\Delta L| = 2) + \mathcal{N}(|\Delta L| = 3) + \mathcal{N}(|\Delta L| = 4) + \mathcal{N}(|\Delta L| = 6)$.

Class ψ^4 : 18 types

$$\mathcal{O}_{\bar{u}_R^2 u_L^2}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}\right]} (u_{Lsa} C u_{Ltb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}\right]} (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}\right]} (u_{Lsa} C u_{Ltb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}\right]} (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \end{array} \right. \quad (3.32)$$

$$\mathcal{O}_{d_L e_L u_L^2}^{(1,2)}(1, 1) \left| \begin{array}{l} \mathcal{Y}_{\left[\begin{smallmatrix} s \\ t \end{smallmatrix}\right]} \epsilon^{abc} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} s \\ t \end{smallmatrix}\right]} \epsilon^{abc} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) \end{array} \right. \quad (3.33)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{u}_R u_L}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^b u_{Lta}) \\ (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c u_{Ltc}) \\ (d_{Lrb} C u_{Lta}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \\ (d_{Lra} C u_{Ltc}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \end{array} \right. \quad (3.34)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{u}_R u_L}^{(1,2)}(0, 0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a u_{Lta}) \\ (e_{Lr} C u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.35)$$

$$\mathcal{O}_{\nu_L^2 \bar{u}_R u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y}_{\left[\begin{smallmatrix} s \\ t \end{smallmatrix}\right]} (u_{Lra} C \nu_{Lt}) (\bar{u}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} s \\ t \end{smallmatrix}\right]} (\nu_{Ls} C \nu_{Lt}) (\bar{u}_{Rp}^a u_{Lra}) \end{array} \right. \quad (3.36)$$

$$\mathcal{O}_{d_L^2 \nu_L u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline \end{smallmatrix} \right] \epsilon^{abc} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ \hline r \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \end{array} \right. \quad (3.37)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L u_L}^{(1,2)}(0,2) \left| \begin{array}{l} (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \\ (e_{Lr} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) \end{array} \right. \quad (3.38)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \bar{u}_R^2}^{(1,2)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] \epsilon_{abc} (\bar{e}_{Rr} C \bar{u}_{Rt}^c) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ \hline t \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^c \right) \end{array} \right. \quad (3.39)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rs}^a \nu_{Lt}) \\ (\bar{e}_{Rr} \nu_{Lt}) (\bar{u}_{Rs}^a d_{Lpa}) \end{array} \right. \quad (3.40)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L \bar{u}_R}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline \end{smallmatrix} \right] \epsilon_{abc} (\bar{d}_{Rr}^b \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ \hline r \end{smallmatrix} \right] \epsilon_{abc} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \end{array} \right. \quad (3.41)$$

$$\mathcal{O}_{d_L^3 \bar{e}_R}^{(1,2)}(1,-1) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s \end{smallmatrix} \right] \epsilon^{abc} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) \right. \quad (3.42)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L^2}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (d_{Lsa} C d_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b d_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (d_{Lsa} C d_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b d_{Ltb} \right) \end{array} \right. \quad (3.43)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rs} e_{Lt}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \\ (d_{Lra} C e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \end{array} \right. \quad (3.44)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L^2}^{(1,2)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ \hline t \end{smallmatrix} \right] (d_{Lra} C \nu_{Lt}) \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \end{array} \right. \quad (3.45)$$

$$\mathcal{O}_{\bar{d}_R^3 e_L}^{(1,2)}(-1,1) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s \end{smallmatrix} \right] \epsilon_{abc} (\bar{d}_{Rs}^c e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \right. \quad (3.46)$$

$$\mathcal{O}_{\bar{e}_R^2 e_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} e_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) \end{array} \right. \quad (3.47)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L^2}^{(1,2)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ \hline t \end{smallmatrix} \right] (\bar{e}_{Rp} \nu_{Ls}) (e_{Lr} C \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} e_{Lr}) \end{array} \right. \quad (3.48)$$

$$\mathcal{O}_{\nu_L^4}^{(1,2)}(0,4) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (\nu_{Ls} C \nu_{Lt}) \right. \quad (3.49)$$

Class $\psi^2 \psi^{\dagger 2}$: 50 types

$$\mathcal{O}_{u_L^2 \bar{u}_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (u_{Lpa} C u_{Lrb}) \left(\bar{u}_{Ls}^a C \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline s & t \end{smallmatrix} \right] (u_{Lpa} C u_{Lrb}) \left(\bar{u}_{Ls}^a C \bar{u}_{Lt}^b \right) \end{array} \right. \quad (3.50)$$

$$\mathcal{O}_{d_R e_R u_L^2}(1,1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (u_{Lpa} C u_{Lrb}) (d_{Rsc} C e_{Rt}) \quad (3.51)$$

$$\mathcal{O}_{\bar{u}_R u_R u_L \bar{u}_L}^{(1,2)}(0,0) \Big| \begin{pmatrix} \bar{u}_{Rp}^a u_{Lrb} \\ \bar{u}_{Rp}^a u_{Lra} \end{pmatrix} \begin{pmatrix} \bar{u}_{Lt}^b u_{Rsa} \\ \bar{u}_{Lt}^c u_{Rsc} \end{pmatrix} \quad (3.52)$$

$$\mathcal{O}_{d_R \bar{d}_L \bar{u}_R u_L}^{(1,2)}(0,0) \Big| \begin{pmatrix} \bar{d}_{Lt}^b d_{Rsa} \\ \bar{u}_{Rp}^a u_{Lra} \end{pmatrix} \begin{pmatrix} \bar{u}_{Rp}^a u_{Lrb} \\ \bar{d}_{Lt}^c d_{Rsc} \end{pmatrix} \quad (3.53)$$

$$\mathcal{O}_{e_R \bar{e}_L \bar{u}_R u_L}(0,0) \Big| (\bar{e}_{Lt} e_{Rs}) (\bar{u}_{Rp}^a u_{Lra}) \quad (3.54)$$

$$\mathcal{O}_{\bar{\nu}_L^2 \bar{u}_R u_L}(0,-2) \Big| \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) (\bar{u}_{Rp}^a u_{Lra}) \quad (3.55)$$

$$\mathcal{O}_{d_L \bar{d}_L u_L \bar{u}_L}^{(1,2)}(0,0) \Big| \begin{pmatrix} d_{Lpa} C u_{Lrb} \\ d_{Lpa} C u_{Lrb} \end{pmatrix} \begin{pmatrix} \bar{d}_{Ls}^a C \bar{u}_{Lt}^b \\ \bar{d}_{Ls}^b C \bar{u}_{Lt}^a \end{pmatrix} \quad (3.56)$$

$$\mathcal{O}_{d_L e_R u_R u_L}(1,1) \Big| \epsilon^{abc} (e_{Rs} C u_{Rtc}) (d_{Lpa} C u_{Lrb}) \quad (3.57)$$

$$\mathcal{O}_{d_R d_L \bar{\nu}_L u_L}(1,-1) \Big| \epsilon^{abc} (\bar{\nu}_{Lt} d_{Rsc}) (d_{Lpa} C u_{Lrb}) \quad (3.58)$$

$$\mathcal{O}_{d_R d_R u_L \bar{u}_L}^{(1,2)}(0,0) \Big| \begin{pmatrix} \bar{d}_{Rp}^a u_{Lrb} \\ \bar{d}_{Rp}^a u_{Lra} \end{pmatrix} \begin{pmatrix} \bar{u}_{Lt}^b d_{Rsa} \\ \bar{u}_{Lt}^c d_{Rsc} \end{pmatrix} \quad (3.59)$$

$$\mathcal{O}_{\bar{d}_R e_R \bar{\nu}_L u_L}(0,0) \Big| (\bar{\nu}_{Lt} e_{Rs}) (\bar{d}_{Rp}^a u_{Lra}) \quad (3.60)$$

$$\mathcal{O}_{e_L \bar{e}_L u_L \bar{u}_L}(0,0) \Big| (e_{Lp} C u_{Lra}) (\bar{e}_{Ls} C \bar{u}_{Lt}^a) \quad (3.61)$$

$$\mathcal{O}_{d_R e_L u_R u_L}(1,1) \Big| \epsilon^{abc} (e_{Lp} C u_{Lra}) (d_{Rsb} C u_{Rtc}) \quad (3.62)$$

$$\mathcal{O}_{\bar{d}_L e_L \bar{\nu}_L u_L}(0,0) \Big| (e_{Lp} C u_{Lra}) (\bar{d}_{Ls}^a C \bar{\nu}_{Lt}) \quad (3.63)$$

$$\mathcal{O}_{\bar{e}_R e_R u_L \bar{u}_L}(0,0) \Big| (\bar{e}_{Rp} u_{Lra}) (\bar{u}_{Lt}^a e_{Rs}) \quad (3.64)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L u_L \bar{u}_L}(0,0) \Big| (u_{Lpa} C \nu_{Lr}) (\bar{u}_{Ls}^a C \bar{\nu}_{Lt}) \quad (3.65)$$

$$\mathcal{O}_{\bar{d}_L e_R \nu_L u_L}(0,2) \Big| (u_{Lpa} C \nu_{Lr}) (\bar{d}_{Ls}^a e_{Rt}) \quad (3.66)$$

$$\mathcal{O}_{d_R^2 \nu_L u_L}(1,1) \Big| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} (u_{Lpa} C \nu_{Lr}) (d_{Rsb} C d_{Rtc}) \quad (3.67)$$

$$\mathcal{O}_{\bar{u}_R^2 u_R^2}^{(1,2)}(0,0) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ r & t \end{smallmatrix} \right] (u_{Rsa} C u_{Rtb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \quad (3.68)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_L \bar{u}_R^2}(-1,-1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abc} (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{d}_{Ls}^c C \bar{e}_{Lt}) \quad (3.69)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{u}_R u_R}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{u}_{Rr}^b d_{Lpa}) (\bar{d}_{Ls}^a u_{Rtb}) \\ (\bar{u}_{Rr}^a d_{Lpa}) (\bar{d}_{Ls}^c u_{Rtc}) \end{array} \right. \quad (3.70)$$

$$\mathcal{O}_{d_L \bar{e}_L \bar{\nu}_L \bar{u}_R}(0,-2) \left| (\bar{e}_{Ls} C \bar{\nu}_{Lt}) (\bar{u}_{Rr}^a d_{Lpa}) \right. \quad (3.71)$$

$$\mathcal{O}_{d_R d_R \bar{u}_R u_R}^{(1,2)}(0,0) \left| \begin{array}{l} (d_{Rsa} C u_{Rtb}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ (d_{Rsb} C u_{Rta}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.72)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{\nu}_L \bar{u}_R}(-1,-1) \left| \epsilon_{abc} (\bar{d}_{Ls}^c C \bar{\nu}_{Lt}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \right. \quad (3.73)$$

$$\mathcal{O}_{e_L \bar{e}_L \bar{u}_R u_R}(0,0) \left| (\bar{e}_{Ls} u_{Rta}) (\bar{u}_{Rr}^a e_{Lp}) \right. \quad (3.74)$$

$$\mathcal{O}_{\bar{e}_R e_R \bar{u}_R u_R}(0,0) \left| (e_{Rs} C u_{Rta}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \right. \quad (3.75)$$

$$\mathcal{O}_{d_R \bar{e}_R \bar{\nu}_L \bar{u}_R}(0,-2) \left| (\bar{\nu}_{Lt} d_{Rsa}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \right. \quad (3.76)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L \bar{u}_R u_R}(0,0) \left| (\bar{\nu}_{Lt} u_{Rsa}) (\bar{u}_{Rp}^a \nu_{Lr}) \right. \quad (3.77)$$

$$\mathcal{O}_{\bar{d}_L^2 \nu_L \bar{u}_R}(-1,1) \left| \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon_{abc} (\bar{u}_{Rp}^a \nu_{Lr}) (\bar{d}_{Ls}^b C \bar{d}_{Lt}^c) \right. \quad (3.78)$$

$$\mathcal{O}_{d_R \bar{e}_L \nu_L \bar{u}_R}(0,0) \left| (\bar{e}_{Lt} d_{Rsa}) (\bar{u}_{Rp}^a \nu_{Lr}) \right. \quad (3.79)$$

$$\mathcal{O}_{d_L^2 \bar{d}_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{p} & \overline{s} \\ r & t \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{d}_{Ls}^a C \bar{d}_{Lt}^b) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{p} & \overline{s} \\ r & t \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{d}_{Ls}^a C \bar{d}_{Lt}^b) \end{array} \right. \quad (3.80)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_L}(1,-1) \left| \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \epsilon^{abc} (\bar{e}_{Lt} d_{Rsc}) (d_{Lpa} C d_{Lrb}) \right. \quad (3.81)$$

$$\mathcal{O}_{d_R d_R d_L \bar{d}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lt}^b d_{Rsa}) \\ (\bar{d}_{Rp}^a d_{Lra}) (\bar{d}_{Lt}^c d_{Rsc}) \end{array} \right. \quad (3.82)$$

$$\mathcal{O}_{\bar{d}_R d_L e_R \bar{e}_L}(0,0) \left| (\bar{e}_{Lt} e_{Rs}) (\bar{d}_{Rp}^a d_{Lra}) \right. \quad (3.83)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{\nu}_L^2}(0,-2) \left| \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) \right. \quad (3.84)$$

$$\mathcal{O}_{d_L \bar{d}_L e_L \bar{e}_L}(0,0) \left| (d_{Lpa} C e_{Lr}) (\bar{d}_{Ls}^a C \bar{e}_{Lt}) \right. \quad (3.85)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_R}(0,0) \left| (\bar{e}_{Rr} d_{Lpa}) (\bar{d}_{Ls}^a e_{Rt}) \right. \quad (3.86)$$

$$\mathcal{O}_{d_R^2 d_L \bar{e}_R}(1,-1) \left| \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{e}_{Rr} d_{Lpa}) (d_{Rsb} C d_{Rtc}) \right. \quad (3.87)$$

$$\mathcal{O}_{d_L \bar{d}_L \nu_L \bar{\nu}_L}(0,0) \left| (d_{Lpa} C \nu_{Lr}) (\bar{d}_{Ls}^a C \bar{\nu}_{Lt}) \right. \quad (3.88)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{[p]r}, \overline{[s]t}] (d_{Rsa} C d_{Rtb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y}[\overline{[p]r}, \overline{[s]t}] (d_{Rsa} C d_{Rtb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.89)$$

$$\mathcal{O}_{\bar{d}_R d_R e_L \bar{e}_L}(0,0) \left| (\bar{e}_{Lt} d_{Rsa}) (\bar{d}_{Rp}^a e_{Lr}) \right. \quad (3.90)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_R}(0,0) \left| (d_{Rsa} C e_{Rt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \right. \quad (3.91)$$

$$\mathcal{O}_{\bar{d}_R d_R \nu_L \bar{\nu}_L}(0,0) \left| (\bar{\nu}_{Lt} d_{Rsa}) (\bar{d}_{Rp}^a \nu_{Lr}) \right. \quad (3.92)$$

$$\mathcal{O}_{e_L^2 \bar{e}_L^2}(0,0) \left| \mathcal{Y}[\overline{[p]r}, \overline{[s]t}] (e_{Lp} C e_{Lr}) (\bar{e}_{Ls} C \bar{e}_{Lt}) \right. \quad (3.93)$$

$$\mathcal{O}_{\bar{e}_R e_R e_L \bar{e}_L}(0,0) \left| (\bar{e}_{Rp} e_{Lr}) (\bar{e}_{Lt} e_{Rs}) \right. \quad (3.94)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{\nu}_L^2}(0,-2) \left| \mathcal{Y}[\overline{[s]t}] (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) (\bar{e}_{Rp} e_{Lr}) \right. \quad (3.95)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L \bar{\nu}_L}(0,0) \left| (e_{Lp} C \nu_{Lr}) (\bar{e}_{Ls} C \bar{\nu}_{Lt}) \right. \quad (3.96)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R^2}(0,0) \left| \mathcal{Y}[\overline{[p]r}, \overline{[s]t}] (e_{Rs} C e_{Rt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) \right. \quad (3.97)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L \bar{\nu}_L}(0,0) \left| (\bar{e}_{Rp} \nu_{Lr}) (\bar{\nu}_{Lt} e_{Rs}) \right. \quad (3.98)$$

$$\mathcal{O}_{\nu_L^2 \bar{\nu}_L^2}(0,0) \left| \mathcal{Y}[\overline{[p]r}, \overline{[s]t}] (\nu_{Lp} C \nu_{Lr}) (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) \right. \quad (3.99)$$

3.3 Lists of the dim-7 operators

Class $F_L^2 \psi^2$: 10 types

$$\mathcal{O}_{G_L^2 \bar{u}_R u_L}^{(1\sim 3)}(0,0) \left| \begin{array}{l} G_{L\mu\nu}^A G_L^{A\mu\nu} (\bar{u}_{Rp}^a u_{Lra}) \\ d^{ABC} (\lambda^C)^b_a G_{L\mu\nu}^A G_L^{B\mu\nu} (\bar{u}_{Rp}^a u_{Lrb}) \\ i f^{ABC} (\lambda^C)^b_a G_{L\mu\nu}^A G_L^{B\mu}_\lambda (\bar{u}_{Rp}^a \sigma^{\nu\lambda} u_{Lrb}) \end{array} \right. \quad (3.100)$$

$$\mathcal{O}_{G_L^2 \bar{d}_R d_L}^{(1\sim 3)}(0,0) \left| \begin{array}{l} G_{L\mu\nu}^A G_L^{A\mu\nu} (\bar{d}_{Rp}^a d_{Lra}) \\ d^{ABC} (\lambda^C)^b_a G_{L\mu\nu}^A G_L^{B\mu\nu} (\bar{d}_{Rp}^a d_{Lrb}) \\ i f^{ABC} (\lambda^C)^b_a G_{L\mu\nu}^A G_L^{B\mu}_\lambda (\bar{d}_{Rp}^a \sigma^{\nu\lambda} d_{Lrb}) \end{array} \right. \quad (3.101)$$

$$\mathcal{O}_{G_L^2 \bar{e}_R e_L}(0,0) \left| (\bar{e}_{Rp} e_{Lr}) G_{L\mu\nu}^A G_L^{A\mu\nu} \right. \quad (3.102)$$

$$\mathcal{O}_{G_L^2 \nu_L^2}(0,2) \left| \mathcal{Y}[\overline{[p]r}] (\nu_{Lp} C \nu_{Lr}) G_{L\mu\nu}^A G_L^{A\mu\nu} \right. \quad (3.103)$$

$$\mathcal{O}_{F_L G_L \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\lambda^A)^b_a F_{L\mu\nu} G_L^{A\mu\nu} (\bar{u}_{Rp}^a u_{Lrb}) \\ i (\lambda^A)^b_a F_{L\mu\nu} G_L^{A\mu}_\lambda (\bar{u}_{Rp}^a \sigma^{\nu\lambda} u_{Lrb}) \end{array} \right. \quad (3.104)$$

$$\mathcal{O}_{F_L G_L \bar{d}_R d_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\lambda^A)^b_a F_{L\mu\nu} G_L^{A\mu\nu} (\bar{d}_{Rp}^a d_{Lrb}) \\ i (\lambda^A)^b_a F_{L\mu\nu} G_L^{A\mu}_\lambda (\bar{d}_{Rp}^a \sigma^{\nu\lambda} d_{Lrb}) \end{array} \right. \quad (3.105)$$

$$\mathcal{O}_{F_L^2 \bar{u}_R u_L}(0,0) \Big| F_{L\mu\nu} F_L^{\mu\nu} \left(\bar{u}_{Rp}^a u_{Lra} \right) \quad (3.106)$$

$$\mathcal{O}_{F_L^2 \bar{d}_R d_L}(0,0) \Big| F_{L\mu\nu} F_L^{\mu\nu} \left(\bar{d}_{Rp}^a d_{Lra} \right) \quad (3.107)$$

$$\mathcal{O}_{F_L^2 \bar{e}_R e_L}(0,0) \Big| F_{L\mu\nu} F_L^{\mu\nu} \left(\bar{e}_{Rp} e_{Lr} \right) \quad (3.108)$$

$$\mathcal{O}_{F_L^2 \nu_L^2}(0,2) \Big| \mathcal{Y}[\overline{[p]r}] F_{L\mu\nu} (\nu_{Lp} C \nu_{Lr}) F_L^{\mu\nu} \quad (3.109)$$

Class $F_L^2 \psi^{\dagger 2}$: 10 types

$$\mathcal{O}_{G_L^2 u_R \bar{u}_L}^{(1,2)}(0,0) \Big| \frac{G_{L\mu\nu}^A G_L^{A\mu\nu} (\bar{u}_{Lr}^a u_{Rpa})}{d^{ABC} (\lambda^C)_b^a G_{L\mu\nu}^A G_L^{B\mu\nu} (\bar{u}_{Lr}^b u_{Rpa})} \quad (3.110)$$

$$\mathcal{O}_{G_L^2 d_R \bar{d}_L}^{(1,2)}(0,0) \Big| \frac{G_{L\mu\nu}^A G_L^{A\mu\nu} (\bar{d}_{Lr}^a d_{Rpa})}{d^{ABC} (\lambda^C)_b^a G_{L\mu\nu}^A G_L^{B\mu\nu} (\bar{d}_{Lr}^b d_{Rpa})} \quad (3.111)$$

$$\mathcal{O}_{G_L^2 e_R \bar{e}_L}(0,0) \Big| (\bar{e}_{Lr} e_{Rp}) G_{L\mu\nu}^A G_L^{A\mu\nu} \quad (3.112)$$

$$\mathcal{O}_{G_L^2 \bar{\nu}_L^2}(0,-2) \Big| \mathcal{Y}[\overline{[p]r}] (\bar{\nu}_{Lp} C \bar{\nu}_{Lr}) G_{L\mu\nu}^A G_L^{A\mu\nu} \quad (3.113)$$

$$\mathcal{O}_{F_L G_L u_R \bar{u}_L}(0,0) \Big| (\lambda^A)_b^a F_{L\mu\nu} G_L^{A\mu\nu} (\bar{u}_{Lr}^b u_{Rpa}) \quad (3.114)$$

$$\mathcal{O}_{F_L G_L d_R \bar{d}_L}(0,0) \Big| (\lambda^A)_b^a F_{L\mu\nu} G_L^{A\mu\nu} (\bar{d}_{Lr}^b d_{Rpa}) \quad (3.115)$$

$$\mathcal{O}_{F_L^2 u_R \bar{u}_L}(0,0) \Big| F_{L\mu\nu} F_L^{\mu\nu} (\bar{u}_{Lr}^a u_{Rpa}) \quad (3.116)$$

$$\mathcal{O}_{F_L^2 d_R \bar{d}_L}(0,0) \Big| F_{L\mu\nu} F_L^{\mu\nu} (\bar{d}_{Lr}^a d_{Rpa}) \quad (3.117)$$

$$\mathcal{O}_{F_L^2 e_R \bar{e}_L}(0,0) \Big| F_{L\mu\nu} F_L^{\mu\nu} (\bar{e}_{Lr} e_{Rp}) \quad (3.118)$$

$$\mathcal{O}_{F_L^2 \bar{\nu}_L^2}(0,-2) \Big| \mathcal{Y}[\overline{[p]r}] F_{L\mu\nu} F_L^{\mu\nu} (\bar{\nu}_{Lp} C \bar{\nu}_{Lr}) \quad (3.119)$$

Class $\psi^3 \psi^{\dagger} D$: 52 types

$$\mathcal{O}_{\bar{u}_R u_L^2 \bar{u}_L D}^{(1,2)}(0,0) \Big| \frac{\mathcal{Y}[\overline{[r]s}] i (u_{Lrb} C D^\mu u_{Lsa}) (\bar{u}_{Rp}^a \gamma_\mu C \bar{u}_{Lt}^b)}{\mathcal{Y}[\overline{[r]s}] i (u_{Lrb} C D^\mu u_{Lsa}) (\bar{u}_{Rp}^a \gamma_\mu C \bar{u}_{Lt}^b)} \quad (3.120)$$

$$\mathcal{O}_{d_L e_R u_L^2 D}(1,1) \Big| \mathcal{Y}[\overline{[r]s}] i \epsilon^{abc} (d_{Lpa} C \gamma_\mu e_{Rt}) (u_{Lrb} C D^\mu u_{Lsc}) \quad (3.121)$$

$$\mathcal{O}_{d_R e_L u_L^2 D}(1,1) \Big| \mathcal{Y}[\overline{[r]s}] i \epsilon^{abc} (e_{Lp} C \gamma_\mu d_{Rtc}) (u_{Lra} C D^\mu u_{Lsb}) \quad (3.122)$$

$$\mathcal{O}_{\bar{u}_R^2 u_R u_L D}^{(1,2)}(0,0) \Big| \frac{\mathcal{Y}[\overline{[p]r}] i (\bar{u}_{Rp}^a \gamma_\mu u_{Rtb}) (\bar{u}_{Rr}^b D^\mu u_{Lsa})}{\mathcal{Y}[\overline{[p]r}] i (\bar{u}_{Rp}^a \gamma_\mu u_{Rtb}) (\bar{u}_{Rr}^b D^\mu u_{Lsa})} \quad (3.123)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{u}_R u_L D}^{(1,2)}(0,0) \Big| \frac{i (\bar{d}_{Lt}^a \gamma_\mu d_{Lpa}) (\bar{u}_{Rr}^b D^\mu u_{Lsb})}{i (\bar{d}_{Lt}^c \gamma_\mu d_{Lpa}) (\bar{u}_{Rr}^a D^\mu u_{Lsc})} \quad (3.124)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{u}_R u_L D}(0, 0) \left| i \begin{pmatrix} \bar{d}_{Rp}^a \gamma_\mu d_{Rtb} \\ \bar{d}_{Rp}^a \gamma_\mu d_{Rta} \end{pmatrix} \begin{pmatrix} \bar{u}_{Rr}^b D^\mu u_{Lsa} \\ \bar{u}_{Rr}^b D^\mu u_{Lsb} \end{pmatrix} \right. \quad (3.125)$$

$$\mathcal{O}_{e_L \bar{e}_L \bar{u}_R u_L D}(0, 0) \left| i (\bar{e}_{Lt} \gamma_\mu e_{Lp}) (\bar{u}_{Rr}^a D^\mu u_{Lsa}) \right. \quad (3.126)$$

$$\mathcal{O}_{\bar{e}_R e_R \bar{u}_R u_L D}(0, 0) \left| i (\bar{e}_{Rp} \gamma_\mu e_{Rt}) (\bar{u}_{Rr}^a D^\mu u_{Lsa}) \right. \quad (3.127)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L \bar{u}_R u_L D}(0, 0) \left| i (u_{Lra} C D^\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma_\mu C \bar{\nu}_{Lt}) \right. \quad (3.128)$$

$$\mathcal{O}_{d_L^2 \bar{\nu}_L u_L D}(1, -1) \left| \mathcal{Y} [\overline{[p]r}] i \epsilon^{abc} (\bar{\nu}_{Lt} \gamma_\mu d_{Lpa}) (d_{Lrb} C D^\mu u_{Lsc}) \right. \quad (3.129)$$

$$\mathcal{O}_{\bar{d}_R d_L u_L \bar{u}_L D}(0, 0) \left| i \begin{pmatrix} (d_{Lrb} C D^\mu u_{Lsa}) \\ (d_{Lra} C D^\mu u_{Lsc}) \end{pmatrix} \begin{pmatrix} \bar{d}_{Rp}^a \gamma_\mu C \bar{u}_{Lt}^b \\ \bar{d}_{Rp}^a \gamma_\mu C \bar{u}_{Lt}^c \end{pmatrix} \right. \quad (3.130)$$

$$\mathcal{O}_{d_L e_L u_R u_L D}(1, 1) \left| i \epsilon^{abc} (d_{Lpa} C \gamma_\mu u_{Rtc}) (e_{Lr} C D^\mu u_{Lsb}) \right. \quad (3.131)$$

$$\mathcal{O}_{d_R d_L \nu_L u_L D}(1, 1) \left| i \epsilon^{abc} (d_{Lpa} C \gamma_\mu d_{Rtc}) (u_{Lrb} C D^\mu \nu_{Ls}) \right. \quad (3.132)$$

$$\mathcal{O}_{\bar{d}_R e_L \bar{\nu}_L u_L D}(0, 0) \left| i (e_{Lr} C D^\mu u_{Lsa}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{\nu}_{Lt}) \right. \quad (3.133)$$

$$\mathcal{O}_{\bar{d}_R e_R \nu_L u_L D}(0, 2) \left| i (\bar{d}_{Rp}^a \gamma_\mu e_{Rt}) (u_{Lra} C D^\mu \nu_{Ls}) \right. \quad (3.134)$$

$$\mathcal{O}_{\bar{e}_R e_L u_L \bar{u}_L D}(0, 0) \left| i (e_{Lr} C D^\mu u_{Lsa}) (\bar{e}_{Rp} \gamma_\mu C \bar{u}_{Lt}^a) \right. \quad (3.135)$$

$$\mathcal{O}_{\bar{d}_L e_L \nu_L u_L D}(0, 2) \left| i (\bar{d}_{Lt}^a \gamma_\mu e_{Lp}) (u_{Lra} C D^\mu \nu_{Ls}) \right. \quad (3.136)$$

$$\mathcal{O}_{\nu_L^2 u_L \bar{u}_L D}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\nu_{Lr} C D^\mu \nu_{Ls}) (\bar{u}_{Lt}^a \gamma_\mu u_{Lpa}) \right. \quad (3.137)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_L \bar{u}_R^2 D}(-1, -1) \left| \mathcal{Y} [\overline{[r]s}] i \epsilon_{abc} (\bar{d}_{Rp}^a \gamma_\mu C \bar{e}_{Lt}) (\bar{u}_{Rr}^b C D^\mu \bar{u}_{Rs}^c) \right. \quad (3.138)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R \bar{u}_R^2 D}(-1, -1) \left| \mathcal{Y} [\overline{[r]s}] i \epsilon_{abc} (\bar{u}_{Rr}^a C D^\mu \bar{u}_{Rs}^b) (\bar{e}_{Rp} \gamma_\mu C \bar{d}_{Lt}^c) \right. \quad (3.139)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{u}_R u_R D}(0, 0) \left| i \begin{pmatrix} \bar{d}_{Rp}^a \gamma_\mu u_{Rta} \\ D^\mu \bar{u}_{Rs}^b d_{Lrb} \end{pmatrix} \begin{pmatrix} D^\mu \bar{u}_{Rs}^c d_{Lra} \\ \bar{d}_{Rp}^a \gamma_\mu u_{Rtc} \end{pmatrix} \right. \quad (3.140)$$

$$\mathcal{O}_{d_L \bar{e}_R \bar{\nu}_L \bar{u}_R D}(0, -2) \left| i (\bar{\nu}_{Lt} \gamma_\mu d_{Lpa}) (\bar{e}_{Rr} C D^\mu \bar{u}_{Rs}^a) \right. \quad (3.141)$$

$$\mathcal{O}_{d_L \bar{e}_L \nu_L \bar{u}_R D}(0, 0) \left| i (\bar{e}_{Lt} \gamma_\mu d_{Lpa}) (\bar{u}_{Rr}^a D^\mu \nu_{Ls}) \right. \quad (3.142)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{\nu}_L \bar{u}_R D}(-1, -1) \left| \mathcal{Y} [\overline{[p]r}] i \epsilon_{abc} (\bar{d}_{Rp}^a \gamma_\mu C \bar{\nu}_{Lt}) (\bar{d}_{Rr}^b C D^\mu \bar{u}_{Rs}^c) \right. \quad (3.143)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \bar{u}_R \bar{u}_L D}(-1, -1) \left| i \epsilon_{abc} (\bar{e}_{Rr} C D^\mu \bar{u}_{Rs}^b) (\bar{d}_{Rp}^a \gamma_\mu C \bar{u}_{Lt}^c) \right. \quad (3.144)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \nu_L \bar{u}_R D}(-1, 1) \left| i \epsilon_{abc} (\bar{u}_{Rr}^b D^\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{d}_{Lt}^c) \right. \quad (3.145)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{u}_R u_R D}(0,0) \Big| i (\bar{e}_{Rp} \gamma_\mu u_{Rta}) (D^\mu \bar{u}_{Rs}^a e_{Lr}) \quad (3.146)$$

$$\mathcal{O}_{d_R \bar{e}_R \nu_L \bar{u}_R D}(0,0) \Big| i (\bar{e}_{Rp} \gamma_\mu d_{Rta}) (\bar{u}_{Rr}^a D^\mu \nu_{Ls}) \quad (3.147)$$

$$\mathcal{O}_{\nu_L^2 \bar{u}_R u_R D}(0,2) \Big| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\nu_{Lr} C D^\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma_\mu u_{Rta}) \quad (3.148)$$

$$\mathcal{O}_{d_L^3 \bar{e}_L D}(1,-1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r & s \end{smallmatrix} \right] i \epsilon^{abc} (\bar{e}_{Lt} \gamma_\mu d_{Lpa}) (d_{Lrb} C D^\mu d_{Lsc}) \quad (3.149)$$

$$\mathcal{O}_{\bar{d}_R d_L^2 \bar{d}_L D}(0,0) \Big| \begin{aligned} & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (d_{Lrb} C D^\mu d_{Lsa}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{d}_{Lt}^b) \\ & \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] i (d_{Lrb} C D^\mu d_{Lsa}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{d}_{Lt}^b) \end{aligned} \quad (3.150)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_R D}(1,-1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i \epsilon^{abc} (D^\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma_\mu d_{Rtc}) \quad (3.151)$$

$$\mathcal{O}_{d_L^2 \nu_L u_R D}(1,1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i \epsilon^{abc} (d_{Lpa} C \gamma_\mu u_{Rtc}) (d_{Lrb} C D^\mu \nu_{Ls}) \quad (3.152)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R d_L D}(0,0) \Big| \begin{aligned} & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i (\bar{d}_{Rp}^a \gamma_\mu d_{Rtb}) (\bar{d}_{Rr}^b D^\mu d_{Lsa}) \\ & \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i (\bar{d}_{Rp}^a \gamma_\mu d_{Rtb}) (\bar{d}_{Rr}^b D^\mu d_{Lsa}) \end{aligned} \quad (3.153)$$

$$\mathcal{O}_{\bar{d}_R d_L e_L \bar{e}_L D}(0,0) \Big| i (d_{Lra} C D^\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{e}_{Lt}) \quad (3.154)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_R D}(0,0) \Big| i (D^\mu \bar{e}_{Rs} d_{Lra}) (\bar{d}_{Rp}^a \gamma_\mu e_{Rt}) \quad (3.155)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L \bar{\nu}_L D}(0,0) \Big| i (d_{Lra} C D^\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{\nu}_{Lt}) \quad (3.156)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_L D}(0,0) \Big| i (\bar{d}_{Lt}^a \gamma_\mu d_{Lpa}) (\bar{e}_{Rr} D^\mu e_{Ls}) \quad (3.157)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L \bar{u}_L D}(0,0) \Big| i (\bar{e}_{Rr} D^\mu \nu_{Ls}) (\bar{u}_{Lt}^a \gamma_\mu d_{Lpa}) \quad (3.158)$$

$$\mathcal{O}_{d_L \bar{d}_L \nu_L^2 D}(0,2) \Big| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\nu_{Lr} C D^\mu \nu_{Ls}) (\bar{d}_{Lt}^a \gamma_\mu d_{Lpa}) \quad (3.159)$$

$$\mathcal{O}_{\bar{d}_R^3 e_R D}(-1,1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r & s \end{smallmatrix} \right] i \epsilon_{abc} (\bar{d}_{Rp}^a \gamma_\mu e_{Rt}) (\bar{d}_{Rr}^b C D^\mu \bar{d}_{Rs}^c) \quad (3.160)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L e_L D}(-1,1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i \epsilon_{abc} (\bar{d}_{Rr}^b D^\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{d}_{Lt}^c) \quad (3.161)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L \bar{u}_L D}(-1,1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i \epsilon_{abc} (\bar{d}_{Rr}^b D^\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu C \bar{u}_{Lt}^c) \quad (3.162)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_R \bar{e}_R e_L D}(0,0) \Big| i (\bar{d}_{Rp}^a \gamma_\mu d_{Rta}) (\bar{e}_{Rr} D^\mu e_{Ls}) \quad (3.163)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L u_R D}(0,2) \Big| i (e_{Lr} C D^\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu u_{Rta}) \quad (3.164)$$

$$\mathcal{O}_{\bar{d}_R d_R \nu_L^2 D}(0,2) \Big| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\nu_{Lr} C D^\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma_\mu d_{Rta}) \quad (3.165)$$

$$\mathcal{O}_{\bar{e}_R e_L^2 \bar{e}_L D}(0,0) \Big| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (e_{Lr} C D^\mu e_{Ls}) (\bar{e}_{Rp} \gamma_\mu C \bar{e}_{Lt}) \quad (3.166)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R e_L D}(0,0) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i (\bar{e}_{Rp} \gamma_\mu e_{Rt}) (\bar{e}_{Rr} D^\mu e_{Ls}) \quad (3.167)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L \bar{\nu}_L D}(0,0) \Big| i (\bar{e}_{Rp} \gamma_\mu C \bar{\nu}_{Lt}) (e_{Lr} C D^\mu \nu_{Ls}) \quad (3.168)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L^2 D}(0,2) \Big| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\bar{e}_{Lt} \gamma_\mu e_{Lp}) (\nu_{Lr} C D^\mu \nu_{Ls}) \quad (3.169)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L^2 D}(0,2) \Big| \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\bar{e}_{Rp} \gamma_\mu e_{Rt}) (\nu_{Lr} C D^\mu \nu_{Ls}) \quad (3.170)$$

$$\mathcal{O}_{\nu_L^3 \bar{\nu}_L D}(0,2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i (\bar{\nu}_{Lt} \gamma_\mu \nu_{Lp}) (\nu_{Lr} C D^\mu \nu_{Ls}) \quad (3.171)$$

3.4 Lists of the dim-8 operators

3.4.1 Classes involving bosons only

Class F_L^4 : 4 types

$$\mathcal{O}_{G_L^4}^{(1\sim 3)}(0,0) \Big| \begin{array}{l} d^{ACE} d^{BDE} G_{L\mu\nu}^A G_{L\mu\nu}^{B\mu\nu} G_{L\lambda\rho}^C G_{L\lambda\rho}^{D\lambda\rho} \\ G_{L\lambda\rho}^A G_{L\mu\nu}^A G_{L\lambda\rho}^{B\lambda\rho} G_{L\mu\nu}^{B\mu\nu} \\ f^{ACE} f^{BDE} G_{L\mu\nu}^A G_{L\mu\nu}^{B\mu\nu} G_{L\lambda\rho}^C G_{L\lambda\rho}^{D\lambda\rho} \end{array} \quad (3.172)$$

$$\mathcal{O}_{F_L G_L^3}(0,0) \Big| d^{ABC} F_{L\mu\nu} G_{L\mu\nu}^{A\mu\nu} G_{L\lambda\rho}^B G_{L\lambda\rho}^{C\lambda\rho} \quad (3.173)$$

$$\mathcal{O}_{F_L^2 G_L^2}^{(1,2)}(0,0) \Big| \begin{array}{l} F_{L\mu\nu} F_L^{\mu\nu} G_{L\lambda\rho}^A G_{L\lambda\rho}^{A\lambda\rho} \\ F_{L\lambda\rho} F_{L\mu\nu} G_{L\lambda\rho}^A G_{L\mu\nu}^{A\mu\nu} \end{array} \quad (3.174)$$

$$\mathcal{O}_{F_L^4}(0,0) \Big| F_{L\lambda\rho} F_{L\mu\nu} F_L^{\lambda\rho} F_L^{\mu\nu} \quad (3.175)$$

Class $F_L^2 F_R^2$: 5 types

$$\mathcal{O}_{G_L^2 G_R^2}^{(1\sim 3)}(0,0) \Big| \begin{array}{l} d^{ACE} d^{BDE} G_{L\mu\nu}^A G_{L\mu\nu}^{B\mu\nu} G_{R\lambda\rho}^C G_{R\lambda\rho}^{D\lambda\rho} \\ G_{L\mu\nu}^A G_{R\lambda\rho}^A G_{L\lambda\rho}^{B\lambda\rho} G_{R\mu\nu}^{B\mu\nu} \\ f^{ACE} f^{BDE} G_{L\mu\nu}^A G_{L\mu\nu}^{B\mu\nu} G_{R\lambda\rho}^C G_{R\lambda\rho}^{D\lambda\rho} \end{array} \quad (3.176)$$

$$\mathcal{O}_{F_R G_L^2 G_R}(0,0) \Big| d^{ABC} F_{R\lambda\rho} G_{L\mu\nu}^A G_{L\mu\nu}^{B\mu\nu} G_{R\lambda\rho}^{C\lambda\rho} \quad (3.177)$$

$$\mathcal{O}_{F_R^2 G_L^2}(0,0) \Big| F_{R\lambda\rho} F_R^{\lambda\rho} G_{L\mu\nu}^A G_{L\mu\nu}^{A\mu\nu} \quad (3.178)$$

$$\mathcal{O}_{F_L F_R G_L G_R}(0,0) \Big| F_{L\mu\nu} F_{R\lambda\rho} G_{L\mu\nu}^A G_{R\lambda\rho}^{A\lambda\rho} \quad (3.179)$$

$$\mathcal{O}_{F_L^2 F_R^2}(0,0) \Big| F_{L\mu\nu} F_{R\lambda\rho} F_L^{\mu\nu} F_R^{\lambda\rho} \quad (3.180)$$

3.4.2 Classes involving two-fermions

Class $F_L^2 \psi \psi^\dagger D$: 8 types

$$\mathcal{O}_{G_L^2 u_L \bar{u}_L D}(0,0) \Big| i f^{ABC} (\lambda^C)_b^a G_{L\nu\lambda}^A G_L^{B\lambda\mu} (\bar{u}_{Lr}^b \gamma^\nu D_\mu u_{Lpa}) \quad (3.181)$$

$$\mathcal{O}_{G_L^2 \bar{u}_R u_R D}(0,0) \Big| i f^{ABC} (\lambda^C)_a^b G_{L\nu\lambda}^A G_L^{B\lambda\mu} (D_\mu \bar{u}_{Rp}^a \gamma^\nu u_{Rrb}) \quad (3.182)$$

$$\mathcal{O}_{G_L^2 d_L \bar{d}_L D}(0,0) \left| i f^{ABC} \left(\lambda^C \right)_b^a G_L^A{}_\nu{}_\lambda G_L^{B\lambda\mu} \left(\bar{d}_{Lr}^b \gamma^\nu D_\mu d_{Lpa} \right) \right. \quad (3.183)$$

$$\mathcal{O}_{G_L^2 \bar{d}_R d_R D}(0,0) \left| i f^{ABC} \left(\lambda^C \right)_a^b G_L^A{}_\nu{}_\lambda G_L^{B\lambda\mu} \left(D_\mu \bar{d}_{Rp}^a \gamma^\nu d_{Rrb} \right) \right. \quad (3.184)$$

$$\mathcal{O}_{F_L G_L u_L \bar{u}_L D}(0,0) \left| i \left(\lambda^A \right)_b^a F_{L\nu\lambda} G_L^{A\lambda\mu} \left(\bar{u}_{Lr}^b \gamma^\nu D_\mu u_{Lpa} \right) \right. \quad (3.185)$$

$$\mathcal{O}_{F_L G_L \bar{u}_R u_R D}(0,0) \left| i \left(\lambda^A \right)_a^b F_{L\nu\lambda} G_L^{A\lambda\mu} \left(D_\mu \bar{u}_{Rp}^a \gamma^\nu u_{Rrb} \right) \right. \quad (3.186)$$

$$\mathcal{O}_{F_L G_L d_L \bar{d}_L D}(0,0) \left| i \left(\lambda^A \right)_b^a F_{L\nu\lambda} G_L^{A\lambda\mu} \left(\bar{d}_{Lr}^b \gamma^\nu D_\mu d_{Lpa} \right) \right. \quad (3.187)$$

$$\mathcal{O}_{F_L G_L \bar{d}_R d_R D}(0,0) \left| i \left(\lambda^A \right)_a^b F_{L\nu\lambda} G_L^{A\lambda\mu} \left(D_\mu \bar{d}_{Rp}^a \gamma^\nu d_{Rrb} \right) \right. \quad (3.188)$$

Class $F_L F_R \psi \psi^\dagger D$: 18 types

$$\mathcal{O}_{G_L G_R u_L \bar{u}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i d^{ABC} \left(\lambda^C \right)_b^a G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(D_\mu \bar{u}_{Lr}^b \gamma^\lambda u_{Lpa} \right) \\ i f^{ABC} \left(\lambda^C \right)_b^a G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(D_\mu \bar{u}_{Lr}^b \gamma^\lambda u_{Lpa} \right) \\ i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(D_\mu \bar{u}_{Lr}^a \gamma^\lambda u_{Lpa} \right) \end{array} \right. \quad (3.189)$$

$$\mathcal{O}_{F_R G_L u_L \bar{u}_L D}(0,0) \left| i \left(\lambda^A \right)_b^a F_{R\nu\lambda} G_L^{A\mu}{}_\nu \left(D_\mu \bar{u}_{Lr}^b \gamma^\lambda u_{Lpa} \right) \right. \quad (3.190)$$

$$\mathcal{O}_{G_L G_R \bar{u}_R u_R D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i d^{ABC} \left(\lambda^C \right)_b^a G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(\bar{u}_{Rp}^a \gamma^\lambda D_\mu u_{Rrb} \right) \\ i f^{ABC} \left(\lambda^C \right)_a^b G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(\bar{u}_{Rp}^a \gamma^\lambda D_\mu u_{Rrb} \right) \\ i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(\bar{u}_{Rp}^a \gamma^\lambda D_\mu u_{Rra} \right) \end{array} \right. \quad (3.191)$$

$$\mathcal{O}_{F_R G_L \bar{u}_R u_R D}(0,0) \left| i \left(\lambda^A \right)_a^b F_{R\nu\lambda} G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a \gamma^\lambda D_\mu u_{Rrb} \right) \right. \quad (3.192)$$

$$\mathcal{O}_{G_L G_R d_L \bar{d}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i d^{ABC} \left(\lambda^C \right)_b^a G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(D_\mu \bar{d}_{Lr}^b \gamma^\lambda d_{Lpa} \right) \\ i f^{ABC} \left(\lambda^C \right)_b^a G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(D_\mu \bar{d}_{Lr}^b \gamma^\lambda d_{Lpa} \right) \\ i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(D_\mu \bar{d}_{Lr}^a \gamma^\lambda d_{Lpa} \right) \end{array} \right. \quad (3.193)$$

$$\mathcal{O}_{F_R G_L d_L \bar{d}_L D}(0,0) \left| i \left(\lambda^A \right)_b^a F_{R\nu\lambda} G_L^{A\mu}{}_\nu \left(D_\mu \bar{d}_{Lr}^b \gamma^\lambda d_{Lpa} \right) \right. \quad (3.194)$$

$$\mathcal{O}_{G_L G_R \bar{d}_R d_R D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i d^{ABC} \left(\lambda^C \right)_b^a G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(\bar{d}_{Rp}^a \gamma^\lambda D_\mu d_{Rrb} \right) \\ i f^{ABC} \left(\lambda^C \right)_a^b G_L^{A\mu}{}_\nu G_R^{B\nu}{}_\lambda \left(\bar{d}_{Rp}^a \gamma^\lambda D_\mu d_{Rrb} \right) \\ i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(\bar{d}_{Rp}^a \gamma^\lambda D_\mu d_{Rra} \right) \end{array} \right. \quad (3.195)$$

$$\mathcal{O}_{F_R G_L \bar{d}_R d_R D}(0,0) \left| i \left(\lambda^A \right)_a^b F_{R\nu\lambda} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\lambda D_\mu d_{Rrb} \right) \right. \quad (3.196)$$

$$\mathcal{O}_{G_L G_R e_L \bar{e}_L D}(0,0) \left| i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(D_\mu \bar{e}_{Lr} \gamma^\lambda e_{Lp} \right) \right. \quad (3.197)$$

$$\mathcal{O}_{G_L G_R \bar{e}_R e_R D}(0,0) \left| i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(\bar{e}_{Rp} \gamma^\lambda D_\mu e_{Rr} \right) \right. \quad (3.198)$$

$$\mathcal{O}_{G_L G_R \nu_L \bar{\nu}_L D}(0, 0) \left| i G_L^{A\mu}{}_\nu G_R^{A\nu}{}_\lambda \left(D_\mu \bar{\nu}_{Lr} \gamma^\lambda \nu_{Lp} \right) \right. \quad (3.199)$$

$$\mathcal{O}_{F_L F_R u_L \bar{u}_L D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(D_\mu \bar{u}_{Lr}^a \gamma^\lambda u_{Lpa} \right) \right. \quad (3.200)$$

$$\mathcal{O}_{F_L F_R \bar{u}_R u_R D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(\bar{u}_{Rp}^a \gamma^\lambda D_\mu u_{Rra} \right) \right. \quad (3.201)$$

$$\mathcal{O}_{F_L F_R d_L \bar{d}_L D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(D_\mu \bar{d}_{Lr}^a \gamma^\lambda d_{Lpa} \right) \right. \quad (3.202)$$

$$\mathcal{O}_{F_L F_R \bar{d}_R d_R D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(\bar{d}_{Rp}^a \gamma^\lambda D_\mu d_{Rra} \right) \right. \quad (3.203)$$

$$\mathcal{O}_{F_L F_R e_L \bar{e}_L D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(D_\mu \bar{e}_{Lr} \gamma^\lambda e_{Lp} \right) \right. \quad (3.204)$$

$$\mathcal{O}_{F_L F_R \bar{e}_R e_R D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(\bar{e}_{Rp} \gamma^\lambda D_\mu e_{Rr} \right) \right. \quad (3.205)$$

$$\mathcal{O}_{F_L F_R \nu_L \bar{\nu}_L D}(0, 0) \left| i F_L^\mu{}_\nu F_R^\nu{}_\lambda \left(D_\mu \bar{\nu}_{Lr} \gamma^\lambda \nu_{Lp} \right) \right. \quad (3.206)$$

3.4.3 Classes involving four-fermions

Class $\psi^4 D^2$: 18 types

$$\mathcal{O}_{\bar{u}_R^2 u_L^2 D^2}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(D_\mu u_{Lsa} C D^\mu u_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a u_{Lsa} \right) \left(D_\mu \bar{u}_{Rr}^b D^\mu u_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a u_{Lsb} \right) \left(D_\mu \bar{u}_{Rr}^b D^\mu u_{Lta} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(D_\mu u_{Lsa} C D^\mu u_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a u_{Lsa} \right) \left(D_\mu \bar{u}_{Rr}^b D^\mu u_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a u_{Lsb} \right) \left(D_\mu \bar{u}_{Rr}^b D^\mu u_{Lta} \right) \end{array} \right. \quad (3.207)$$

$$\mathcal{O}_{d_L e_L u_L^2 D^2}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} \left(d_{Lpa} C u_{Lsb} \right) \left(D_\mu e_{Lr} C D^\mu u_{Ltc} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} \left(d_{Lpa} C e_{Lr} \right) \left(D_\mu u_{Lsb} C D^\mu u_{Ltc} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} \left(d_{Lpa} C u_{Lsb} \right) \left(D_\mu e_{Lr} C D^\mu u_{Ltc} \right) \end{array} \right. \quad (3.208)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{u}_R u_L D^2}(0, 0) \left| \begin{array}{l} \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{u}_{Rs}^b D^\mu u_{Lta} \right) \\ \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(D_\mu \bar{u}_{Rs}^c D^\mu u_{Ltc} \right) \\ \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \left(D_\mu d_{Lrb} C D^\mu u_{Lta} \right) \\ \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu d_{Lra} C D^\mu u_{Ltc} \right) \\ i \left(D_\mu \bar{u}_{Rs}^b D_\nu u_{Lta} \right) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb} \right) \\ i \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra} \right) \left(D_\mu \bar{u}_{Rs}^c D_\nu u_{Ltc} \right) \end{array} \right. \quad (3.209)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{u}_R u_L D^2}(0, 0) \left| \begin{array}{l} \left(\bar{e}_{Rp} e_{Lr} \right) \left(D_\mu \bar{u}_{Rs}^a D^\mu u_{Lta} \right) \\ \left(\bar{e}_{Rp} C \bar{u}_{Rs}^a \right) \left(D_\mu e_{Lr} C D^\mu u_{Lta} \right) \\ i \left(\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr} \right) \left(D_\mu \bar{u}_{Rs}^a D_\nu u_{Lta} \right) \end{array} \right. \quad (3.210)$$

$$\mathcal{O}_{\nu_L^2 \bar{u}_R u_L D^2}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a \nu_{Ls} \right) (D_\mu u_{Lra} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a u_{Lra} \right) (D_\mu \nu_{Ls} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a \nu_{Ls} \right) (D_\mu u_{Lra} C D^\mu \nu_{Lt}) \end{array} \right. \quad (3.211)$$

$$\mathcal{O}_{d_L^2 \nu_L u_L D^2}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ p & r \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C u_{Lsc}) (D_\mu d_{Lrb} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C d_{Lrb}) (D_\mu u_{Lsc} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C u_{Lsc}) (D_\mu d_{Lrb} C D^\mu \nu_{Lt}) \end{array} \right. \quad (3.212)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L u_L D^2}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \left(\bar{d}_{Rp}^a e_{Lr} \right) (D_\mu u_{Lsa} C D^\mu \nu_{Lt}) \\ \left(\bar{d}_{Rp}^a u_{Lsa} \right) (D_\mu e_{Lr} C D^\mu \nu_{Lt}) \\ i (D_\mu u_{Lsa} C D_\nu \nu_{Lt}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} e_{Lr} \right) \end{array} \right. \quad (3.213)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \bar{u}_R^2 D^2}^{(1\sim 3)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) (D_\mu \bar{e}_{Rr} C D^\mu \bar{u}_{Rt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \left(D_\mu \bar{u}_{Rs}^b C D^\mu \bar{u}_{Rt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) (D_\mu \bar{e}_{Rr} C D^\mu \bar{u}_{Rt}^c) \end{array} \right. \quad (3.214)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L \bar{u}_R D^2}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) (D_\mu \bar{u}_{Rs}^a D^\mu \nu_{Lt}) \\ (\bar{u}_{Rs}^a d_{Lpa}) (D_\mu \bar{e}_{Rr} D^\mu \nu_{Lt}) \\ i (D_\mu \bar{u}_{Rs}^a D_\nu \nu_{Lt}) (\bar{e}_{Rr} \sigma^{\mu\nu} d_{Lpa}) \end{array} \right. \quad (3.215)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L \bar{u}_R D^2}^{(1\sim 3)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ p & r \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu \bar{d}_{Rr}^b D^\mu \nu_{Lt} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(D_\mu \bar{u}_{Rs}^c D^\mu \nu_{Lt} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu \bar{d}_{Rr}^b D^\mu \nu_{Lt} \right) \end{array} \right. \quad (3.216)$$

$$\mathcal{O}_{d_L^3 \bar{e}_R D^2}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C d_{Lrb}) (D^\mu \bar{e}_{Rt} D_\mu d_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r & s \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C d_{Lrb}) (D^\mu \bar{e}_{Rt} D_\mu d_{Lsc}) \end{array} \right. \quad (3.217)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L^2 D^2}^{(1\sim 6)}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (D_\mu d_{Lsa} C D^\mu d_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(D_\mu \bar{d}_{Rr}^b D^\mu d_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lsb} \right) \left(D_\mu \bar{d}_{Rr}^b D^\mu d_{Lta} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r, & s & t \\ p & r, & s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (D_\mu d_{Lsa} C D^\mu d_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r, & s & t \\ p & r, & s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(D_\mu \bar{d}_{Rr}^b D^\mu d_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r, & s & t \\ p & r, & s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lsb} \right) \left(D_\mu \bar{d}_{Rr}^b D^\mu d_{Lta} \right) \end{array} \right. \quad (3.218)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_L D^2}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} \left(\bar{d}_{Rp}^a d_{Lra} \right) (D_\mu \bar{e}_{Rs} D^\mu e_{Lt}) \\ \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) (D_\mu d_{Lra} C D^\mu e_{Lt}) \\ i (D_\mu \bar{e}_{Rs} D_\nu e_{Lt}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra} \right) \end{array} \right. \quad (3.219)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L^2 D^2}^{(1\sim 3)}(0, 2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (D_\mu d_{Lra} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lra} \right) (D_\mu \nu_{Ls} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (D_\mu d_{Lra} C D^\mu \nu_{Lt}) \end{cases} \quad (3.220)$$

$$\mathcal{O}_{\bar{d}_R^3 e_L D^2}^{(1,2)}(-1, 1) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(D_\mu \bar{d}_{Rs}^c D^\mu e_{Lt} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(D_\mu \bar{d}_{Rs}^c D^\mu e_{Lt} \right) \end{cases} \quad (3.221)$$

$$\mathcal{O}_{\bar{e}_R^2 e_L D^2}^{(1\sim 3)}(0, 0) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (D_\mu \bar{e}_{Rr} D^\mu e_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] (\bar{e}_{Rp} C \bar{e}_{Rr}) (D_\mu e_{Ls} C D^\mu e_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (D_\mu \bar{e}_{Rr} D^\mu e_{Lt}) \end{cases} \quad (3.222)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L^2 D^2}^{(1\sim 3)}(0, 2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rp} \nu_{Ls}) (D_\mu e_{Lr} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Lr}) (D_\mu \nu_{Ls} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] (\bar{e}_{Rp} \nu_{Ls}) (D_\mu e_{Lr} C D^\mu \nu_{Lt}) \end{cases} \quad (3.223)$$

$$\mathcal{O}_{\nu_L^4 D^2}^{(1,2)}(0, 4) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (D_\mu \nu_{Ls} C D^\mu \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s & t \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (D_\mu \nu_{Ls} C D^\mu \nu_{Lt}) \end{cases} \quad (3.224)$$

Class $\psi^2 \psi^{\dagger 2} D^2$: 50 types

$$\mathcal{O}_{u_L^2 \bar{u}_L^2 D^2}^{(1\sim 4)}(0, 0) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] (u_{Lpa} C u_{Lrb}) \left(D_\mu \bar{u}_{Ls}^a C D^\mu \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i (u_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \left(D_\mu \bar{u}_{Ls}^a C D_\nu \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] (u_{Lpa} C u_{Lrb}) \left(D_\mu \bar{u}_{Ls}^a C D^\mu \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix} \right] i (u_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \left(D_\mu \bar{u}_{Ls}^a C D_\nu \bar{u}_{Lt}^b \right) \end{cases} \quad (3.225)$$

$$\mathcal{O}_{d_R e_R u_L^2 D^2}^{(1,2)}(1, 1) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i \epsilon^{abc} (D_\mu d_{Rsc} C D_\nu e_{Rt}) (u_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (u_{Lpa} C u_{Lrb}) (D_\mu d_{Rsc} C D^\mu e_{Rt}) \end{cases} \quad (3.226)$$

$$\mathcal{O}_{\bar{u}_R u_R u_L \bar{u}_L D^2}^{(1\sim 4)}(0, 0) \begin{cases} \left(\bar{u}_{Rp}^a u_{Lrb} \right) \left(D^\mu \bar{u}_{Lt}^b D_\mu u_{Rsa} \right) \\ \left(\bar{u}_{Rp}^a u_{Lra} \right) \left(D^\mu \bar{u}_{Lt}^c D_\mu u_{Rsc} \right) \\ i \left(D_\nu \bar{u}_{Lt}^b D_\mu u_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra} \right) \left(D_\nu \bar{u}_{Lt}^c D_\mu u_{Rsc} \right) \end{cases} \quad (3.227)$$

$$\mathcal{O}_{d_R \bar{d}_L \bar{u}_R u_L D^2}^{(1\sim 4)}(0, 0) \begin{cases} \left(\bar{u}_{Rp}^a u_{Lrb} \right) \left(D^\mu \bar{d}_{Lt}^b D_\mu d_{Rsa} \right) \\ \left(\bar{u}_{Rp}^a u_{Lra} \right) \left(D^\mu \bar{d}_{Lt}^c D_\mu d_{Rsc} \right) \\ i \left(D_\nu \bar{d}_{Lt}^b D_\mu d_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra} \right) \left(D_\nu \bar{d}_{Lt}^c D_\mu d_{Rsc} \right) \end{cases} \quad (3.228)$$

$$\mathcal{O}_{e_R \bar{e}_L \bar{u}_R u_L D^2}^{(1,2)}(0, 0) \begin{cases} \left(\bar{u}_{Rp}^a u_{Lra} \right) \left(D^\mu \bar{e}_{Lt} D_\mu e_{Rs} \right) \\ i \left(D_\nu \bar{e}_{Lt} D_\mu e_{Rs} \right) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra} \right) \end{cases} \quad (3.229)$$

$$\mathcal{O}_{\bar{\nu}_L^2 \bar{u}_R u_L D^2}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i (D_\mu \bar{\nu}_{Ls} C D_\nu \bar{\nu}_{Lt}) (\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{u}_{Rp}^a u_{Lra}) (D_\mu \bar{\nu}_{Ls} C D^\mu \bar{\nu}_{Lt}) \end{array} \right. \quad (3.230)$$

$$\mathcal{O}_{d_L \bar{d}_L u_L \bar{u}_L D^2}(0, 0) \left| \begin{array}{l} (d_{Lpa} C u_{Lrb}) \left(D_\mu \bar{d}_{Ls}^a C D^\mu \bar{u}_{Lt}^b \right) \\ (d_{Lpa} C u_{Lrb}) \left(D_\mu \bar{d}_{Ls}^b C D^\mu \bar{u}_{Lt}^a \right) \\ i (d_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \left(D_\mu \bar{d}_{Ls}^a C D_\nu \bar{u}_{Lt}^b \right) \\ i (d_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \left(D_\mu \bar{d}_{Ls}^b C D_\nu \bar{u}_{Lt}^a \right) \end{array} \right. \quad (3.231)$$

$$\mathcal{O}_{d_L e_R u_R u_L D^2}(1, 1) \left| \begin{array}{l} \epsilon^{abc} (d_{Lpa} C u_{Lrb}) (D_\mu e_{Rs} C D^\mu u_{Rtc}) \\ i \epsilon^{abc} (D_\mu e_{Rs} C D_\nu u_{Rtc}) (d_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \end{array} \right. \quad (3.232)$$

$$\mathcal{O}_{d_R d_L \bar{\nu}_L u_L D^2}(1, -1) \left| \begin{array}{l} \epsilon^{abc} (d_{Lpa} C u_{Lrb}) (D^\mu \bar{\nu}_{Lt} D_\mu d_{Rsc}) \\ i \epsilon^{abc} (D_\nu \bar{\nu}_{Lt} D_\mu d_{Rsc}) (d_{Lpa} C \sigma^{\mu\nu} u_{Lrb}) \end{array} \right. \quad (3.233)$$

$$\mathcal{O}_{\bar{d}_R d_R u_L \bar{u}_L D^2}(0, 0) \left| \begin{array}{l} (\bar{d}_{Rp}^a u_{Lrb}) \left(D^\mu \bar{u}_{Lt}^b D_\mu d_{Rsa} \right) \\ (\bar{d}_{Rp}^a u_{Lra}) \left(D^\mu \bar{u}_{Lt}^c D_\mu d_{Rsc} \right) \\ i \left(D_\nu \bar{u}_{Lt}^b D_\mu d_{Rsa} \right) (\bar{d}_{Rp}^a \sigma^{\mu\nu} u_{Lrb}) \\ i \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} u_{Lra} \right) (D_\nu \bar{u}_{Lt}^c D_\mu d_{Rsc}) \end{array} \right. \quad (3.234)$$

$$\mathcal{O}_{\bar{d}_R e_R \bar{\nu}_L u_L D^2}(0, 0) \left| \begin{array}{l} (\bar{d}_{Rp}^a u_{Lra}) \left(D^\mu \bar{\nu}_{Lt} D_\mu e_{Rs} \right) \\ i (D_\nu \bar{\nu}_{Lt} D_\mu e_{Rs}) (\bar{d}_{Rp}^a \sigma^{\mu\nu} u_{Lra}) \end{array} \right. \quad (3.235)$$

$$\mathcal{O}_{e_L \bar{e}_L u_L \bar{u}_L D^2}(0, 0) \left| \begin{array}{l} (e_{Lp} C u_{Lra}) (D_\mu \bar{e}_{Ls} C D^\mu \bar{u}_{Lt}^a) \\ i (e_{Lp} C \sigma^{\mu\nu} u_{Lra}) (D_\mu \bar{e}_{Ls} C D_\nu \bar{u}_{Lt}^a) \end{array} \right. \quad (3.236)$$

$$\mathcal{O}_{d_R e_L u_R u_L D^2}(1, 1) \left| \begin{array}{l} \epsilon^{abc} (e_{Lp} C u_{Lra}) (D_\mu d_{Rsb} C D^\mu u_{Rtc}) \\ i \epsilon^{abc} (e_{Lp} C \sigma^{\mu\nu} u_{Lra}) (D_\mu d_{Rsb} C D_\nu u_{Rtc}) \end{array} \right. \quad (3.237)$$

$$\mathcal{O}_{d_L e_L \bar{\nu}_L u_L D^2}(0, 0) \left| \begin{array}{l} (e_{Lp} C u_{Lra}) \left(D_\mu \bar{d}_{Ls}^a C D^\mu \bar{\nu}_{Lt} \right) \\ i (e_{Lp} C \sigma^{\mu\nu} u_{Lra}) \left(D_\mu \bar{d}_{Ls}^a C D_\nu \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.238)$$

$$\mathcal{O}_{\bar{e}_R e_R u_L \bar{u}_L D^2}(0, 0) \left| \begin{array}{l} (\bar{e}_{Rp} u_{Lra}) \left(D^\mu \bar{u}_{Lt}^a D_\mu e_{Rs} \right) \\ i (D_\nu \bar{u}_{Lt}^a D_\mu e_{Rs}) (\bar{e}_{Rp} \sigma^{\mu\nu} u_{Lra}) \end{array} \right. \quad (3.239)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L u_L \bar{u}_L D^2}(0, 0) \left| \begin{array}{l} (u_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{u}_{Ls}^a C D^\mu \bar{\nu}_{Lt} \right) \\ i (u_{Lpa} C \sigma^{\mu\nu} \nu_{Lr}) \left(D_\mu \bar{u}_{Ls}^a C D_\nu \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.240)$$

$$\mathcal{O}_{\bar{d}_L e_R \nu_L u_L D^2}(0, 2) \left| \begin{array}{l} (u_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{d}_{Ls}^a D^\mu e_{Rt} \right) \\ i \left(D_\mu \bar{d}_{Ls}^a D_\nu e_{Rt} \right) (u_{Lpa} C \sigma^{\mu\nu} \nu_{Lr}) \end{array} \right. \quad (3.241)$$

$$\mathcal{O}_{d_R^2 \nu_L u_L D^2}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon^{abc} (D_\mu d_{Rsb} C D_\nu d_{Rtc}) (u_{Lpa} C \sigma^{\mu\nu} \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} (u_{Lpa} C \nu_{Lr}) (D_\mu d_{Rsb} C D^\mu d_{Rtc}) \end{array} \right. \quad (3.242)$$

$$\mathcal{O}_{\bar{u}_R^2 u_R^2 D^2}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} \overline{p} \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) (D_\mu u_{Rsa} C D^\mu u_{Rtb}) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i (D_\mu u_{Rsa} C D_\nu u_{Rtb}) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) (D_\mu u_{Rsa} C D^\mu u_{Rtb}) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i (D_\mu u_{Rsa} C D_\nu u_{Rtb}) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.243)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_L \bar{u}_R^2 D^2}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} \overline{p} \\ r \end{smallmatrix} \right] i \epsilon_{abc} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} C \bar{u}_{Rr}^b \right) \left(D_\mu \bar{d}_{Ls}^c C D_\nu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} \\ r \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(D_\mu \bar{d}_{Ls}^c C D^\mu \bar{e}_{Lt} \right) \end{array} \right. \quad (3.244)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{u}_R u_R D^2}(0,0) \left| \begin{array}{l} \left(\bar{u}_{Rr}^b d_{Lpa} \right) \left(D_\mu \bar{d}_{Ls}^a D^\mu u_{Rtb} \right) \\ \left(\bar{u}_{Rr}^a d_{Lpa} \right) \left(D_\mu \bar{d}_{Ls}^c D^\mu u_{Rtc} \right) \\ i \left(D_\mu \bar{d}_{Ls}^a D_\nu u_{Rtb} \right) \left(\bar{u}_{Rr}^b \sigma^{\mu\nu} d_{Lpa} \right) \\ i \left(\bar{u}_{Rr}^a \sigma^{\mu\nu} d_{Lpa} \right) \left(D_\mu \bar{d}_{Ls}^c D_\nu u_{Rtc} \right) \end{array} \right. \quad (3.245)$$

$$\mathcal{O}_{d_L \bar{e}_L \bar{\nu}_L \bar{u}_R D^2}(0,-2) \left| \begin{array}{l} \left(\bar{u}_{Rr}^a d_{Lpa} \right) \left(D_\mu \bar{e}_{Ls} C D^\mu \bar{\nu}_{Lt} \right) \\ i \left(D_\mu \bar{e}_{Ls} C D_\nu \bar{\nu}_{Lt} \right) \left(\bar{u}_{Rr}^a \sigma^{\mu\nu} d_{Lpa} \right) \end{array} \right. \quad (3.246)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{u}_R u_R D^2}(0,0) \left| \begin{array}{l} \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(D_\mu d_{Rsa} C D^\mu u_{Rtb} \right) \\ \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(D_\mu d_{Rsb} C D^\mu u_{Rta} \right) \\ i \left(D_\mu d_{Rsa} C D_\nu u_{Rtb} \right) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} C \bar{u}_{Rr}^b \right) \\ i \left(D_\mu d_{Rsb} C D_\nu u_{Rta} \right) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.247)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{\nu}_L \bar{u}_R D^2}(-1,-1) \left| \begin{array}{l} \epsilon_{abc} \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(D_\mu \bar{d}_{Ls}^c C D^\mu \bar{\nu}_{Lt} \right) \\ i \epsilon_{abc} \left(D_\mu \bar{d}_{Ls}^c C D_\nu \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.248)$$

$$\mathcal{O}_{e_L \bar{e}_L \bar{u}_R u_R D^2}(0,0) \left| \begin{array}{l} \left(\bar{u}_{Rr}^a e_{Lp} \right) \left(D_\mu \bar{e}_{Ls} D^\mu u_{Rta} \right) \\ i \left(D_\mu \bar{e}_{Ls} D_\nu u_{Rta} \right) \left(\bar{u}_{Rr}^a \sigma^{\mu\nu} e_{Lp} \right) \end{array} \right. \quad (3.249)$$

$$\mathcal{O}_{\bar{e}_R e_R \bar{u}_R u_R D^2}(0,0) \left| \begin{array}{l} \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \left(D_\mu e_{Rs} C D^\mu u_{Rta} \right) \\ i \left(D_\mu e_{Rs} C D_\nu u_{Rta} \right) \left(\bar{e}_{Rp} \sigma^{\mu\nu} C \bar{u}_{Rr}^a \right) \end{array} \right. \quad (3.250)$$

$$\mathcal{O}_{d_R \bar{e}_R \bar{\nu}_L \bar{u}_R D^2}(0,-2) \left| \begin{array}{l} \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \left(D^\mu \bar{\nu}_{Lt} D_\mu d_{Rsa} \right) \\ i \left(D_\nu \bar{\nu}_{Lt} D_\mu d_{Rsa} \right) \left(\bar{e}_{Rp} \sigma^{\mu\nu} C \bar{u}_{Rr}^a \right) \end{array} \right. \quad (3.251)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L \bar{u}_R u_R D^2}(0,0) \left| \begin{array}{l} \left(\bar{u}_{Rp}^a \nu_{Lr} \right) \left(D^\mu \bar{\nu}_{Lt} D_\mu u_{Rsa} \right) \\ i \left(D_\nu \bar{\nu}_{Lt} D_\mu u_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} \nu_{Lr} \right) \end{array} \right. \quad (3.252)$$

$$\mathcal{O}_{\bar{d}_L^2 \nu_L \bar{u}_R D^2}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} \overline{s} \\ t \end{smallmatrix} \right] i \epsilon_{abc} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} \nu_{Lr} \right) \left(D_\mu \bar{d}_{Ls}^b C D_\nu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{s} \\ t \end{smallmatrix} \right] \epsilon_{abc} \left(\bar{u}_{Rp}^a \nu_{Lr} \right) \left(D_\mu \bar{d}_{Ls}^b C D^\mu \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.253)$$

$$\mathcal{O}_{d_R \bar{e}_L \nu_L \bar{u}_R D^2}(0,0) \left| \begin{array}{l} \left(\bar{u}_{Rp}^a \nu_{Lr} \right) \left(D^\mu \bar{e}_{Lt} D_\mu d_{Rsa} \right) \\ i \left(D_\nu \bar{e}_{Lt} D_\mu d_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} \nu_{Lr} \right) \end{array} \right. \quad (3.254)$$

$$\mathcal{O}_{d_L^2 \bar{d}_L^2 D^2}^{(1\sim 4)}(0,0) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] (d_{Lpa} C d_{Lrb}) \left(D_\mu \bar{d}_{Ls}^a C D^\mu \bar{d}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] i (d_{Lpa} C \sigma^{\mu\nu} d_{Lrb}) \left(D_\mu \bar{d}_{Ls}^a C D_\nu \bar{d}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] (d_{Lpa} C d_{Lrb}) \left(D_\mu \bar{d}_{Ls}^a C D^\mu \bar{d}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] i (d_{Lpa} C \sigma^{\mu\nu} d_{Lrb}) \left(D_\mu \bar{d}_{Ls}^a C D_\nu \bar{d}_{Lt}^b \right) \end{cases} \quad (3.255)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_L D^2}^{(1,2)}(1,-1) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] i \epsilon^{abc} (D_\nu \bar{e}_{Lt} D_\mu d_{Rsc}) (d_{Lpa} C \sigma^{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C d_{Lrb}) (D^\mu \bar{e}_{Lt} D_\mu d_{Rsc}) \end{cases} \quad (3.256)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{d}_L D^2}^{(1\sim 4)}(0,0) \begin{cases} \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D^\mu \bar{d}_{Lt}^b D_\mu d_{Rsa} \right) \\ \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(D^\mu \bar{d}_{Lt}^c D_\mu d_{Rsc} \right) \\ i \left(D_\nu \bar{d}_{Lt}^b D_\mu d_{Rsa} \right) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb} \right) \\ i \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra} \right) \left(D_\nu \bar{d}_{Lt}^c D_\mu d_{Rsc} \right) \end{cases} \quad (3.257)$$

$$\mathcal{O}_{\bar{d}_R d_L e_R \bar{e}_L D^2}^{(1,2)}(0,0) \begin{cases} \left(\bar{d}_{Rp}^a d_{Lra} \right) (D^\mu \bar{e}_{Lt} D_\mu e_{Rs}) \\ i (D_\nu \bar{e}_{Lt} D_\mu e_{Rs}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra} \right) \end{cases} \quad (3.258)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{\nu}_L^2 D^2}^{(1,2)}(0,-2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} \overline{s} \\ \overline{t} \end{smallmatrix} \right] i (D_\mu \bar{\nu}_{Ls} C D_\nu \bar{\nu}_{Lt}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{s} \\ \overline{t} \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a d_{Lra} \right) (D_\mu \bar{\nu}_{Ls} C D^\mu \bar{\nu}_{Lt}) \end{cases} \quad (3.259)$$

$$\mathcal{O}_{d_L \bar{d}_L e_L \bar{e}_L D^2}^{(1,2)}(0,0) \begin{cases} (d_{Lpa} C e_{Lr}) \left(D_\mu \bar{d}_{Ls}^a C D^\mu \bar{e}_{Lt} \right) \\ i (d_{Lpa} C \sigma^{\mu\nu} e_{Lr}) \left(D_\mu \bar{d}_{Ls}^a C D_\nu \bar{e}_{Lt} \right) \end{cases} \quad (3.260)$$

$$\mathcal{O}_{d_L d_L \bar{e}_R e_R D^2}^{(1,2)}(0,0) \begin{cases} (\bar{e}_{Rr} d_{Lpa}) \left(D_\mu \bar{d}_{Ls}^a D^\mu e_{Rt} \right) \\ i \left(D_\mu \bar{d}_{Ls}^a D_\nu e_{Rt} \right) (\bar{e}_{Rr} \sigma^{\mu\nu} d_{Lpa}) \end{cases} \quad (3.261)$$

$$\mathcal{O}_{d_R^2 d_L \bar{e}_R D^2}^{(1,2)}(1,-1) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} \overline{s} & \overline{t} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] i \epsilon^{abc} (D_\mu d_{Rsb} C D_\nu d_{Rtc}) (\bar{e}_{Rr} \sigma^{\mu\nu} d_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{s} & \overline{t} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] \epsilon^{abc} (\bar{e}_{Rr} d_{Lpa}) (D_\mu d_{Rsb} C D^\mu d_{Rtc}) \end{cases} \quad (3.262)$$

$$\mathcal{O}_{d_L \bar{d}_L \nu_L \bar{\nu}_L D^2}^{(1,2)}(0,0) \begin{cases} (d_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{d}_{Ls}^a C D^\mu \bar{\nu}_{Lt} \right) \\ i (d_{Lpa} C \sigma^{\mu\nu} \nu_{Lr}) \left(D_\mu \bar{d}_{Ls}^a C D_\nu \bar{\nu}_{Lt} \right) \end{cases} \quad (3.263)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R^2 D^2}^{(1\sim 4)}(0,0) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (D_\mu d_{Rsa} C D^\mu d_{Rtb}) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] i (D_\mu d_{Rsa} C D_\nu d_{Rtb}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (D_\mu d_{Rsa} C D^\mu d_{Rtb}) \\ \mathcal{Y} \left[\begin{smallmatrix} \overline{p} & \overline{s} \\ \overline{r} & \overline{t} \end{smallmatrix} \right] i (D_\mu d_{Rsa} C D_\nu d_{Rtb}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} C \bar{d}_{Rr}^b \right) \end{cases} \quad (3.264)$$

$$\mathcal{O}_{\bar{d}_R d_R e_L \bar{e}_L D^2}^{(1,2)}(0,0) \begin{cases} \left(\bar{d}_{Rp}^a e_{Lr} \right) (D^\mu \bar{e}_{Lt} D_\mu d_{Rsa}) \\ i (D_\nu \bar{e}_{Lt} D_\mu d_{Rsa}) \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} e_{Lr} \right) \end{cases} \quad (3.265)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_R D^2}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (D_\mu d_{Rsa} C D^\mu e_{Rt}) \\ i (D_\mu d_{Rsa} C D_\nu e_{Rt}) (\bar{d}_{Rp}^a \sigma^{\mu\nu} C \bar{e}_{Rr}) \end{array} \right. \quad (3.266)$$

$$\mathcal{O}_{\bar{d}_R d_R \nu_L \bar{\nu}_L D^2}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{d}_{Rp}^a \nu_{Lr}) (D^\mu \bar{\nu}_{Lt} D_\mu d_{Rsa}) \\ i (D_\nu \bar{\nu}_{Lt} D_\mu d_{Rsa}) (\bar{d}_{Rp}^a \sigma^{\mu\nu} \nu_{Lr}) \end{array} \right. \quad (3.267)$$

$$\mathcal{O}_{e_L^2 \bar{e}_L^2 D^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] i (D_\mu \bar{e}_{Ls} C D_\nu \bar{e}_{Lt}) (e_{Lp} C \sigma^{\mu\nu} e_{Lr}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] (e_{Lp} C e_{Lr}) (D_\mu \bar{e}_{Ls} C D^\mu \bar{e}_{Lt}) \end{array} \right. \quad (3.268)$$

$$\mathcal{O}_{\bar{e}_R e_R e_L \bar{e}_L D^2}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (D^\mu \bar{e}_{Lt} D_\mu e_{Rs}) \\ i (D_\nu \bar{e}_{Lt} D_\mu e_{Rs}) (\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr}) \end{array} \right. \quad (3.269)$$

$$\mathcal{O}_{\bar{e}_R e_R \bar{\nu}_L^2 D^2}^{(1,2)}(0,-2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] i (D_\mu \bar{\nu}_{Ls} C D_\nu \bar{\nu}_{Lt}) (\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr}) \\ \mathcal{Y} \left[\frac{s}{\bar{s}t} \right] (\bar{e}_{Rp} e_{Lr}) (D_\mu \bar{\nu}_{Ls} C D^\mu \bar{\nu}_{Lt}) \end{array} \right. \quad (3.270)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L \bar{\nu}_L D^2}^{(1,2)}(0,0) \left| \begin{array}{l} (e_{Lp} C \nu_{Lr}) (D_\mu \bar{e}_{Ls} C D^\mu \bar{\nu}_{Lt}) \\ i (D_\mu \bar{e}_{Ls} C D_\nu \bar{\nu}_{Lt}) (e_{Lp} C \sigma^{\mu\nu} \nu_{Lr}) \end{array} \right. \quad (3.271)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R^2 D^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] i (D_\mu e_{Rs} C D_\nu e_{Rt}) (\bar{e}_{Rp} \sigma^{\mu\nu} C \bar{e}_{Rr}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] (\bar{e}_{Rp} C \bar{e}_{Rr}) (D_\mu e_{Rs} C D^\mu e_{Rt}) \end{array} \right. \quad (3.272)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L \bar{\nu}_L D^2}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} \nu_{Lr}) (D^\mu \bar{\nu}_{Lt} D_\mu e_{Rs}) \\ i (D_\nu \bar{\nu}_{Lt} D_\mu e_{Rs}) (\bar{e}_{Rp} \sigma^{\mu\nu} \nu_{Lr}) \end{array} \right. \quad (3.273)$$

$$\mathcal{O}_{\nu_L^2 \bar{\nu}_L^2 D^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] i (D_\mu \bar{\nu}_{Ls} C D_\nu \bar{\nu}_{Lt}) (\nu_{Lp} C \sigma^{\mu\nu} \nu_{Lr}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] (\nu_{Lp} C \nu_{Lr}) (D_\mu \bar{\nu}_{Ls} C D^\mu \bar{\nu}_{Lt}) \end{array} \right. \quad (3.274)$$

Class $F_L \psi^4$: 33 types

$$\mathcal{O}_{G_L \bar{u}_R^2 u_L^2}^{(1\sim 12)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (u_{Lsa} C u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (u_{Lsa} C u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (u_{Lsa} C u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (u_{Lsa} C u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa}) \\ \mathcal{Y} \left[\frac{p}{\bar{p}r}, \frac{s}{\bar{s}t} \right] i (\lambda^A)^d_b G_L^{A\mu\nu} (\bar{u}_{Rr}^b u_{Ltd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsb}) \end{array} \right. \quad (3.275)$$

$$\mathcal{O}_{G_L d_L e_L u_L^2}^{(1\sim 6)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (u_{Lsb} C u_{Ltc}) (d_{Lpa} C \sigma_{\mu\nu} e_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (e_{Lr} C u_{Ltc}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (d_{Lpa} C u_{Ltc}) (e_{Lr} C \sigma^{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (u_{Lsb} C u_{Ltc}) (d_{Lpa} C \sigma_{\mu\nu} e_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (e_{Lr} C u_{Ltc}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (d_{Lpa} C u_{Ltc}) (e_{Lr} C \sigma^{\mu\nu} u_{Lsb}) \end{array} \right. \quad (3.276)$$

$$\mathcal{O}_{G_L \bar{d}_R d_L \bar{u}_R u_L}^{(1\sim 12)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Rs}^c u_{Lta}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Rs}^c u_{Ltc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Rs}^c u_{Ltd}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Rs}^b u_{Ltd}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (d_{Lrb} C u_{Lta}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (d_{Lrb} C u_{Ltc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (d_{Lra} C u_{Ltd}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (d_{Lrb} C u_{Ltd}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^b) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{d}_{Rp}^a u_{Lta}) (\bar{u}_{Rs}^c \sigma^{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{d}_{Rp}^a u_{Ltc}) (\bar{u}_{Rs}^c \sigma^{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{d}_{Rp}^a u_{Ltd}) (\bar{u}_{Rs}^c \sigma^{\mu\nu} d_{Lra}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{d}_{Rp}^a u_{Ltd}) (\bar{u}_{Rs}^b \sigma^{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.277)$$

$$\mathcal{O}_{G_L \bar{e}_R e_L \bar{u}_R u_L}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Rs}^a u_{Ltb}) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (e_{Lr} C u_{Ltb}) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rs}^a) \\ i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{e}_{Rp} u_{Ltb}) (\bar{u}_{Rs}^a \sigma^{\mu\nu} e_{Lr}) \end{array} \right. \quad (3.278)$$

$$\mathcal{O}_{G_L \nu_L^2 \bar{u}_R u_L}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (u_{Lrb} C \nu_{Lt}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Rp}^a \nu_{Lt}) (u_{Lrb} C \sigma^{\mu\nu} \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_a^b (\nu_{Ls} C \nu_{Lt}) G_L^{A\mu\nu} (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb}) \end{array} \right. \quad (3.279)$$

$$\mathcal{O}_{G_L d_L^2 \nu_L u_L}^{(1\sim 6)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu\nu} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu\nu} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsc}) \end{array} \right. \quad (3.280)$$

$$\mathcal{O}_{G_L \bar{d}_R e_L \nu_L u_L}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} e_{Lr} \right) \\ i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} (e_{Lr} C \nu_{Lt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lsb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \nu_{Lt} \right) (e_{Lr} C \sigma^{\mu\nu} u_{Lsb}) \end{array} \right. \quad (3.281)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{e}_R \bar{u}_R^2}^{(1\sim 6)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{e}_{Rr} C \bar{u}_{Rt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a C \bar{u}_{Rt}^c \right) \left(\bar{e}_{Rr} \sigma^{\mu\nu} C \bar{u}_{Rs}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{e}_{Rr} C \bar{u}_{Rt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a C \bar{u}_{Rt}^c \right) \left(\bar{e}_{Rr} \sigma^{\mu\nu} C \bar{u}_{Rs}^b \right) \end{array} \right. \quad (3.282)$$

$$\mathcal{O}_{G_L d_L \bar{e}_R \nu_L \bar{u}_R}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{u}_{Rs}^b \nu_{Lt} \right) \left(\bar{e}_{Rr} \sigma_{\mu\nu} d_{Lpa} \right) \\ i \left(\lambda^A \right)_b^b \left(\bar{e}_{Rr} \nu_{Lt} \right) G_L^{A\mu\nu} \left(\bar{u}_{Rs}^b \sigma_{\mu\nu} d_{Lpa} \right) \\ i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} \left(d_{Lpa} C \nu_{Lt} \right) \left(\bar{e}_{Rr} \sigma^{\mu\nu} C \bar{u}_{Rs}^b \right) \end{array} \right. \quad (3.283)$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \nu_L \bar{u}_R}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{u}_{Rs}^c \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{u}_{Rs}^c \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.284)$$

$$\mathcal{O}_{G_L \bar{d}_L^3 \bar{e}_R}^{(1\sim 4)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(\bar{e}_{Rt} d_{Lsc} \right) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu\nu} \left(\bar{e}_{Rt} d_{Lsc} \right) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(\bar{e}_{Rt} d_{Lsc} \right) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(\bar{e}_{Rt} d_{Lsc} \right) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.285)$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R^2 d_L^2}^{(1\sim 12)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (d_{Lsa} C d_{Ltd}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] i \left(\lambda^A \right)_a^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsb} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & \boxed{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (d_{Lsa} C d_{Ltd}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & \boxed{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & \boxed{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsb} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & \boxed{r} & s \\ & & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (d_{Lsa} C d_{Ltd}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & \boxed{r} & s \\ & & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & \boxed{r} & s \\ & & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsb} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & \boxed{r} & \boxed{s} \\ & & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (d_{Lsa} C d_{Ltd}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & \boxed{r} & \boxed{s} \\ & & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & \boxed{r} & \boxed{s} \\ & & t \end{smallmatrix} \right] i \left(\lambda^A \right)_a^d G_L^{A\mu\nu} \left(\bar{d}_{Rr}^b d_{Ltd} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsb} \right)
 \end{aligned} \right. \quad (3.286)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L \bar{e}_R e_L}^{(1\sim 3)}(0,0) & \left| \begin{aligned}
 & i \left(\lambda^A \right)_b^b (\bar{e}_{Rs} e_{Lt}) G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_b^g G_L^{A\mu\nu} (d_{Lrb} C e_{Lt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rs} \right) \\
 & i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a e_{Lt} \right) (\bar{e}_{Rs} \sigma^{\mu\nu} d_{Lrb})
 \end{aligned} \right. \quad (3.287)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L \nu_L^2}^{(1\sim 3)}(0,2) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} (d_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Ls} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^g G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \nu_{Lt} \right) (d_{Lrb} C \sigma^{\mu\nu} \nu_{Ls}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i \left(\lambda^A \right)_a^b (\nu_{Ls} C \nu_{Lt}) G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb} \right)
 \end{aligned} \right. \quad (3.288)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R^3 e_L}^{(1\sim 4)}(-1,1) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^c G_L^{A\mu\nu} \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right)
 \end{aligned} \right. \quad (3.289)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{F_L \bar{u}_R^2 u_L^2}^{(1\sim 6)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{u}_{Rr}^b u_{Ltb} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ & & t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{u}_{Rr}^b u_{Ltb} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & \boxed{t} \end{smallmatrix} \right] i F_L^{\mu\nu} (u_{Lsa} C u_{Ltb}) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & \boxed{t} \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{u}_{Rr}^b u_{Ltb} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa} \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ & & t \end{smallmatrix} \right] i F_L^{\mu\nu} (u_{Lsa} C u_{Ltb}) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ & & t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{u}_{Rr}^b u_{Ltb} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lsa} \right)
 \end{aligned} \right. \quad (3.290)
 \end{aligned}$$

$$\mathcal{O}_{F_L d_L e_L u_L^2}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (e_{Lr} C u_{Ltc}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i\epsilon^{abc} F_{L\mu\nu} (d_{Lpa} C u_{Ltc}) (e_{Lr} C \sigma^{\mu\nu} u_{Lsb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (u_{Lsb} C u_{Ltc}) (d_{Lpa} C \sigma_{\mu\nu} e_{Lr}) \end{array} \right. \quad (3.291)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \bar{u}_R u_L}^{(1\sim 6)}(0, 0) \left| \begin{array}{l} iF_L^{\mu\nu} (\bar{u}_{Rs}^b u_{Lta}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ iF_L^{\mu\nu} (\bar{u}_{Rs}^c u_{Ltc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \\ iF_L^{\mu\nu} (d_{Lrb} C u_{Lta}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^b) \\ iF_L^{\mu\nu} (d_{Lra} C u_{Ltc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c) \\ iF_{L\mu\nu} (\bar{d}_{Rp}^a u_{Lta}) (\bar{u}_{Rs}^b \sigma^{\mu\nu} d_{Lrb}) \\ iF_{L\mu\nu} (\bar{d}_{Rp}^a u_{Ltc}) (\bar{u}_{Rs}^c \sigma^{\mu\nu} d_{Lra}) \end{array} \right. \quad (3.292)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L \bar{u}_R u_L}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} iF_L^{\mu\nu} (\bar{u}_{Rs}^a u_{Lta}) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \\ iF_L^{\mu\nu} (e_{Lr} C u_{Lta}) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rs}^a) \\ iF_{L\mu\nu} (\bar{e}_{Rp} u_{Lta}) (\bar{u}_{Rs}^a \sigma^{\mu\nu} e_{Lr}) \end{array} \right. \quad (3.293)$$

$$\mathcal{O}_{F_L \nu_L^2 \bar{u}_R u_L}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] iF_L^{\mu\nu} (u_{Lra} C \nu_{Lt}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] iF_{L\mu\nu} (\bar{u}_{Rp}^a \nu_{Lt}) (u_{Lra} C \sigma^{\mu\nu} \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i(\nu_{Ls} C \nu_{Lt}) F_L^{\mu\nu} (\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra}) \end{array} \right. \quad (3.294)$$

$$\mathcal{O}_{F_L d_L^2 \nu_L u_L}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lsc}) \end{array} \right. \quad (3.295)$$

$$\mathcal{O}_{F_L \bar{d}_R e_L \nu_L u_L}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} iF_L^{\mu\nu} (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} e_{Lr}) \\ iF_L^{\mu\nu} (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lsa}) \\ iF_{L\mu\nu} (\bar{d}_{Rp}^a \nu_{Lt}) (e_{Lr} C \sigma^{\mu\nu} u_{Lsa}) \end{array} \right. \quad (3.296)$$

$$\mathcal{O}_{F_L d_R \bar{e}_R \bar{u}_R^2}^{(1\sim 3)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} (\bar{e}_{Rr} C \bar{u}_{Rt}^c) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i\epsilon_{abc} F_{L\mu\nu} (\bar{d}_{Rp}^a C \bar{u}_{Rt}^c) (\bar{e}_{Rr} \sigma^{\mu\nu} C \bar{u}_{Rs}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} (\bar{u}_{Rs}^b C \bar{u}_{Rt}^c) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr}) \end{array} \right. \quad (3.297)$$

$$\mathcal{O}_{F_L d_L \bar{e}_R \nu_L \bar{u}_R}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} iF_L^{\mu\nu} (\bar{u}_{Rs}^a \nu_{Lt}) (\bar{e}_{Rr} \sigma_{\mu\nu} d_{Lpa}) \\ iF_L^{\mu\nu} (\bar{e}_{Rr} \nu_{Lt}) (\bar{u}_{Rs}^a \sigma_{\mu\nu} d_{Lpa}) \\ iF_{L\mu\nu} (d_{Lpa} C \nu_{Lt}) (\bar{e}_{Rr} \sigma^{\mu\nu} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.298)$$

$$\mathcal{O}_{F_L d_R^2 \nu_L \bar{u}_R}^{(1\sim 3)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} (\bar{u}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rs}^c) \end{array} \right. \quad (3.299)$$

$$\mathcal{O}_{F_L d_L^3 \bar{e}_R}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r & s \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.300)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 d_L^2}^{(1\sim 6)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{d}_{Rr}^b d_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{d}_{Rr}^b d_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(d_{Lsa} C d_{Ltb} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{d}_{Rr}^b d_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(d_{Lsa} C d_{Ltb} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{d}_{Rr}^b d_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lsa} \right) \end{array} \right. \quad (3.301)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \bar{e}_R e_L}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_L^{\mu\nu} \left(\bar{e}_{Rs} e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra} \right) \\ i F_L^{\mu\nu} \left(d_{Lra} C e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rs} \right) \\ i F_{L\mu\nu} \left(\bar{d}_{Rp}^a e_{Lt} \right) \left(\bar{e}_{Rs} \sigma^{\mu\nu} d_{Lra} \right) \end{array} \right. \quad (3.302)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \nu_L^2}^{(1\sim 3)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(d_{Lra} C \nu_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_{L\mu\nu} \left(\bar{d}_{Rp}^a \nu_{Lt} \right) \left(d_{Lra} C \sigma^{\mu\nu} \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\nu_{Ls} C \nu_{Lt} \right) F_L^{\mu\nu} \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra} \right) \end{array} \right. \quad (3.303)$$

$$\mathcal{O}_{F_L \bar{d}_R^3 e_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \end{array} \right. \quad (3.304)$$

$$\mathcal{O}_{F_L \bar{e}_R^2 e_L^2}^{(1\sim 3)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{e}_{Rr} e_{Lt} \right) \left(\bar{e}_{Rp} \sigma_{\mu\nu} e_{Ls} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(e_{Ls} C e_{Lt} \right) F_L^{\mu\nu} \left(\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{e}_{Rr} e_{Lt} \right) \left(\bar{e}_{Rp} \sigma_{\mu\nu} e_{Ls} \right) \end{array} \right. \quad (3.305)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L \nu_L^2}^{(1\sim 3)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_L^{\mu\nu} \left(e_{Lr} C \nu_{Lt} \right) \left(\bar{e}_{Rp} \sigma_{\mu\nu} \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i F_{L\mu\nu} \left(\bar{e}_{Rp} \nu_{Lt} \right) \left(e_{Lr} C \sigma^{\mu\nu} \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\nu_{Ls} C \nu_{Lt} \right) F_L^{\mu\nu} \left(\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr} \right) \end{array} \right. \quad (3.306)$$

$$\mathcal{O}_{F_L \nu_L^4}^{(1\sim 3)}(0,4) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\nu_{Lr} C \nu_{Lt} \right) F_L^{\mu\nu} \left(\nu_{Lp} C \sigma_{\mu\nu} \nu_{Ls} \right) \right. \quad (3.307)$$

Class $F_L \psi^2 \psi^{\dagger 2}$: 136 types

$$\mathcal{O}_{G_L u_L^2 \bar{u}_L^2}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} \left(\bar{u}_{Ls}^c C \bar{u}_{Lt}^a \right) \left(u_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} \left(\bar{u}_{Ls}^c C \bar{u}_{Lt}^a \right) \left(u_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} \left(\bar{u}_{Ls}^c C \bar{u}_{Lt}^a \right) \left(u_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} \left(\bar{u}_{Ls}^c C \bar{u}_{Lt}^a \right) \left(u_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.308)$$

$$\mathcal{O}_{G_L d_R e_R u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(d_{Rsc} C e_{Rt} \right) \left(u_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(d_{Rsc} C e_{Rt} \right) \left(u_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.309)$$

$$\mathcal{O}_{G_L \bar{u}_R u_R u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} \left(\bar{u}_{Lt}^d u_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} \left(\bar{u}_{Lt}^c u_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} \left(\bar{u}_{Lt}^d u_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \\ i \left(\lambda^A \right)_a^g G_L^{A\mu\nu} \left(\bar{u}_{Lt}^b u_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.310)$$

$$\mathcal{O}_{G_L d_R \bar{d}_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} \left(\bar{d}_{Lt}^d d_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} \left(\bar{d}_{Lt}^c d_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} \left(\bar{d}_{Lt}^d d_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \\ i \left(\lambda^A \right)_a^g G_L^{A\mu\nu} \left(\bar{d}_{Lt}^b d_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.311)$$

$$\mathcal{O}_{G_L e_R \bar{e}_L \bar{u}_R u_L}(0,0) \left| i \left(\lambda^A \right)_a^b \left(\bar{e}_{Lt} e_{Rs} \right) G_L^{A\mu\nu} \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \right. \quad (3.312)$$

$$\mathcal{O}_{G_L \bar{\nu}_L^2 \bar{u}_R u_L}(0,-2) \left| \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] i \left(\lambda^A \right)_a^b \left(\bar{\nu}_{Ls} C \bar{\nu}_{Lt} \right) G_L^{A\mu\nu} \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \right. \quad (3.313)$$

$$\mathcal{O}_{G_L d_L \bar{d}_L u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} \left(\bar{d}_{Ls}^c C \bar{u}_{Lt}^a \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_b^g G_L^{A\mu\nu} \left(\bar{d}_{Ls}^a C \bar{u}_{Lt}^d \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} \left(\bar{d}_{Ls}^c C \bar{u}_{Lt}^b \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} \left(\bar{d}_{Ls}^b C \bar{u}_{Lt}^d \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.314)$$

$$\mathcal{O}_{G_L \bar{d}_L e_R u_R u_L}^{(1,2)}(1,1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(e_{Rs} C u_{Rtc} \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g \epsilon^{bcd} G_L^{A\mu\nu} \left(e_{Rs} C u_{Rtc} \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.315)$$

$$\mathcal{O}_{G_L d_R d_L \bar{\nu}_L u_L}^{(1,2)}(1,-1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(\bar{\nu}_{Lt} d_{Rsc} \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g \epsilon^{bcd} G_L^{A\mu\nu} \left(\bar{\nu}_{Lt} d_{Rsc} \right) \left(d_{Lpa} C \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.316)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} \left(\bar{u}_{Lt}^d d_{Rsa} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_b^b G_L^{A\mu\nu} \left(\bar{u}_{Lt}^c d_{Rsc} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} \left(\bar{u}_{Lt}^d d_{Rsc} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \\ i \left(\lambda^A \right)_a^g G_L^{A\mu\nu} \left(\bar{u}_{Lt}^b d_{Rsc} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \end{array} \right. \quad (3.317)$$

$$\mathcal{O}_{G_L \bar{d}_R e_R \bar{\nu}_L u_L}(0,0) \left| i \left(\lambda^A \right)_a^b \left(\bar{\nu}_{Lt} e_{Rs} \right) G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \right. \quad (3.318)$$

$$\mathcal{O}_{G_L e_L \bar{e}_L u_L \bar{u}_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{e}_{Ls} C \bar{u}_{Lt}^b \right) \left(e_{Lp} C \sigma_{\mu\nu} u_{Lra} \right) \right. \quad (3.319)$$

$$\mathcal{O}_{G_L d_R e_L u_R u_L}^{(1,2)}(1,1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} \left(d_{Rsb} C u_{Rtc} \right) \left(e_{Lp} C \sigma_{\mu\nu} u_{Lra} \right) \\ i \left(\lambda^A \right)_d^g \epsilon^{bcd} G_L^{A\mu\nu} \left(d_{Rsb} C u_{Rtc} \right) \left(e_{Lp} C \sigma_{\mu\nu} u_{Lra} \right) \end{array} \right. \quad (3.320)$$

$$\mathcal{O}_{G_L \bar{d}_L e_L \bar{\nu}_L u_L}(0, 0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{d}_{Ls}^b C \bar{\nu}_{Lt} \right) (e_{Lp} C \sigma_{\mu\nu} u_{Lra}) \right. \quad (3.321)$$

$$\mathcal{O}_{G_L \bar{e}_R e_R u_L \bar{u}_L}(0, 0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{u}_{Lt}^b e_{Rs} \right) (\bar{e}_{Rp} C \sigma_{\mu\nu} u_{Lra}) \right. \quad (3.322)$$

$$\mathcal{O}_{G_L \nu_L \bar{\nu}_L u_L \bar{u}_L}(0, 0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{u}_{Ls}^b C \bar{\nu}_{Lt} \right) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.323)$$

$$\mathcal{O}_{G_L \bar{d}_L e_R \nu_L u_L}(0, 2) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{d}_{Ls}^b e_{Rt} \right) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.324)$$

$$\mathcal{O}_{G_L d_R^2 \nu_L u_L}^{(1,2)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \bar{s} & \bar{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (d_{Rsb} C d_{Rtc}) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ \bar{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (d_{Rsb} C d_{Rtc}) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \end{array} \right. \quad (3.325)$$

$$\mathcal{O}_{G_L \bar{u}_R^2 u_R^2}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} \bar{p} & \bar{s} \\ r & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (u_{Rsa} C u_{Rtd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} \bar{p} & \bar{s} \\ r & \bar{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (u_{Rsa} C u_{Rtd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} \bar{p} & \bar{s} \\ r & \bar{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (u_{Rsa} C u_{Rtd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} \bar{p} & \bar{s} \\ r & \bar{t} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (u_{Rsa} C u_{Rtd}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.326)$$

$$\mathcal{O}_{G_L \bar{d}_L \bar{e}_L \bar{u}_R^2}^{(1,2)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} \bar{p} \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{e}_{Lt}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} \bar{p} \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{e}_{Lt}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.327)$$

$$\mathcal{O}_{G_L d_L \bar{d}_L \bar{u}_R u_R}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^a u_{Rtd}) (\bar{u}_{Rr}^b \sigma_{\mu\nu} d_{Lpa}) \\ i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c u_{Rtc}) (\bar{u}_{Rr}^b \sigma_{\mu\nu} d_{Lpa}) \\ i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c u_{Rtd}) (\bar{u}_{Rr}^a \sigma_{\mu\nu} d_{Lpa}) \\ i \left(\lambda^A \right)_c^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c u_{Rtb}) (\bar{u}_{Rr}^b \sigma_{\mu\nu} d_{Lpa}) \end{array} \right. \quad (3.328)$$

$$\mathcal{O}_{G_L d_L \bar{e}_L \bar{\nu}_L \bar{u}_R}(0, -2) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} (\bar{e}_{Ls} C \bar{\nu}_{Lt}) (\bar{u}_{Rr}^b \sigma_{\mu\nu} d_{Lpa}) \right. \quad (3.329)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{e}_L \bar{u}_R \bar{u}_L}^{(1,2)}(-1, -1) \left| \begin{array}{l} i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{e}_{Ls} C \bar{u}_{Lt}^c) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu\nu} (\bar{e}_{Ls} C \bar{u}_{Lt}^c) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.330)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R \bar{u}_R u_R}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (d_{Rsa} C u_{Rtd}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (d_{Rsb} C u_{Rtd}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ i \left(\lambda^A \right)_b^g G_L^{A\mu\nu} (d_{Rsc} C u_{Rtb}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ i \left(\lambda^A \right)_b^g G_L^{A\mu\nu} (d_{Rsc} C u_{Rta}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.331)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{d}_L \bar{\nu}_L \bar{u}_R}^{(1,2)}(-1, -1) \left| \begin{array}{l} i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{\nu}_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \\ i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{\nu}_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.332)$$

$$\mathcal{O}_{G_L e_L \bar{e}_L \bar{u}_R u_R}(0, 0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (\bar{e}_{Ls} u_{Rtb}) (\bar{u}_{Rr}^a \sigma_{\mu\nu} e_{Lp}) \right. \quad (3.333)$$

$$\mathcal{O}_{G_L \bar{d}_L \bar{e}_R \bar{u}_R \bar{u}_L}^{(1,2)}(-1, -1) \left| \begin{array}{l} i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^b C \bar{u}_{Lt}^c) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \\ i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu\nu} (\bar{d}_{Ls}^b C \bar{u}_{Lt}^c) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \end{array} \right. \quad (3.334)$$

$$\mathcal{O}_{G_L \bar{e}_R e_R \bar{u}_R u_R}(0, 0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (e_{Rs} C u_{Rtb}) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \right. \quad (3.335)$$

$$\mathcal{O}_{G_L d_R \bar{e}_R \bar{u}_R \bar{u}_L}(0, -2) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (\bar{\nu}_{Lt} d_{Rsb}) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \right. \quad (3.336)$$

$$\mathcal{O}_{G_L \nu_L \bar{\nu}_L \bar{u}_R u_R}(0, 0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (\bar{\nu}_{Lt} u_{Rsb}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.337)$$

$$\mathcal{O}_{G_L d_L^2 \nu_L \bar{u}_R}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ s \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^b C \bar{d}_{Lt}^c) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Ls}^b C \bar{d}_{Lt}^c) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \end{array} \right. \quad (3.338)$$

$$\mathcal{O}_{G_L d_R \bar{e}_L \nu_L \bar{u}_R}(0, 0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (\bar{e}_{Lt} d_{Rsb}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.339)$$

$$\mathcal{O}_{G_L d_L^2 \bar{\nu}_L u_R}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (\bar{\nu}_{Lt} u_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (\bar{\nu}_{Lt} u_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.340)$$

$$\mathcal{O}_{G_L d_L^2 \bar{d}_L}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{d}_{Lt}^a) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{d}_{Lt}^a) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{d}_{Lt}^a) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i \left(\lambda^A \right)_c^b G_L^{A\mu\nu} (\bar{d}_{Ls}^c C \bar{d}_{Lt}^a) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.341)$$

$$\mathcal{O}_{G_L d_R d_L^2 \bar{e}_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (\bar{e}_{Lt} d_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu\nu} (\bar{e}_{Lt} d_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.342)$$

$$\mathcal{O}_{G_L \bar{d}_R d_L u_R \bar{u}_L}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{u}_{Lt}^d u_{Rsa}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{u}_{Lt}^c u_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} (\bar{u}_{Lt}^d u_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \\ i \left(\lambda^A \right)_a^d G_L^{A\mu\nu} (\bar{u}_{Lt}^b u_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.343)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R d_L \bar{d}_L}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b G_L^{A\mu\nu} (\bar{d}_{Lt}^d d_{Rsa}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_b^d G_L^{A\mu\nu} (\bar{d}_{Lt}^c d_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \\ i \left(\lambda^A \right)_d^g G_L^{A\mu\nu} (\bar{d}_{Lt}^d d_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \\ i \left(\lambda^A \right)_a^d G_L^{A\mu\nu} (\bar{d}_{Lt}^b d_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \end{array} \right. \quad (3.344)$$

$$\mathcal{O}_{G_L \bar{d}_R d_L e_R \bar{e}_L}(0,0) \left| i \left(\lambda^A \right)_a^b \left(\bar{e}_{L t} e_{R s} \right) G_L^{A \mu \nu} \left(\bar{d}_{R p}^a \sigma_{\mu \nu} d_{L r b} \right) \right. \quad (3.345)$$

$$\mathcal{O}_{G_L \bar{d}_R d_L \bar{\nu}_L^2}(0,-2) \left| \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] i \left(\lambda^A \right)_a^b \left(\bar{\nu}_{L s} C \bar{\nu}_{L t} \right) G_L^{A \mu \nu} \left(\bar{d}_{R p}^a \sigma_{\mu \nu} d_{L r b} \right) \right. \quad (3.346)$$

$$\mathcal{O}_{G_L d_L e_L \nu_R^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A \mu \nu} \left(u_{R s b} C u_{R t c} \right) \left(d_{L p a} C \sigma_{\mu \nu} e_{L r} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ \hline t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A \mu \nu} \left(u_{R s b} C u_{R t c} \right) \left(d_{L p a} C \sigma_{\mu \nu} e_{L r} \right) \end{array} \right. \quad (3.347)$$

$$\mathcal{O}_{G_L d_L \bar{d}_L e_L \bar{e}_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A \mu \nu} \left(\bar{d}_{L s}^b C \bar{e}_{L t} \right) \left(d_{L p a} C \sigma_{\mu \nu} e_{L r} \right) \right. \quad (3.348)$$

$$\mathcal{O}_{G_L d_L \bar{e}_R \bar{\nu}_L \bar{u}_L}(0,-2) \left| i \left(\lambda^A \right)_b^a G_L^{A \mu \nu} \left(\bar{u}_{L s}^b C \bar{\nu}_{L t} \right) \left(\bar{e}_{R r} \sigma_{\mu \nu} d_{L p a} \right) \right. \quad (3.349)$$

$$\mathcal{O}_{G_L d_L \bar{d}_L \bar{e}_R e_R}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A \mu \nu} \left(\bar{d}_{L s}^b e_{R t} \right) \left(\bar{e}_{R r} \sigma_{\mu \nu} d_{L p a} \right) \right. \quad (3.350)$$

$$\mathcal{O}_{G_L d_R^2 d_L \bar{e}_R}^{(1,2)}(1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A \mu \nu} \left(d_{R s b} C d_{R t c} \right) \left(\bar{e}_{R r} \sigma_{\mu \nu} d_{L p a} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ \hline t \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A \mu \nu} \left(d_{R s b} C d_{R t c} \right) \left(\bar{e}_{R r} \sigma_{\mu \nu} d_{L p a} \right) \end{array} \right. \quad (3.351)$$

$$\mathcal{O}_{G_L d_L \bar{e}_L \nu_L \bar{u}_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A \mu \nu} \left(\bar{e}_{L s} C \bar{u}_{L t} \right) \left(d_{L p a} C \sigma_{\mu \nu} \nu_{L r} \right) \right. \quad (3.352)$$

$$\mathcal{O}_{G_L d_R d_L \nu_L u_R}^{(1,2)}(1,1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A \mu \nu} \left(d_{R s b} C u_{R t c} \right) \left(d_{L p a} C \sigma_{\mu \nu} \nu_{L r} \right) \\ i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A \mu \nu} \left(d_{R s b} C u_{R t c} \right) \left(d_{L p a} C \sigma_{\mu \nu} \nu_{L r} \right) \end{array} \right. \quad (3.353)$$

$$\mathcal{O}_{G_L d_L \bar{d}_L \nu_L \bar{\nu}_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A \mu \nu} \left(\bar{d}_{L s}^b C \bar{\nu}_{L t} \right) \left(d_{L p a} C \sigma_{\mu \nu} \nu_{L r} \right) \right. \quad (3.354)$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \bar{\nu}_L \bar{u}_L}^{(1,2)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ \hline r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(\bar{u}_{L s}^c C \bar{\nu}_{L t} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(\bar{u}_{L s}^c C \bar{\nu}_{L t} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \end{array} \right. \quad (3.355)$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \bar{d}_L e_R}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ \hline r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(\bar{d}_{L s}^c e_{R t} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \hline \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(\bar{d}_{L s}^c e_{R t} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \end{array} \right. \quad (3.356)$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \bar{d}_R}^{(1 \sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & s \\ \hline r & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(d_{R s a} C d_{R t d} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & s \\ \hline r & t \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(d_{R s a} C d_{R t d} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s & t \\ \hline \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(d_{R s a} C d_{R t d} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s & t \\ \hline \end{smallmatrix} \right] i \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(d_{R s a} C d_{R t d} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} C \bar{d}_{R r}^b \right) \end{array} \right. \quad (3.357)$$

$$\mathcal{O}_{G_L \bar{d}_R e_L \bar{\nu}_L u_R}(0,0) \left| i \left(\lambda^A \right)_a^b G_L^{A \mu \nu} \left(\bar{\nu}_{L t} u_{R s b} \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} e_{L r} \right) \right. \quad (3.358)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{d}_L^2 e_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \hline \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(\bar{d}_{L s}^b C \bar{d}_{L t}^c \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} e_{L r} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ \hline t \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A \mu \nu} \left(\bar{d}_{L s}^b C \bar{d}_{L t}^c \right) \left(\bar{d}_{R p}^a \sigma_{\mu \nu} e_{L r} \right) \end{array} \right. \quad (3.359)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R e_L \bar{e}_L}(0,0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (\bar{e}_{Lt} d_{Rsb}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} e_{Lr} \right) \right. \quad (3.360)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{e}_R \bar{u}_L^2}^{(1,2)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \bar{s} & \bar{t} \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{u}_{Ls}^b C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ \bar{t} \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{u}_{Ls}^b C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \end{array} \right. \quad (3.361)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R \bar{e}_R e_R}(0,0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (d_{Rsb} C e_{Rt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \right. \quad (3.362)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{d}_L \nu_L \bar{u}_L}^{(1,2)}(-1,1) \left| \begin{array}{l} i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu\nu} \left(\bar{d}_{Ls}^b C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \\ i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu\nu} \left(\bar{d}_{Ls}^b C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \end{array} \right. \quad (3.363)$$

$$\mathcal{O}_{G_L \bar{d}_R e_R \nu_L u_R}(0,2) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (e_{Rsb} C u_{Rtb}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \right. \quad (3.364)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R \nu_L \bar{\nu}_L}(0,0) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} (\bar{\nu}_{Lt} d_{Rsb}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \right. \quad (3.365)$$

$$\mathcal{O}_{G_L \bar{e}_R e_L u_R \bar{u}_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{u}_{Lt}^b u_{Rsa} \right) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \right. \quad (3.366)$$

$$\mathcal{O}_{G_L d_R \bar{d}_L \bar{e}_R e_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{d}_{Lt}^b d_{Rsa} \right) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \right. \quad (3.367)$$

$$\mathcal{O}_{G_L \bar{d}_L e_L \nu_L u_R}(0,2) \left| i \left(\lambda^A \right)_a^b G_L^{A\mu\nu} \left(\bar{d}_{Ls}^a u_{Rtb} \right) (e_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.368)$$

$$\mathcal{O}_{G_L d_R \bar{e}_R \nu_L \bar{u}_L}(0,0) \left| i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} \left(\bar{u}_{Lt}^b d_{Rsa} \right) (\bar{e}_{Rp} \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.369)$$

$$\mathcal{O}_{G_L \nu_L^2 u_R \bar{u}_L}(0,2) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} (\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \left(\bar{u}_{Lt}^b u_{Rsa} \right) \right. \quad (3.370)$$

$$\mathcal{O}_{G_L d_R \bar{d}_L \nu_L^2}(0,2) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu\nu} (\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \left(\bar{d}_{Lt}^b d_{Rsa} \right) \right. \quad (3.371)$$

$$\mathcal{O}_{F_L u_L^2 \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix}, \begin{smallmatrix} s & t \\ \bar{s} & \bar{t} \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{u}_{Ls}^a C \bar{u}_{Lt}^b \right) (u_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \bar{p} & \bar{r} \end{smallmatrix}, \begin{smallmatrix} s \\ \bar{t} \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{u}_{Ls}^a C \bar{u}_{Lt}^b \right) (u_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \end{array} \right. \quad (3.372)$$

$$\mathcal{O}_{F_L d_R e_R u_L^2}(1,1) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ \bar{p} & \bar{r} \end{smallmatrix} \right] i \epsilon^{abc} F_L^{\mu\nu} (d_{Rsc} C e_{Rt}) (u_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \right. \quad (3.373)$$

$$\mathcal{O}_{F_L \bar{u}_R u_R u_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} i F_L^{\mu\nu} \left(\bar{u}_{Lt}^b u_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i F_L^{\mu\nu} \left(\bar{u}_{Lt}^c u_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \end{array} \right. \quad (3.374)$$

$$\mathcal{O}_{F_L d_R \bar{d}_L \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} i F_L^{\mu\nu} \left(\bar{d}_{Lt}^b d_{Rsa} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \\ i F_L^{\mu\nu} \left(\bar{d}_{Lt}^c d_{Rsc} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \end{array} \right. \quad (3.375)$$

$$\mathcal{O}_{F_L e_R \bar{e}_L \bar{u}_R u_L}(0,0) \left| i F_L^{\mu\nu} (\bar{e}_{Lt} e_{Rs}) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \right. \quad (3.376)$$

$$\mathcal{O}_{F_L \bar{\nu}_L^2 \bar{u}_R u_L}(0,-2) \left| \mathcal{Y} \left[\begin{smallmatrix} s & t \\ \bar{s} & \bar{t} \end{smallmatrix} \right] i F_L^{\mu\nu} (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \right. \quad (3.377)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L u_L \bar{u}_L}^{(1,2)}(0,0) \left| iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a C \bar{u}_{Lt}^b \right) (d_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \right. \\ \left. iF_L^{\mu\nu} \left(\bar{d}_{Ls}^b C \bar{u}_{Lt}^a \right) (d_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \right. \quad (3.378)$$

$$\mathcal{O}_{F_L d_L e_R u_R u_L}(1,1) \left| i\epsilon^{abc} F_L^{\mu\nu} (e_{Rs} C u_{Rtc}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \right. \quad (3.379)$$

$$\mathcal{O}_{F_L d_R d_L \bar{\nu}_L u_L}(1,-1) \left| i\epsilon^{abc} F_L^{\mu\nu} (\bar{\nu}_{Lt} d_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} u_{Lrb}) \right. \quad (3.380)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R u_L \bar{u}_L}^{(1,2)}(0,0) \left| iF_L^{\mu\nu} \left(\bar{u}_{Lt}^b d_{Rsa} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lrb} \right) \right. \\ \left. iF_L^{\mu\nu} \left(\bar{u}_{Lt}^c d_{Rsc} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \right. \quad (3.381)$$

$$\mathcal{O}_{F_L \bar{d}_R e_R \bar{\nu}_L u_L}(0,0) \left| iF_L^{\mu\nu} (\bar{\nu}_{Lt} e_{Rs}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} u_{Lra} \right) \right. \quad (3.382)$$

$$\mathcal{O}_{F_L e_L \bar{e}_L u_L \bar{u}_L}(0,0) \left| iF_L^{\mu\nu} (\bar{e}_{Ls} C \bar{u}_{Lt}^a) (e_{Lp} C \sigma_{\mu\nu} u_{Lra}) \right. \quad (3.383)$$

$$\mathcal{O}_{F_L d_R e_L u_R u_L}(1,1) \left| i\epsilon^{abc} F_L^{\mu\nu} (d_{Rsb} C u_{Rtc}) (e_{Lp} C \sigma_{\mu\nu} u_{Lra}) \right. \quad (3.384)$$

$$\mathcal{O}_{F_L \bar{d}_L e_L \bar{\nu}_L u_L}(0,0) \left| iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a C \bar{\nu}_{Lt} \right) (e_{Lp} C \sigma_{\mu\nu} u_{Lra}) \right. \quad (3.385)$$

$$\mathcal{O}_{F_L \bar{e}_R e_R u_L \bar{u}_L}(0,0) \left| iF_L^{\mu\nu} (\bar{u}_{Lt}^a e_{Rs}) (\bar{e}_{Rp} \sigma_{\mu\nu} u_{Lra}) \right. \quad (3.386)$$

$$\mathcal{O}_{F_L \nu_L \bar{\nu}_L u_L \bar{u}_L}(0,0) \left| iF_L^{\mu\nu} (\bar{u}_{Ls}^a C \bar{\nu}_{Lt}) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.387)$$

$$\mathcal{O}_{F_L \bar{d}_L e_R \nu_L u_L}(0,2) \left| iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a e_{Rt} \right) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.388)$$

$$\mathcal{O}_{F_L d_R^2 \nu_L u_L}(1,1) \left| \mathcal{Y} \left[\frac{s}{t} \right] i\epsilon^{abc} F_L^{\mu\nu} (d_{Rsb} C d_{Rtc}) (u_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.389)$$

$$\mathcal{O}_{F_L \bar{u}_R^2 u_R}^{(1,2)}(0,0) \left| \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] iF_L^{\mu\nu} (u_{Rsa} C u_{Rtb}) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \\ \left. \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t} \right] iF_L^{\mu\nu} (u_{Rsa} C u_{Rtb}) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \quad (3.390)$$

$$\mathcal{O}_{F_L \bar{d}_L \bar{e}_L \bar{u}_R^2}(-1,-1) \left| \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^c C \bar{e}_{Lt} \right) \left(\bar{u}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \quad (3.391)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L \bar{u}_R u_R}^{(1,2)}(0,0) \left| iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a u_{Rtb} \right) \left(\bar{u}_{Rr}^b \sigma_{\mu\nu} d_{Lpa} \right) \right. \\ \left. iF_L^{\mu\nu} \left(\bar{d}_{Ls}^c u_{Rtc} \right) \left(\bar{u}_{Rr}^a \sigma_{\mu\nu} d_{Lpa} \right) \right. \quad (3.392)$$

$$\mathcal{O}_{F_L d_L \bar{e}_L \bar{\nu}_L \bar{u}_R}(0,-2) \left| iF_L^{\mu\nu} (\bar{e}_{Ls} C \bar{\nu}_{Lt}) (\bar{u}_{Rr}^a \sigma_{\mu\nu} d_{Lpa}) \right. \quad (3.393)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{e}_L \bar{u}_R \bar{u}_L}(-1,-1) \left| i\epsilon_{abc} F_L^{\mu\nu} (\bar{e}_{Ls} C \bar{u}_{Lt}^c) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \quad (3.394)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R \bar{u}_R u_R}^{(1,2)}(0,0) \left| iF_L^{\mu\nu} (d_{Rsa} C u_{Rtb}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \\ \left. iF_L^{\mu\nu} (d_{Rsb} C u_{Rta}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \quad (3.395)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{d}_L \bar{\nu}_L \bar{u}_R}(-1,-1) \left| i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^c C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{u}_{Rr}^b \right) \right. \quad (3.396)$$

$$\mathcal{O}_{F_L e_L \bar{e}_L \bar{u}_R u_R}(0,0) \left| iF_L^{\mu\nu} (\bar{e}_{Ls} u_{Rta}) (\bar{u}_{Rr}^a \sigma_{\mu\nu} e_{Lp}) \right. \quad (3.397)$$

$$\mathcal{O}_{F_L \bar{d}_L \bar{e}_R \bar{u}_R \bar{u}_L}(-1, -1) \left| i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^b C \bar{u}_{Lt}^c \right) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \right. \quad (3.398)$$

$$\mathcal{O}_{F_L \bar{e}_R e_R \bar{u}_R u_R}(0, 0) \left| iF_L^{\mu\nu} (e_{Rs} C u_{Rta}) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \right. \quad (3.399)$$

$$\mathcal{O}_{F_L d_R \bar{e}_R \bar{\nu}_L \bar{u}_R}(0, -2) \left| iF_L^{\mu\nu} (\bar{\nu}_{Lt} d_{Rsa}) (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{u}_{Rr}^a) \right. \quad (3.400)$$

$$\mathcal{O}_{F_L \nu_L \bar{\nu}_L \bar{u}_R u_R}(0, 0) \left| iF_L^{\mu\nu} (\bar{\nu}_{Lt} u_{Rsa}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.401)$$

$$\mathcal{O}_{F_L \bar{d}_L^2 \nu_L \bar{u}_R}(-1, 1) \left| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^b C \bar{d}_{Lt}^c \right) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.402)$$

$$\mathcal{O}_{F_L d_R \bar{e}_L \nu_L \bar{u}_R}(0, 0) \left| iF_L^{\mu\nu} (\bar{e}_{Lt} d_{Rsa}) (\bar{u}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.403)$$

$$\mathcal{O}_{F_L d_L^2 \bar{\nu}_L u_R}(1, -1) \left| \mathcal{Y} [\overline{p\overline{r}}] i\epsilon^{abc} F_L^{\mu\nu} (\bar{\nu}_{Lt} u_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \right. \quad (3.404)$$

$$\mathcal{O}_{F_L d_L^2 d_L^2}^{(1,2)}(0, 0) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a C \bar{d}_{Lt}^b \right) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a C \bar{d}_{Lt}^b \right) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \right. \quad (3.405)$$

$$\mathcal{O}_{F_L d_R d_L^2 \bar{e}_L}(1, -1) \left| \mathcal{Y} [\overline{p\overline{r}}] i\epsilon^{abc} F_L^{\mu\nu} (\bar{e}_{Lt} d_{Rsc}) (d_{Lpa} C \sigma_{\mu\nu} d_{Lrb}) \right. \quad (3.406)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L u_R \bar{u}_L}^{(1,2)}(0, 0) \left| iF_L^{\mu\nu} (\bar{u}_{Lt}^b u_{Rsa}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \right. \\ \left. iF_L^{\mu\nu} (\bar{u}_{Lt}^c u_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \right. \quad (3.407)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R d_L \bar{d}_L}^{(1,2)}(0, 0) \left| iF_L^{\mu\nu} (\bar{d}_{Lt}^b d_{Rsa}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lrb}) \right. \\ \left. iF_L^{\mu\nu} (\bar{d}_{Lt}^c d_{Rsc}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \right. \quad (3.408)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L e_R \bar{e}_L}(0, 0) \left| iF_L^{\mu\nu} (\bar{e}_{Lt} e_{Rs}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \right. \quad (3.409)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \bar{\nu}_L^2}(0, -2) \left| \mathcal{Y} [\overline{s\overline{t}}] iF_L^{\mu\nu} (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) (\bar{d}_{Rp}^a \sigma_{\mu\nu} d_{Lra}) \right. \quad (3.410)$$

$$\mathcal{O}_{F_L d_L e_L u_R^2}(1, 1) \left| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (u_{Rsb} C u_{Rtc}) (d_{Lpa} C \sigma_{\mu\nu} e_{Lr}) \right. \quad (3.411)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L e_L \bar{e}_L}(0, 0) \left| iF_L^{\mu\nu} (\bar{d}_{Ls}^a C \bar{e}_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} e_{Lr}) \right. \quad (3.412)$$

$$\mathcal{O}_{F_L d_L \bar{e}_R \bar{\nu}_L \bar{u}_L}(0, -2) \left| iF_L^{\mu\nu} (\bar{u}_{Ls}^a C \bar{\nu}_{Lt}) (\bar{e}_{Rr} \sigma_{\mu\nu} d_{Lpa}) \right. \quad (3.413)$$

$$\mathcal{O}_{F_L d_L d_L \bar{e}_R e_R}(0, 0) \left| iF_L^{\mu\nu} (\bar{d}_{Ls}^a e_{Rt}) (\bar{e}_{Rr} \sigma_{\mu\nu} d_{Lpa}) \right. \quad (3.414)$$

$$\mathcal{O}_{F_L d_R^2 d_L \bar{e}_R}(1, -1) \left| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i\epsilon^{abc} F_L^{\mu\nu} (d_{Rsb} C d_{Rtc}) (\bar{e}_{Rr} \sigma_{\mu\nu} d_{Lpa}) \right. \quad (3.415)$$

$$\mathcal{O}_{F_L d_L \bar{e}_L \nu_L \bar{u}_L}(0, 0) \left| iF_L^{\mu\nu} (\bar{e}_{Ls} C \bar{u}_{Lt}^a) (d_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.416)$$

$$\mathcal{O}_{F_L d_R d_L \nu_L u_R}(1, 1) \left| i\epsilon^{abc} F_L^{\mu\nu} (d_{Rsb} C u_{Rtc}) (d_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.417)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L \nu_L \bar{\nu}_L}(0, 0) \left| iF_L^{\mu\nu} (\bar{d}_{Ls}^a C \bar{\nu}_{Lt}) (d_{Lpa} C \sigma_{\mu\nu} \nu_{Lr}) \right. \quad (3.418)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 \bar{\nu}_L \bar{u}_L}(-1, -1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} (\bar{u}_{Ls}^c C \bar{\nu}_{Lt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \quad (3.419)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 \bar{d}_L e_R}(-1, 1) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^c e_{Rt} \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \quad (3.420)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 d_R^2}^{(1,2)}(0, 0) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] iF_L^{\mu\nu} (d_{Rsa} C d_{Rtb}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \\ \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] iF_L^{\mu\nu} (d_{Rsa} C d_{Rtb}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{d}_{Rr}^b \right) \quad (3.421)$$

$$\mathcal{O}_{F_L \bar{d}_R e_L \bar{\nu}_L u_R}(0, 0) \Big| iF_L^{\mu\nu} (\bar{\nu}_{Lt} u_{Rsa}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} e_{Lr} \right) \quad (3.422)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{d}_L^2 e_L}(-1, 1) \Big| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^b C \bar{d}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} e_{Lr} \right) \quad (3.423)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R e_L \bar{e}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{e}_{Lt} d_{Rsa}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} e_{Lr} \right) \quad (3.424)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{e}_R \bar{u}_L^2}(-1, -1) \Big| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{u}_{Ls}^b C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \quad (3.425)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R \bar{e}_R e_R}(0, 0) \Big| iF_L^{\mu\nu} (d_{Rsa} C e_{Rt}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} C \bar{e}_{Rr} \right) \quad (3.426)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{d}_L \nu_L \bar{u}_L}(-1, 1) \Big| i\epsilon_{abc} F_L^{\mu\nu} \left(\bar{d}_{Ls}^b C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \quad (3.427)$$

$$\mathcal{O}_{F_L \bar{d}_R e_R \nu_L u_R}(0, 2) \Big| iF_L^{\mu\nu} (e_{Rs} C u_{Rta}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \quad (3.428)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R \nu_L \bar{\nu}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{\nu}_{Lt} d_{Rsa}) \left(\bar{d}_{Rp}^a \sigma_{\mu\nu} \nu_{Lr} \right) \quad (3.429)$$

$$\mathcal{O}_{F_L e_L^2 \bar{e}_L^2}(0, 0) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] iF_L^{\mu\nu} (\bar{e}_{Ls} C \bar{e}_{Lt}) (e_{Lp} C \sigma_{\mu\nu} e_{Lr}) \quad (3.430)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L u_R \bar{u}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{u}_{Lt}^a u_{Rsa}) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \quad (3.431)$$

$$\mathcal{O}_{F_L d_R \bar{d}_L \bar{e}_R e_L}(0, 0) \Big| iF_L^{\mu\nu} \left(\bar{d}_{Lt}^a d_{Rsa} \right) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \quad (3.432)$$

$$\mathcal{O}_{F_L \bar{e}_R e_R e_L \bar{e}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{e}_{Lt} e_{Rs}) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \quad (3.433)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L \bar{\nu}_L^2}(0, -2) \Big| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] iF_L^{\mu\nu} (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) (\bar{e}_{Rp} \sigma_{\mu\nu} e_{Lr}) \quad (3.434)$$

$$\mathcal{O}_{F_L \bar{d}_L e_L \nu_L u_R}(0, 2) \Big| iF_L^{\mu\nu} \left(\bar{d}_{Ls}^a u_{Rta} \right) (e_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \quad (3.435)$$

$$\mathcal{O}_{F_L e_L \bar{e}_L \nu_L \bar{\nu}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{e}_{Ls} C \bar{\nu}_{Lt}) (e_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \quad (3.436)$$

$$\mathcal{O}_{F_L \bar{e}_R^2 e_R^2}(0, 0) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] i(e_{Rs} C e_{Rt}) F_L^{\mu\nu} (\bar{e}_{Rp} \sigma_{\mu\nu} C \bar{e}_{Rr}) \quad (3.437)$$

$$\mathcal{O}_{F_L d_R \bar{e}_R \nu_L \bar{u}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{u}_{Lt}^a d_{Rsa}) (\bar{e}_{Rp} \sigma_{\mu\nu} \nu_{Lr}) \quad (3.438)$$

$$\mathcal{O}_{F_L \bar{e}_R e_R \nu_L \bar{\nu}_L}(0, 0) \Big| iF_L^{\mu\nu} (\bar{\nu}_{Lt} e_{Rs}) (\bar{e}_{Rp} \sigma_{\mu\nu} \nu_{Lr}) \quad (3.439)$$

$$\mathcal{O}_{F_L \nu_L^2 u_R \bar{u}_L}(0, 2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] iF_L^{\mu\nu} (\bar{u}_{Lt}^a u_{Rsa}) (\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \quad (3.440)$$

$$\mathcal{O}_{F_L d_R \bar{d}_L \nu_L^2}(0, 2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i F_L^{\mu\nu} \left(\bar{d}_{Lt}^a d_{Rsa} \right) (\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \quad (3.441)$$

$$\mathcal{O}_{F_L e_R \bar{e}_L \nu_L^2}(0, 2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i F_L^{\mu\nu} (\bar{e}_{Lt} e_{Rs}) (\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \quad (3.442)$$

$$\mathcal{O}_{F_L \nu_L^2 \bar{\nu}_L^2}(0, 0) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r, \boxed{s \ell} \end{smallmatrix} \right] i F_L^{\mu\nu} (\bar{\nu}_{Ls} C \bar{\nu}_{Lt}) (\nu_{Lp} C \sigma_{\mu\nu} \nu_{Lr}) \quad (3.443)$$

3.5 Lists of the dim-9 operators

3.5.1 Classes involving two-fermions

Class $F_L^2 \psi^2 D^2$: 10 types

$$\mathcal{O}_{G_L^2 \bar{u}_R u_L D^2}(0, 0) \Bigg| \begin{aligned} & G_L^A{}_{\nu\lambda} G_L^{A\nu\lambda} \left(D_\mu \bar{u}_{Rp}^a D^\mu u_{Lra} \right) \\ & d^{ABC} \left(\lambda^C \right)_a^b G_L^A{}_{\nu\lambda} G_L^{B\nu\lambda} \left(D_\mu \bar{u}_{Rp}^a D^\mu u_{Lrb} \right) \\ & f^{ABC} \left(\lambda^C \right)_a^b G_L^A{}_{\lambda}{}^\mu G_L^{B\lambda\nu} \left(D_\mu \bar{u}_{Rp}^a D_\nu u_{Lrb} \right) \\ & i G_L^{A\lambda\rho} G_L^A{}_{\mu\nu} \left(D_\lambda \bar{u}_{Rp}^a \sigma^{\mu\nu} D_\rho u_{Lra} \right) \\ & i d^{ABC} \left(\lambda^C \right)_a^b G_L^{A\lambda\rho} G_L^B{}_{\mu\nu} \left(D_\lambda \bar{u}_{Rp}^a \sigma^{\mu\nu} D_\rho u_{Lrb} \right) \end{aligned} \quad (3.444)$$

$$\mathcal{O}_{G_L^2 \bar{d}_R d_L D^2}(0, 0) \Bigg| \begin{aligned} & G_L^A{}_{\nu\lambda} G_L^{A\nu\lambda} \left(D_\mu \bar{d}_{Rp}^a D^\mu d_{Lra} \right) \\ & d^{ABC} \left(\lambda^C \right)_a^b G_L^A{}_{\nu\lambda} G_L^{B\nu\lambda} \left(D_\mu \bar{d}_{Rp}^a D^\mu d_{Lrb} \right) \\ & f^{ABC} \left(\lambda^C \right)_a^b G_L^A{}_{\lambda}{}^\mu G_L^{B\lambda\nu} \left(D_\mu \bar{d}_{Rp}^a D_\nu d_{Lrb} \right) \\ & i G_L^{A\lambda\rho} G_L^A{}_{\mu\nu} \left(D_\lambda \bar{d}_{Rp}^a \sigma^{\mu\nu} D_\rho d_{Lra} \right) \\ & i d^{ABC} \left(\lambda^C \right)_a^b G_L^{A\lambda\rho} G_L^B{}_{\mu\nu} \left(D_\lambda \bar{d}_{Rp}^a \sigma^{\mu\nu} D_\rho d_{Lrb} \right) \end{aligned} \quad (3.445)$$

$$\mathcal{O}_{G_L^2 \bar{e}_R e_L D^2}(0, 0) \Bigg| \begin{aligned} & G_L^A{}_{\nu\lambda} G_L^{A\nu\lambda} \left(D_\mu \bar{e}_{Rp} D^\mu e_{Lr} \right) \\ & i G_L^{A\lambda\rho} G_L^A{}_{\mu\nu} \left(D_\lambda \bar{e}_{Rp} \sigma^{\mu\nu} D_\rho e_{Lr} \right) \end{aligned} \quad (3.446)$$

$$\mathcal{O}_{G_L^2 \nu_L^2 D^2}(0, 2) \Bigg| \begin{aligned} & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] G_L^A{}_{\nu\lambda} G_L^{A\nu\lambda} \left(D_\mu \nu_{Lp} C D^\mu \nu_{Lr} \right) \\ & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i G_L^{A\lambda\rho} G_L^A{}_{\mu\nu} \left(D_\lambda \nu_{Lp} C \sigma^{\mu\nu} D_\rho \nu_{Lr} \right) \end{aligned} \quad (3.447)$$

$$\mathcal{O}_{F_L G_L \bar{u}_R u_L D^2}(0, 0) \Bigg| \begin{aligned} & \left(\lambda^A \right)_a^b F_{L\nu\lambda} G_L^{A\nu\lambda} \left(D_\mu \bar{u}_{Rp}^a D^\mu u_{Lrb} \right) \\ & \left(\lambda^A \right)_a^b F_{L\lambda}{}^\mu G_L^{A\lambda\nu} \left(D_\mu \bar{u}_{Rp}^a D_\nu u_{Lrb} \right) \\ & i \left(\lambda^A \right)_a^b F_L{}^{\lambda\rho} G_L^A{}_{\mu\nu} \left(D_\lambda \bar{u}_{Rp}^a \sigma^{\mu\nu} D_\rho u_{Lrb} \right) \end{aligned} \quad (3.448)$$

$$\mathcal{O}_{F_L G_L \bar{d}_R d_L D^2}(0, 0) \Bigg| \begin{aligned} & \left(\lambda^A \right)_a^b F_{L\nu\lambda} G_L^{A\nu\lambda} \left(D_\mu \bar{d}_{Rp}^a D^\mu d_{Lrb} \right) \\ & \left(\lambda^A \right)_a^b F_{L\lambda}{}^\mu G_L^{A\lambda\nu} \left(D_\mu \bar{d}_{Rp}^a D_\nu d_{Lrb} \right) \\ & i \left(\lambda^A \right)_a^b F_L{}^{\lambda\rho} G_L^A{}_{\mu\nu} \left(D_\lambda \bar{d}_{Rp}^a \sigma^{\mu\nu} D_\rho d_{Lrb} \right) \end{aligned} \quad (3.449)$$

$$\mathcal{O}_{F_L^2 \bar{u}_R u_L D^2}(0, 0) \Bigg| \begin{aligned} & F_{L\nu\lambda} F_L{}^{\nu\lambda} \left(D_\mu \bar{u}_{Rp}^a D^\mu u_{Lra} \right) \\ & i F_{L\mu\nu} F_L{}^{\lambda\rho} \left(D_\lambda \bar{u}_{Rp}^a \sigma^{\mu\nu} D_\rho u_{Lra} \right) \end{aligned} \quad (3.450)$$

$$\mathcal{O}_{F_L^2 \bar{d}_R d_L D^2}(0,0) \left| \begin{array}{l} F_{L\nu\lambda} F_L^{\nu\lambda} (D_\mu \bar{d}_{Rp}^a D^\mu d_{Lra}) \\ i F_{L\mu\nu} F_L^{\lambda\rho} (D_\lambda \bar{d}_{Rp}^a \sigma^{\mu\nu} D_\rho d_{Lra}) \end{array} \right. \quad (3.451)$$

$$\mathcal{O}_{F_L^2 \bar{e}_R e_L D^2}(0,0) \left| \begin{array}{l} F_{L\nu\lambda} F_L^{\nu\lambda} (D_\mu \bar{e}_{Rp} D^\mu e_{Lr}) \\ i F_{L\mu\nu} F_L^{\lambda\rho} (D_\lambda \bar{e}_{Rp} \sigma^{\mu\nu} D_\rho e_{Lr}) \end{array} \right. \quad (3.452)$$

$$\mathcal{O}_{F_L^2 \nu_L^2 D^2}(0,2) \left| \begin{array}{l} \mathcal{Y}[\overline{[p]}] F_{L\nu\lambda} F_L^{\nu\lambda} (D_\mu \nu_{Lp} C D^\mu \nu_{Lr}) \\ \mathcal{Y}[\overline{[p]}] i F_{L\mu\nu} F_L^{\lambda\rho} (D_\lambda \nu_{Lp} C \sigma^{\mu\nu} D_\rho \nu_{Lr}) \end{array} \right. \quad (3.453)$$

Class $F_L F_R \psi^2 D^2$: 12 types

$$\mathcal{O}_{G_L G_R \bar{u}_R u_L D^2}(0,0) \left| \begin{array}{l} d^{ABC} (\lambda^C)^b G_L^{A\mu} G_R^{B\nu\lambda} (\bar{u}_{Rp}^a D_\mu D_\nu u_{Lrb}) \\ f^{ABC} (\lambda^C)^b G_L^{A\mu} G_R^{B\nu\lambda} (\bar{u}_{Rp}^a D_\mu D_\nu u_{Lrb}) \\ G_L^{A\mu} G_R^{A\nu\lambda} (\bar{u}_{Rp}^a D_\mu D_\nu u_{Lra}) \end{array} \right. \quad (3.454)$$

$$\mathcal{O}_{F_R G_L \bar{u}_R u_L D^2}(0,0) \left| (\lambda^A)_a^b F_R^{\nu\lambda} G_L^{A\mu} (\bar{u}_{Rp}^a D_\mu D_\nu u_{Lrb}) \right. \quad (3.455)$$

$$\mathcal{O}_{G_L G_R \bar{d}_R d_L D^2}(0,0) \left| \begin{array}{l} d^{ABC} (\lambda^C)^b G_L^{A\mu} G_R^{B\nu\lambda} (\bar{d}_{Rp}^a D_\mu D_\nu d_{Lrb}) \\ f^{ABC} (\lambda^C)^b G_L^{A\mu} G_R^{B\nu\lambda} (\bar{d}_{Rp}^a D_\mu D_\nu d_{Lrb}) \\ G_L^{A\mu} G_R^{A\nu\lambda} (\bar{d}_{Rp}^a D_\mu D_\nu d_{Lra}) \end{array} \right. \quad (3.456)$$

$$\mathcal{O}_{F_R G_L \bar{d}_R d_L D^2}(0,0) \left| (\lambda^A)_a^b F_R^{\nu\lambda} G_L^{A\mu} (\bar{d}_{Rp}^a D_\mu D_\nu d_{Lrb}) \right. \quad (3.457)$$

$$\mathcal{O}_{G_L G_R \bar{e}_R e_L D^2}(0,0) \left| G_L^{A\mu} G_R^{A\nu\lambda} (\bar{e}_{Rp} D_\mu D_\nu e_{Lr}) \right. \quad (3.458)$$

$$\mathcal{O}_{G_L G_R \nu_L^2 D^2}(0,2) \left| \mathcal{Y}[\overline{[p]}] G_L^{A\mu} G_R^{A\nu\lambda} (\nu_{Lp} C D_\mu D_\nu \nu_{Lr}) \right. \quad (3.459)$$

$$\mathcal{O}_{F_L G_R \bar{u}_R u_L D^2}(0,0) \left| (\lambda^A)_a^b F_L^\mu G_R^{A\nu\lambda} (\bar{u}_{Rp}^a D_\mu D_\nu u_{Lrb}) \right. \quad (3.460)$$

$$\mathcal{O}_{F_L F_R \bar{u}_R u_L D^2}(0,0) \left| F_L^\mu F_R^{\nu\lambda} (\bar{u}_{Rp}^a D_\mu D_\nu u_{Lra}) \right. \quad (3.461)$$

$$\mathcal{O}_{F_L G_R \bar{d}_R d_L D^2}(0,0) \left| (\lambda^A)_a^b F_L^\mu G_R^{A\nu\lambda} (\bar{d}_{Rp}^a D_\mu D_\nu d_{Lrb}) \right. \quad (3.462)$$

$$\mathcal{O}_{F_L F_R \bar{d}_R d_L D^2}(0,0) \left| F_L^\mu F_R^{\nu\lambda} (\bar{d}_{Rp}^a D_\mu D_\nu d_{Lra}) \right. \quad (3.463)$$

$$\mathcal{O}_{F_L F_R \bar{e}_R e_L D^2}(0,0) \left| F_L^\mu F_R^{\nu\lambda} (\bar{e}_{Rp} D_\mu D_\nu e_{Lr}) \right. \quad (3.464)$$

$$\mathcal{O}_{F_L F_R \nu_L^2 D^2}(0,2) \left| \mathcal{Y}[\overline{[p]}] F_L^\mu F_R^{\nu\lambda} (\nu_{Lp} C D_\mu D_\nu \nu_{Lr}) \right. \quad (3.465)$$

Class $F_L^2 \psi^{\dagger 2} D^2$: 10 types

$$\mathcal{O}_{G_L^2 u_R \bar{u}_L D^2}(0,0) \left| \begin{array}{l} G_L^{A\nu\lambda} G_L^{A\nu\lambda} (D^\mu \bar{u}_{Lr}^a D_\mu u_{Rpa}) \\ d^{ABC} (\lambda^C)^a G_L^{A\nu\lambda} G_L^{B\nu\lambda} (D^\mu \bar{u}_{Lr}^b D_\mu u_{Rpa}) \\ f^{ABC} (\lambda^C)^b G_L^{A\mu} G_L^{B\lambda\nu} (D_\nu \bar{u}_{Lr}^b D_\mu u_{Rpa}) \end{array} \right. \quad (3.466)$$

$$\mathcal{O}_{G_L^2 d_R \bar{d}_L D^2}(0,0) \left| \begin{array}{l} G_{L\nu\lambda}^A G_L^{A\nu\lambda} \left(D^\mu \bar{d}_{Lr}^a D_\mu d_{Rpa} \right) \\ d^{ABC} \left(\lambda^C \right)_a^b G_{L\nu\lambda}^A G_L^{B\nu\lambda} \left(D^\mu \bar{d}_{Lr}^b D_\mu d_{Rpa} \right) \\ f^{ABC} \left(\lambda^C \right)_b^a G_{L\lambda}^A G_L^{B\lambda\nu} \left(D_\nu \bar{d}_{Lr}^b D_\mu d_{Rpa} \right) \end{array} \right. \quad (3.467)$$

$$\mathcal{O}_{G_L^2 e_R \bar{e}_L D^2}(0,0) \left| G_{L\nu\lambda}^A G_L^{A\nu\lambda} \left(D^\mu \bar{e}_{Lr} D_\mu e_{Rp} \right) \right. \quad (3.468)$$

$$\mathcal{O}_{G_L^2 \bar{\nu}_L^2 D^2}(0,-2) \left| \mathcal{Y}[\overline{[p]r}] G_{L\nu\lambda}^A G_L^{A\nu\lambda} \left(D_\mu \bar{\nu}_{Lp} C D^\mu \bar{\nu}_{Lr} \right) \right. \quad (3.469)$$

$$\mathcal{O}_{F_L G_L u_R \bar{u}_L D^2}(0,0) \left| \begin{array}{l} \left(\lambda^A \right)_b^a F_{L\nu\lambda} G_L^{A\nu\lambda} \left(D^\mu \bar{u}_{Lr}^b D_\mu u_{Rpa} \right) \\ \left(\lambda^A \right)_b^a F_{L\lambda}^\mu G_L^{A\lambda\nu} \left(D_\nu \bar{u}_{Lr}^b D_\mu u_{Rpa} \right) \end{array} \right. \quad (3.470)$$

$$\mathcal{O}_{F_L G_L d_R \bar{d}_L D^2}(0,0) \left| \begin{array}{l} \left(\lambda^A \right)_b^a F_{L\nu\lambda} G_L^{A\nu\lambda} \left(D^\mu \bar{d}_{Lr}^b D_\mu d_{Rpa} \right) \\ \left(\lambda^A \right)_b^a F_{L\lambda}^\mu G_L^{A\lambda\nu} \left(D_\nu \bar{d}_{Lr}^b D_\mu d_{Rpa} \right) \end{array} \right. \quad (3.471)$$

$$\mathcal{O}_{F_L^2 u_R \bar{u}_L D^2}(0,0) \left| F_{L\nu\lambda} F_L^{\nu\lambda} \left(D^\mu \bar{u}_{Lr}^a D_\mu u_{Rpa} \right) \right. \quad (3.472)$$

$$\mathcal{O}_{F_L^2 d_R \bar{d}_L D^2}(0,0) \left| F_{L\nu\lambda} F_L^{\nu\lambda} \left(D^\mu \bar{d}_{Lr}^a D_\mu d_{Rpa} \right) \right. \quad (3.473)$$

$$\mathcal{O}_{F_L^2 e_R \bar{e}_L D^2}(0,0) \left| F_{L\nu\lambda} F_L^{\nu\lambda} \left(D^\mu \bar{e}_{Lr} D_\mu e_{Rp} \right) \right. \quad (3.474)$$

$$\mathcal{O}_{F_L^2 \bar{\nu}_L^2 D^2}(0,-2) \left| \mathcal{Y}[\overline{[p]r}] F_{L\nu\lambda} F_L^{\nu\lambda} \left(D_\mu \bar{\nu}_{Lp} C D^\mu \bar{\nu}_{Lr} \right) \right. \quad (3.475)$$

Class $F_L^3 \psi^2$: 14 types

$$\mathcal{O}_{G_L^3 \bar{u}_R u_L}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_{L\mu\nu}^A G_{L\lambda\rho}^B G_L^{B\mu\nu} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ i \left(\lambda^C \right)_a^b G_{L\mu\nu}^A G_L^{A\mu\nu} G_{L\lambda\rho}^C \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ id^{ADE} d^{BCD} \left(\lambda^E \right)_b^a G_{L\mu\nu}^A G_L^{B\mu\nu} G_{L\lambda\rho}^C \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ id^{BDE} f^{ACD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_L^{B\mu\nu} G_{L\lambda\rho}^C \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ id^{ABC} G_{L\mu\nu}^A G_L^{B\mu\nu} G_{L\lambda\rho}^C \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lra} \right) \\ d^{CDE} f^{ABD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_L^{B\mu}{}_\lambda G_L^{C\nu\lambda} \left(\bar{u}_{Rp}^a u_{Lrb} \right) \\ f^{ABC} G_{L\mu\nu}^A G_L^{B\mu}{}_\lambda G_L^{C\nu\lambda} \left(\bar{u}_{Rp}^a u_{Lra} \right) \end{array} \right. \quad (3.476)$$

$$\mathcal{O}_{G_L^3 \bar{d}_R d_L}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_{L\mu\nu}^A G_{L\lambda\rho}^B G_L^{B\mu\nu} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ i \left(\lambda^C \right)_a^b G_{L\mu\nu}^A G_L^{A\mu\nu} G_{L\lambda\rho}^C \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ id^{ADE} d^{BCD} \left(\lambda^E \right)_b^a G_{L\mu\nu}^A G_L^{B\mu\nu} G_{L\lambda\rho}^C \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ id^{BDE} f^{ACD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_L^{B\mu\nu} G_{L\lambda\rho}^C \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ id^{ABC} G_{L\mu\nu}^A G_L^{B\mu\nu} G_{L\lambda\rho}^C \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lra} \right) \\ d^{CDE} f^{ABD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_L^{B\mu}{}_\lambda G_L^{C\nu\lambda} \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ f^{ABC} G_{L\mu\nu}^A G_L^{B\mu}{}_\lambda G_L^{C\nu\lambda} \left(\bar{d}_{Rp}^a d_{Lra} \right) \end{array} \right. \quad (3.477)$$

$$\mathcal{O}_{G_L^3 \bar{e}_R e_L}^{(1,2)}(0,0) \left| \begin{array}{l} i d^{ABC} G_L^A{}_{\mu\nu} G_L^{B\mu\nu} G_L^C{}_{\lambda\rho} \left(\bar{e}_{Rp} \sigma^{\lambda\rho} e_{Lr} \right) \\ f^{ABC} \left(\bar{e}_{Rp} e_{Lr} \right) G_L^A{}_{\mu\nu} G_L^{B\mu}{}_{\lambda} G_L^{C\nu\lambda} \end{array} \right. \quad (3.478)$$

$$\mathcal{O}_{G_L^3 \nu_L^2}^{(1,2)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i d^{ABC} G_L^A{}_{\mu\nu} G_L^{B\mu\nu} G_L^C{}_{\lambda\rho} \left(\nu_{Lp} C \sigma^{\lambda\rho} \nu_{Lr} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] f^{ABC} \left(\nu_{Lp} C \nu_{Lr} \right) G_L^A{}_{\mu\nu} G_L^{B\mu}{}_{\lambda} G_L^{C\nu\lambda} \end{array} \right. \quad (3.479)$$

$$\mathcal{O}_{F_L G_L^2 \bar{u}_R u_L}^{(1\sim 6)}(0,0) \left| \begin{array}{l} i F_{L\mu\nu} G_L^A{}_{\lambda\rho} G_L^{A\mu\nu} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lra} \right) \\ i d^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu\nu} G_L^B{}_{\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ i f^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu\nu} G_L^B{}_{\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ f^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{B\nu\lambda} \left(\bar{u}_{Rp}^a u_{Lrb} \right) \\ i F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{A\lambda}{}_{\rho} \left(\bar{u}_{Rp}^a \sigma^{\nu\rho} u_{Lra} \right) \\ i d^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{B\lambda}{}_{\rho} \left(\bar{u}_{Rp}^a \sigma^{\nu\rho} u_{Lrb} \right) \end{array} \right. \quad (3.480)$$

$$\mathcal{O}_{F_L G_L^2 \bar{d}_R d_L}^{(1\sim 6)}(0,0) \left| \begin{array}{l} i F_{L\mu\nu} G_L^A{}_{\lambda\rho} G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lra} \right) \\ i d^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu\nu} G_L^B{}_{\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ i f^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu\nu} G_L^B{}_{\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ f^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{B\nu\lambda} \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ i F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{A\lambda}{}_{\rho} \left(\bar{d}_{Rp}^a \sigma^{\nu\rho} d_{Lra} \right) \\ i d^{ABC} \left(\lambda^C \right)_a^b F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{B\lambda}{}_{\rho} \left(\bar{d}_{Rp}^a \sigma^{\nu\rho} d_{Lrb} \right) \end{array} \right. \quad (3.481)$$

$$\mathcal{O}_{F_L G_L^2 \bar{e}_R e_L}^{(1,2)}(0,0) \left| \begin{array}{l} i F_{L\mu\nu} G_L^A{}_{\lambda\rho} G_L^{A\mu\nu} \left(\bar{e}_{Rp} \sigma^{\lambda\rho} e_{Lr} \right) \\ i F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{A\lambda}{}_{\rho} \left(\bar{e}_{Rp} \sigma^{\nu\rho} e_{Lr} \right) \end{array} \right. \quad (3.482)$$

$$\mathcal{O}_{F_L G_L^2 \nu_L^2}^{(1,2)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i F_{L\mu\nu} G_L^A{}_{\lambda\rho} G_L^{A\mu\nu} \left(\nu_{Lp} C \sigma^{\lambda\rho} \nu_{Lr} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i F_{L\mu\nu} G_L^{A\mu}{}_{\lambda} G_L^{A\lambda}{}_{\rho} \left(\nu_{Lp} C \sigma^{\nu\rho} \nu_{Lr} \right) \end{array} \right. \quad (3.483)$$

$$\mathcal{O}_{F_L^2 G_L \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b F_{L\mu\nu} F_L^{\mu\nu} G_L^A{}_{\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \\ i \left(\lambda^A \right)_a^b F_{L\lambda\rho} F_{L\mu\nu} G_L^{A\mu\nu} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lrb} \right) \end{array} \right. \quad (3.484)$$

$$\mathcal{O}_{F_L^2 G_L \bar{d}_R d_L}^{(1,2)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b F_{L\mu\nu} F_L^{\mu\nu} G_L^A{}_{\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \\ i \left(\lambda^A \right)_a^b F_{L\lambda\rho} F_{L\mu\nu} G_L^{A\mu\nu} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lrb} \right) \end{array} \right. \quad (3.485)$$

$$\mathcal{O}_{F_L^3 \bar{u}_R u_L}(0,0) \left| i F_{L\lambda\rho} F_{L\mu\nu} F_L^{\mu\nu} \left(\bar{u}_{Rp}^a \sigma^{\lambda\rho} u_{Lra} \right) \right. \quad (3.486)$$

$$\mathcal{O}_{F_L^3 \bar{d}_R d_L}(0,0) \left| i F_{L\lambda\rho} F_{L\mu\nu} F_L^{\mu\nu} \left(\bar{d}_{Rp}^a \sigma^{\lambda\rho} d_{Lra} \right) \right. \quad (3.487)$$

$$\mathcal{O}_{F_L^3 \bar{e}_R e_L}(0,0) \left| i F_{L\lambda\rho} F_{L\mu\nu} F_L^{\mu\nu} \left(\bar{e}_{Rp} \sigma^{\lambda\rho} e_{Lr} \right) \right. \quad (3.488)$$

$$\mathcal{O}_{F_L^3 \nu_L^2}(0, 2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i F_{L\lambda\rho} F_{L\mu\nu} F_L^{\mu\nu} \left(\nu_{Lp} C \sigma^{\lambda\rho} \nu_{Lr} \right) \quad (3.489)$$

Class $F_L^3 \psi^{\dagger 2}$: 6 types

$$\mathcal{O}_{G_L^3 u_R \bar{u}_L}^{(1,2)}(0, 0) \Big| \begin{array}{l} d^{CDE} f^{ABD} \left(\lambda^E \right)_b^a G_{L\mu\nu}^A G_L^{B\mu} G_L^{C\nu\lambda} \left(\bar{u}_{Lr}^b u_{Rpa} \right) \\ f^{ABC} G_{L\mu\nu}^A G_L^{B\mu} G_L^{C\nu\lambda} \left(\bar{u}_{Lr}^a u_{Rpa} \right) \end{array} \quad (3.490)$$

$$\mathcal{O}_{G_L^3 d_R \bar{d}_L}^{(1,2)}(0, 0) \Big| \begin{array}{l} d^{CDE} f^{ABD} \left(\lambda^E \right)_b^a G_{L\mu\nu}^A G_L^{B\mu} G_L^{C\nu\lambda} \left(\bar{d}_{Lr}^b d_{Rpa} \right) \\ f^{ABC} G_{L\mu\nu}^A G_L^{B\mu} G_L^{C\nu\lambda} \left(\bar{d}_{Lr}^a d_{Rpa} \right) \end{array} \quad (3.491)$$

$$\mathcal{O}_{G_L^3 e_R \bar{e}_L}(0, 0) \Big| f^{ABC} \left(\bar{e}_{Lr} e_{Rp} \right) G_{L\mu\nu}^A G_L^{B\mu} G_L^{C\nu\lambda} \quad (3.492)$$

$$\mathcal{O}_{G_L^3 \bar{\nu}_L^2}(0, -2) \Big| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] f^{ABC} \left(\bar{\nu}_{Lp} C \bar{\nu}_{Lr} \right) G_{L\mu\nu}^A G_L^{B\mu} G_L^{C\nu\lambda} \quad (3.493)$$

$$\mathcal{O}_{F_L G_L^2 u_R \bar{u}_L}(0, 0) \Big| f^{ABC} \left(\lambda^C \right)_b^a F_{L\mu\nu} G_L^{A\mu} G_L^{B\nu\lambda} \left(\bar{u}_{Lr}^b u_{Rpa} \right) \quad (3.494)$$

$$\mathcal{O}_{F_L G_L^2 d_R \bar{d}_L}(0, 0) \Big| f^{ABC} \left(\lambda^C \right)_b^a F_{L\mu\nu} G_L^{A\mu} G_L^{B\nu\lambda} \left(\bar{d}_{Lr}^b d_{Rpa} \right) \quad (3.495)$$

Class $F_L F_R^2 \psi^2$: 20 types

$$\mathcal{O}_{G_L G_R^2 \bar{u}_R u_L}^{(1\sim 5)}(0, 0) \Big| \begin{array}{l} i \left(\lambda^A \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{B\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i \left(\lambda^C \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^A G_R^{C\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i d^{ADE} d^{BCD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i d^{CDE} f^{ABD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i d^{ABC} G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra} \right) \end{array} \quad (3.496)$$

$$\mathcal{O}_{F_R G_L G_R \bar{u}_R u_L}^{(1\sim 3)}(0, 0) \Big| \begin{array}{l} i d^{ABC} \left(\lambda^C \right)_a^b F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{B\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i f^{ABC} \left(\lambda^C \right)_a^b F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{B\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \\ i F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{A\lambda\rho} \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra} \right) \end{array} \quad (3.497)$$

$$\mathcal{O}_{F_R^2 G_L \bar{u}_R u_L}(0, 0) \Big| i \left(\lambda^A \right)_a^b F_{R\lambda\rho} F_R^{\lambda\rho} G_{L\mu\nu}^A \left(\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb} \right) \quad (3.498)$$

$$\mathcal{O}_{G_L G_R^2 \bar{d}_R d_L}^{(1\sim 5)}(0, 0) \Big| \begin{array}{l} i \left(\lambda^C \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^A G_R^{C\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb} \right) \\ i d^{ABD} d^{CDE} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb} \right) \\ i d^{CDE} f^{ABD} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb} \right) \\ i f^{ABD} f^{CDE} \left(\lambda^E \right)_a^b G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb} \right) \\ i d^{ABC} G_{L\mu\nu}^A G_{R\lambda\rho}^B G_R^{C\lambda\rho} \left(\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra} \right) \end{array} \quad (3.499)$$

$$\mathcal{O}_{F_R^2 G_L G_R \bar{d}_R d_L}(0,0) \left| \begin{array}{l} i d^{ABC} (\lambda^C)^b F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{B\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb}) \\ i f^{ABC} (\lambda^C)^b_a F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{B\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb}) \\ i F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{A\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra}) \end{array} \right. \quad (3.500)$$

$$\mathcal{O}_{F_R^2 G_L \bar{d}_R d_L}(0,0) \left| i (\lambda^A)^b_a F_{R\lambda\rho} F_R^{\lambda\rho} G_{L\mu\nu}^A (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb}) \right. \quad (3.501)$$

$$\mathcal{O}_{G_L G_R^2 \bar{e}_R e_L}(0,0) \left| i d^{ABC} G_{L\mu\nu}^A G_R^{B\lambda\rho} G_R^{C\lambda\rho} (\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr}) \right. \quad (3.502)$$

$$\mathcal{O}_{F_R G_L G_R \bar{e}_R e_L}(0,0) \left| i F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{A\lambda\rho} (\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr}) \right. \quad (3.503)$$

$$\mathcal{O}_{G_L G_R^2 \nu_L^2}(0,2) \left| \mathcal{Y} \left[\frac{p}{r} \right] i d^{ABC} G_{L\mu\nu}^A G_R^{B\lambda\rho} G_R^{C\lambda\rho} (\nu_{Lp} C \sigma^{\mu\nu} \nu_{Lr}) \right. \quad (3.504)$$

$$\mathcal{O}_{F_R G_L G_R \nu_L^2}(0,2) \left| \mathcal{Y} \left[\frac{p}{r} \right] i F_{R\lambda\rho} G_{L\mu\nu}^A G_R^{A\lambda\rho} (\nu_{Lp} C \sigma^{\mu\nu} \nu_{Lr}) \right. \quad (3.505)$$

$$\mathcal{O}_{F_L G_R^2 \bar{u}_R u_L}(0,0) \left| \begin{array}{l} i d^{ABC} (\lambda^C)^b_a F_{L\mu\nu} G_{R\lambda\rho}^A G_R^{B\lambda\rho} (\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb}) \\ i F_{L\mu\nu} G_{R\lambda\rho}^A G_R^{A\lambda\rho} (\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra}) \end{array} \right. \quad (3.506)$$

$$\mathcal{O}_{F_L F_R G_R \bar{u}_R u_L}(0,0) \left| i (\lambda^A)^b_a F_{L\mu\nu} F_{R\lambda\rho} G_R^{A\lambda\rho} (\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lrb}) \right. \quad (3.507)$$

$$\mathcal{O}_{F_L F_R^2 \bar{u}_R u_L}(0,0) \left| i F_{L\mu\nu} F_{R\lambda\rho} F_R^{\lambda\rho} (\bar{u}_{Rp}^a \sigma^{\mu\nu} u_{Lra}) \right. \quad (3.508)$$

$$\mathcal{O}_{F_L G_R^2 \bar{d}_R d_L}(0,0) \left| \begin{array}{l} i d^{ABC} (\lambda^C)^b_a F_{L\mu\nu} G_{R\lambda\rho}^A G_R^{B\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb}) \\ i F_{L\mu\nu} G_{R\lambda\rho}^A G_R^{A\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra}) \end{array} \right. \quad (3.509)$$

$$\mathcal{O}_{F_L F_R G_R \bar{d}_R d_L}(0,0) \left| i (\lambda^A)^b_a F_{L\mu\nu} F_{R\lambda\rho} G_R^{A\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lrb}) \right. \quad (3.510)$$

$$\mathcal{O}_{F_L F_R^2 \bar{d}_R d_L}(0,0) \left| i F_{L\mu\nu} F_{R\lambda\rho} F_R^{\lambda\rho} (\bar{d}_{Rp}^a \sigma^{\mu\nu} d_{Lra}) \right. \quad (3.511)$$

$$\mathcal{O}_{F_L G_R^2 \bar{e}_R e_L}(0,0) \left| i F_{L\mu\nu} G_{R\lambda\rho}^A G_R^{A\lambda\rho} (\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr}) \right. \quad (3.512)$$

$$\mathcal{O}_{F_L F_R^2 \bar{e}_R e_L}(0,0) \left| i F_{L\mu\nu} F_{R\lambda\rho} F_R^{\lambda\rho} (\bar{e}_{Rp} \sigma^{\mu\nu} e_{Lr}) \right. \quad (3.513)$$

$$\mathcal{O}_{F_L G_R^2 \nu_L^2}(0,2) \left| \mathcal{Y} \left[\frac{p}{r} \right] i F_{L\mu\nu} G_{R\lambda\rho}^A G_R^{A\lambda\rho} (\nu_{Lp} C \sigma^{\mu\nu} \nu_{Lr}) \right. \quad (3.514)$$

$$\mathcal{O}_{F_L F_R^2 \nu_L^2}(0,2) \left| \mathcal{Y} \left[\frac{p}{r} \right] i F_{L\mu\nu} F_{R\lambda\rho} F_R^{\lambda\rho} (\nu_{Lp} C \sigma^{\mu\nu} \nu_{Lr}) \right. \quad (3.515)$$

3.5.2 Classes involving four-fermions

Class $\psi^3\psi^\dagger D^3$: 52 types

$$\mathcal{O}_{\bar{u}_R u_L^2 \bar{u}_L D^3}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) \left(D^\mu \bar{u}_{Lt}^b \gamma^\nu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu u_{Lsc} \right) \left(D^\mu \bar{u}_{Lt}^c \gamma^\nu u_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) \left(D^\mu \bar{u}_{Lt}^b \gamma^\nu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu u_{Lsc} \right) \left(D^\mu \bar{u}_{Lt}^c \gamma^\nu u_{Lra} \right) \end{array} \right. \quad (3.516)$$

$$\mathcal{O}_{d_L e_R u_L^2 D^3}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \epsilon^{abc} (d_{Lpa} C D_\mu D_\nu u_{Lsc}) (u_{Lrb} C \gamma^\nu D^\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \epsilon^{abc} (d_{Lpa} C D_\mu D_\nu u_{Lsc}) (u_{Lrb} C \gamma^\nu D^\mu e_{Rt}) \end{array} \right. \quad (3.517)$$

$$\mathcal{O}_{d_R e_L u_L^2 D^3}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \epsilon^{abc} (e_{Lp} C D_\mu D_\nu u_{Lsb}) (u_{Lra} C \gamma^\nu D^\mu d_{Rtc}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \epsilon^{abc} (e_{Lp} C D_\mu D_\nu u_{Lsb}) (u_{Lra} C \gamma^\nu D^\mu d_{Rtc}) \end{array} \right. \quad (3.518)$$

$$\mathcal{O}_{\bar{u}_R^2 u_R u_L D^3}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D^\mu u_{Rtb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a \gamma^\nu D^\mu u_{Rtb} \right) \left(D_\mu \bar{u}_{Rr}^b D_\nu u_{Lsa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D^\mu u_{Rtb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\bar{u}_{Rp}^a \gamma^\nu D^\mu u_{Rtb} \right) \left(D_\mu \bar{u}_{Rr}^b D_\nu u_{Lsa} \right) \end{array} \right. \quad (3.519)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{u}_R u_L D^3}(0,0) \left| \begin{array}{l} i (d_{Lpa} C D_\mu D_\nu u_{Lsb}) \left(\bar{u}_{Rr}^b \gamma^\nu C D^\mu \bar{d}_{Lt}^a \right) \\ i (d_{Lpa} C D_\mu D_\nu u_{Lsc}) \left(\bar{u}_{Rr}^a \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \\ i \left(D^\mu \bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \left(D_\mu \bar{u}_{Rr}^b D_\nu u_{Lsb} \right) \\ i \left(D^\mu \bar{d}_{Lt}^c \gamma^\nu d_{Lpa} \right) \left(D_\mu \bar{u}_{Rr}^a D_\nu u_{Lsc} \right) \end{array} \right. \quad (3.520)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{u}_R u_L D^3}(0,0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D^\mu d_{Rtb} \right) \\ i \left(\bar{d}_{Rp}^a D_\mu D_\nu u_{Lsb} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D^\mu d_{Rta} \right) \\ i \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu d_{Rtb} \right) \left(D_\mu \bar{u}_{Rr}^b D_\nu u_{Lsa} \right) \\ i \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu d_{Rta} \right) \left(D_\mu \bar{u}_{Rr}^b D_\nu u_{Lsb} \right) \end{array} \right. \quad (3.521)$$

$$\mathcal{O}_{e_L \bar{e}_L \bar{u}_R u_L D^3}(0,0) \left| \begin{array}{l} i (e_{Lp} C D_\mu D_\nu u_{Lsa}) (\bar{u}_{Rr}^a \gamma^\nu C D^\mu \bar{e}_{Lt}) \\ i (D^\mu \bar{e}_{Lt} \gamma^\nu e_{Lp}) (D_\mu \bar{u}_{Rr}^a D_\nu u_{Lsa}) \end{array} \right. \quad (3.522)$$

$$\mathcal{O}_{\bar{e}_R e_R \bar{u}_R u_L D^3}(0,0) \left| \begin{array}{l} i (\bar{e}_{Rp} D_\mu D_\nu u_{Lsa}) (\bar{u}_{Rr}^a \gamma^\nu D^\mu e_{Rt}) \\ i (\bar{e}_{Rp} \gamma^\nu D^\mu e_{Rt}) (D_\mu \bar{u}_{Rr}^a D_\nu u_{Lsa}) \end{array} \right. \quad (3.523)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L \bar{u}_R u_L D^3}(0,0) \left| \begin{array}{l} i (\bar{u}_{Rp}^a D_\mu D_\nu \nu_{Ls}) (D^\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lra}) \\ i (D_\mu u_{Lra} C D_\nu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu C D^\mu \bar{\nu}_{Lt}) \end{array} \right. \quad (3.524)$$

$$\mathcal{O}_{d_L^2 \bar{\nu}_L u_L D^3}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{[p][r]}{[s]} \right] i\epsilon^{abc} (d_{Lpa} C D_\mu D_\nu u_{Lsc}) (D^\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lrb}) \\ \mathcal{Y} \left[\frac{[p]}{[r]} \right] i\epsilon^{abc} (D_\mu d_{Lrb} C D_\nu u_{Lsc}) (D^\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) \end{array} \right. \quad (3.525)$$

$$\mathcal{O}_{\bar{d}_R d_L u_L \bar{u}_L D^3}(1 \sim 4, 0, 0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) \left(D^\mu \bar{u}_{Lt}^b \gamma^\nu d_{Lrb} \right) \\ i \left(\bar{d}_{Rp}^a D_\mu D_\nu u_{Lsc} \right) \left(D^\mu \bar{u}_{Lt}^c \gamma^\nu d_{Lra} \right) \\ i \left(D_\mu d_{Lrb} C D_\nu u_{Lsa} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{u}_{Lt}^b \right) \\ i \left(D_\mu d_{Lra} C D_\nu u_{Lsc} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.526)$$

$$\mathcal{O}_{d_L e_L u_R u_L D^3}(1, 1) \left| \begin{array}{l} i\epsilon^{abc} (d_{Lpa} C D_\mu D_\nu u_{Lsb}) (e_{Lr} C \gamma^\nu D^\mu u_{Rtc}) \\ i\epsilon^{abc} (D_\mu e_{Lr} C D_\nu u_{Lsb}) (d_{Lpa} C \gamma^\nu D^\mu u_{Rtc}) \end{array} \right. \quad (3.527)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L u_L D^3}(1, 1) \left| \begin{array}{l} i\epsilon^{abc} (d_{Lpa} C D_\mu D_\nu \nu_{Ls}) (u_{Lrb} C \gamma^\nu D^\mu d_{Rtc}) \\ i\epsilon^{abc} (D_\mu u_{Lrb} C D_\nu \nu_{Ls}) (d_{Lpa} C \gamma^\nu D^\mu d_{Rtc}) \end{array} \right. \quad (3.528)$$

$$\mathcal{O}_{\bar{d}_R e_L \bar{\nu}_L u_L D^3}(1, 2, 0, 0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu u_{Lsa} \right) (D^\mu \bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \\ i \left(D_\mu e_{Lr} C D_\nu u_{Lsa} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.529)$$

$$\mathcal{O}_{\bar{d}_R e_R \nu_L u_L D^3}(1, 2, 0, 2) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) (u_{Lra} C \gamma^\nu D^\mu e_{Rt}) \\ i \left(D_\mu u_{Lra} C D_\nu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu e_{Rt} \right) \end{array} \right. \quad (3.530)$$

$$\mathcal{O}_{\bar{e}_R e_L u_L \bar{u}_L D^3}(1, 2, 0, 0) \left| \begin{array}{l} i \left(\bar{e}_{Rp} D_\mu D_\nu u_{Lsa} \right) (D^\mu \bar{u}_{Lt}^a \gamma^\nu e_{Lr}) \\ i \left(D_\mu e_{Lr} C D_\nu u_{Lsa} \right) \left(\bar{e}_{Rp} \gamma^\nu C D^\mu \bar{u}_{Lt}^a \right) \end{array} \right. \quad (3.531)$$

$$\mathcal{O}_{\bar{d}_L e_L \nu_L u_L D^3}(1, 2, 0, 2) \left| \begin{array}{l} i \left(e_{Lp} C D_\mu D_\nu \nu_{Ls} \right) \left(D^\mu \bar{d}_{Lt}^a \gamma^\nu u_{Lra} \right) \\ i \left(D_\mu u_{Lra} C D_\nu \nu_{Ls} \right) \left(D^\mu \bar{d}_{Lt}^a \gamma^\nu e_{Lp} \right) \end{array} \right. \quad (3.532)$$

$$\mathcal{O}_{\nu_L^2 u_L \bar{u}_L D^3}(1, 2, 0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{[r]}{[s]} \right] i \left(u_{Lpa} C D_\mu D_\nu \nu_{Ls} \right) (D^\mu \bar{u}_{Lt}^a \gamma^\nu \nu_{Lr}) \\ \mathcal{Y} \left[\frac{[r]}{[s]} \right] i \left(u_{Lpa} C D_\mu D_\nu \nu_{Ls} \right) (D^\mu \bar{u}_{Lt}^a \gamma^\nu \nu_{Lr}) \end{array} \right. \quad (3.533)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_L \bar{u}_R^2 D^3}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{[r][s]}{[t]} \right] i\epsilon_{abc} \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{u}_{Rs}^c \right) \left(\bar{u}_{Rr}^b \gamma^\nu C D^\mu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\frac{[r]}{[s]} \right] i\epsilon_{abc} \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{u}_{Rs}^c \right) \left(\bar{u}_{Rr}^b \gamma^\nu C D^\mu \bar{e}_{Lt} \right) \end{array} \right. \quad (3.534)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R \bar{u}_R^2 D^3}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{[r][s]}{[t]} \right] i\epsilon_{abc} \left(\bar{e}_{Rp} C D_\mu D_\nu \bar{u}_{Rs}^b \right) \left(\bar{u}_{Rr}^a \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{[r]}{[s]} \right] i\epsilon_{abc} \left(\bar{e}_{Rp} C D_\mu D_\nu \bar{u}_{Rs}^b \right) \left(\bar{u}_{Rr}^a \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.535)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{u}_R u_R D^3}(1 \sim 4, 0, 0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{u}_{Rs}^b \right) (d_{Lrb} C \gamma^\nu D^\mu u_{Rta}) \\ i \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{u}_{Rs}^c \right) (d_{Lra} C \gamma^\nu D^\mu u_{Rtc}) \\ i \left(D_\nu \bar{u}_{Rs}^b D_\mu d_{Lrb} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu u_{Rta} \right) \\ i \left(D_\nu \bar{u}_{Rs}^c D_\mu d_{Lra} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu u_{Rtc} \right) \end{array} \right. \quad (3.536)$$

$$\mathcal{O}_{d_L \bar{e}_R \bar{\nu}_L \bar{u}_R D^3}(0, -2) \left| \begin{array}{l} i (D_\mu D_\nu \bar{u}_{R_s}^a d_{Lpa}) (\bar{e}_{Rr} \gamma^\nu C D^\mu \bar{\nu}_{Lt}) \\ i (D_\mu \bar{e}_{Rr} C D_\nu \bar{u}_{R_s}^a) (D^\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) \end{array} \right. \quad (3.537)$$

$$\mathcal{O}_{d_L \bar{e}_L \nu_L \bar{u}_R D^3}(0, 0) \left| \begin{array}{l} i (d_{Lpa} C D_\mu D_\nu \nu_{Ls}) (\bar{u}_{Rr}^a \gamma^\nu C D^\mu \bar{e}_{Lt}) \\ i (D_\mu \bar{u}_{Rr}^a D_\nu \nu_{Ls}) (D^\mu \bar{e}_{Lt} \gamma^\nu d_{Lpa}) \end{array} \right. \quad (3.538)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{\nu}_L \bar{u}_R D^3}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{u}_{R_s}^c \right) \left(\bar{d}_{Rr}^b \gamma^\nu C D^\mu \bar{\nu}_{Lt} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C D_\nu \bar{u}_{R_s}^c \right) \end{array} \right. \quad (3.539)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \bar{u}_R \bar{u}_L D^3}(-1, -1) \left| \begin{array}{l} i \epsilon_{abc} \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{u}_{R_s}^b \right) (\bar{e}_{Rr} \gamma^\nu C D^\mu \bar{u}_{Lt}^c) \\ i \epsilon_{abc} \left(D_\mu \bar{e}_{Rr} C D_\nu \bar{u}_{R_s}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.540)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L \bar{u}_R D^3}(-1, 1) \left| \begin{array}{l} i \epsilon_{abc} \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) \left(\bar{u}_{Rr}^b \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \\ i \epsilon_{abc} \left(D_\mu \bar{u}_{Rr}^b D_\nu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.541)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{u}_R u_R D^3}(0, 0) \left| \begin{array}{l} i (\bar{e}_{Rp} C D_\mu D_\nu \bar{u}_{R_s}^a) (e_{Lr} C \gamma^\nu D^\mu u_{Rta}) \\ i (D_\nu \bar{u}_{R_s}^a D_\mu e_{Lr}) (\bar{e}_{Rp} \gamma^\nu D^\mu u_{Rta}) \end{array} \right. \quad (3.542)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \nu_L \bar{u}_R D^3}(0, 0) \left| \begin{array}{l} i (\bar{e}_{Rp} D_\mu D_\nu \nu_{Ls}) (\bar{u}_{Rr}^a \gamma^\nu D^\mu d_{Rta}) \\ i (D_\mu \bar{u}_{Rr}^a D_\nu \nu_{Ls}) (\bar{e}_{Rp} \gamma^\nu D^\mu d_{Rta}) \end{array} \right. \quad (3.543)$$

$$\mathcal{O}_{\nu_L^2 \bar{u}_R u_R D^3}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) (\nu_{Lr} C \gamma^\nu D^\mu u_{Rta}) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\bar{u}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) (\nu_{Lr} C \gamma^\nu D^\mu u_{Rta}) \end{array} \right. \quad (3.544)$$

$$\mathcal{O}_{d_L^2 \bar{e}_L D^3}(1, -1) \left| \mathcal{Y} \left[\frac{p}{s} \right] i \epsilon^{abc} (d_{Lpa} C D_\mu D_\nu d_{Lsc}) (D^\mu \bar{e}_{Lt} \gamma^\nu d_{Lrb}) \right. \quad (3.545)$$

$$\mathcal{O}_{\bar{d}_R d_L^2 \bar{d}_L D^3}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu d_{Lsa} \right) \left(D^\mu \bar{d}_{Lt}^b \gamma^\nu d_{Lrb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu d_{Lsc} \right) \left(D^\mu \bar{d}_{Lt}^c \gamma^\nu d_{Lra} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu d_{Lsa} \right) \left(D^\mu \bar{d}_{Lt}^b \gamma^\nu d_{Lrb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu d_{Lsc} \right) \left(D^\mu \bar{d}_{Lt}^c \gamma^\nu d_{Lra} \right) \end{array} \right. \quad (3.546)$$

$$\mathcal{O}_{\bar{d}_R d_L^2 \bar{e}_R D^3}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} (D_\mu D_\nu \bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C \gamma^\nu D^\mu d_{Rtc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} (D_\nu \bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu D^\mu d_{Rtc}) \end{array} \right. \quad (3.547)$$

$$\mathcal{O}_{d_L^2 \nu_L u_R D^3}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} (d_{Lpa} C D_\mu D_\nu \nu_{Ls}) (d_{Lrb} C \gamma^\nu D^\mu u_{Rtc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} (D_\mu d_{Lrb} C D_\nu \nu_{Ls}) (d_{Lpa} C \gamma^\nu D^\mu u_{Rtc}) \end{array} \right. \quad (3.548)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R d_L D^3}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu d_{Lsa} \right) \left(\bar{d}_{Rr}^b \gamma^\nu D^\mu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(D_\mu \bar{d}_{Rr}^b D_\nu d_{Lsa} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu d_{Lsa} \right) \left(\bar{d}_{Rr}^b \gamma^\nu D^\mu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(D_\mu \bar{d}_{Rr}^b D_\nu d_{Lsa} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu d_{Rtb} \right) \end{array} \right. \quad (3.549)$$

$$\mathcal{O}_{\bar{d}_R d_L e_L \bar{e}_L D^3}(0,0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu e_{Ls} \right) \left(D^\mu \bar{e}_{Lt} \gamma^\nu d_{Lra} \right) \\ i \left(D_\mu d_{Lra} C D_\nu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{e}_{Lt} \right) \end{array} \right. \quad (3.550)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_R D^3}(0,0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{e}_{Rs} \right) \left(d_{Lra} C \gamma^\nu D^\mu e_{Rt} \right) \\ i \left(D_\nu \bar{e}_{Rs} D_\mu d_{Lra} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu e_{Rt} \right) \end{array} \right. \quad (3.551)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L \bar{\nu}_L D^3}(0,0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) \left(D^\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lra} \right) \\ i \left(D_\mu d_{Lra} C D_\nu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.552)$$

$$\mathcal{O}_{d_L \bar{e}_L \bar{e}_R e_L D^3}(0,0) \left| \begin{array}{l} i \left(d_{Lpa} C D_\mu D_\nu e_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu C D^\mu \bar{d}_{Lt}^a \right) \\ i \left(D_\mu \bar{e}_{Rr} D_\nu e_{Ls} \right) \left(D^\mu \bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \end{array} \right. \quad (3.553)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L \bar{u}_L D^3}(0,0) \left| \begin{array}{l} i \left(d_{Lpa} C D_\mu D_\nu \nu_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu C D^\mu \bar{u}_{Lt}^a \right) \\ i \left(D_\mu \bar{e}_{Rr} D_\nu \nu_{Ls} \right) \left(D^\mu \bar{u}_{Lt}^a \gamma^\nu d_{Lpa} \right) \end{array} \right. \quad (3.554)$$

$$\mathcal{O}_{d_L \bar{d}_L \nu_L^2 D^3}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i \left(d_{Lpa} C D_\mu D_\nu \nu_{Ls} \right) \left(D^\mu \bar{d}_{Lt}^a \gamma^\nu \nu_{Lr} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(d_{Lpa} C D_\mu D_\nu \nu_{Ls} \right) \left(D^\mu \bar{d}_{Lt}^a \gamma^\nu \nu_{Lr} \right) \end{array} \right. \quad (3.555)$$

$$\mathcal{O}_{\bar{d}_R^3 e_R D^3}(-1,1) \left| \mathcal{Y} \left[\frac{p}{s} \right] i \epsilon_{abc} \left(\bar{d}_{Rp}^a C D_\mu D_\nu \bar{d}_{Rs}^c \right) \left(\bar{d}_{Rr}^b \gamma^\nu D^\mu e_{Rt} \right) \right. \quad (3.556)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L e_L D^3}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} \left(\bar{d}_{Rp}^a D_\mu D_\nu e_{Ls} \right) \left(\bar{d}_{Rr}^b \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} \left(D_\mu \bar{d}_{Rr}^b D_\nu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.557)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L \bar{u}_L D^3}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) \left(\bar{d}_{Rr}^b \gamma^\nu C D^\mu \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} \left(D_\mu \bar{d}_{Rr}^b D_\nu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C D^\mu \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.558)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_L D^3}(0,0) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu e_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu D^\mu d_{Rta} \right) \\ i \left(D_\mu \bar{e}_{Rr} D_\nu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu d_{Rta} \right) \end{array} \right. \quad (3.559)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L u_R D^3}(0,2) \left| \begin{array}{l} i \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) \left(e_{Lr} C \gamma^\nu D^\mu u_{Rta} \right) \\ i \left(D_\mu e_{Lr} C D_\nu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu D^\mu u_{Rta} \right) \end{array} \right. \quad (3.560)$$

$$\mathcal{O}_{\bar{d}_R d_R \nu_L^2 D^3}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) (\nu_{Lr} C \gamma^\nu D^\mu d_{Rta}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\bar{d}_{Rp}^a D_\mu D_\nu \nu_{Ls} \right) (\nu_{Lr} C \gamma^\nu D^\mu d_{Rta}) \end{array} \right. \quad (3.561)$$

$$\mathcal{O}_{\bar{e}_R e_L^2 \bar{e}_L D^3}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{e}_{Rp} D_\mu D_\nu e_{Ls} \right) (D^\mu \bar{e}_{Lt} \gamma^\nu e_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\bar{e}_{Rp} D_\mu D_\nu e_{Ls} \right) (D^\mu \bar{e}_{Lt} \gamma^\nu e_{Lr}) \end{array} \right. \quad (3.562)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R e_L D^3}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} \boxed{p} \\ r \end{smallmatrix} \right] i \left(\bar{e}_{Rp} D_\mu D_\nu e_{Ls} \right) (\bar{e}_{Rr} \gamma^\nu D^\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{smallmatrix} \boxed{p} \\ \boxed{r} \end{smallmatrix} \right] i \left(D_\mu \bar{e}_{Rr} D_\nu e_{Ls} \right) (\bar{e}_{Rp} \gamma^\nu D^\mu e_{Rt}) \end{array} \right. \quad (3.563)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L \bar{\nu}_L D^3}(0, 0) \left| \begin{array}{l} i \left(\bar{e}_{Rp} D_\mu D_\nu \nu_{Ls} \right) (D^\mu \bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \\ i \left(D_\mu e_{Lr} C D_\nu \nu_{Ls} \right) (\bar{e}_{Rp} \gamma^\nu C D^\mu \bar{\nu}_{Lt}) \end{array} \right. \quad (3.564)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L^2 D^3}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(e_{Lp} C D_\mu D_\nu \nu_{Ls} \right) (D^\mu \bar{e}_{Lt} \gamma^\nu \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(e_{Lp} C D_\mu D_\nu \nu_{Ls} \right) (D^\mu \bar{e}_{Lt} \gamma^\nu \nu_{Lr}) \end{array} \right. \quad (3.565)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L^2 D^3}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\bar{e}_{Rp} D_\mu D_\nu \nu_{Ls} \right) (\nu_{Lr} C \gamma^\nu D^\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\bar{e}_{Rp} D_\mu D_\nu \nu_{Ls} \right) (\nu_{Lr} C \gamma^\nu D^\mu e_{Rt}) \end{array} \right. \quad (3.566)$$

$$\mathcal{O}_{\nu_L^3 \bar{\nu}_L D^3}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} \boxed{p} \\ \boxed{s} \end{smallmatrix} \right] i \left(\nu_{Lp} C D_\mu D_\nu \nu_{Ls} \right) (D^\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Lr}) \right. \quad (3.567)$$

Class $F_L \psi^3 \psi^\dagger D$: 98 types

$$\mathcal{O}_{G_L \bar{u}_R u_L^2 \bar{u}_L D}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu u_{Lsa}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^d \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^b G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu u_{Lsc}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_s^g G_L^{A\mu}{}_\nu (u_{Lra} C D_\mu u_{Lsc}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^d \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^g G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu u_{Lsc}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lt}^d \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^b G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_s^g G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^d \gamma^\nu D_\mu u_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_d^g G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^b \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu u_{Lsa}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^d \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^b G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu u_{Lsc}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_s^g G_L^{A\mu}{}_\nu (u_{Lra} C D_\mu u_{Lsc}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^d \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^g G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu u_{Lsc}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lt}^d \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_b^b G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_s^g G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^d \gamma^\nu D_\mu u_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ \boxed{s} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^g G_L^{A\mu}{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^b \gamma^\nu D_\mu u_{Lrb} \right) \end{array} \right. \quad (3.568)$$

$$\begin{aligned}
 \mathcal{O}_{G_L e_L \bar{e}_L \bar{u}_R u_L D}^{(1\sim 4)}(0,0) & \left| \begin{aligned} & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (\bar{u}_{Rr}^a D_\mu u_{Lsb}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (D_\mu \bar{u}_{Rr}^a u_{Lsb}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (e_{Lp} C u_{Lsb}) (D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{e}_{Lt}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (e_{Lp} C D_\mu u_{Lsb}) (\bar{u}_{Rr}^a \gamma^\nu C \bar{e}_{Lt}) \end{aligned} \right. \quad (3.574)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{e}_R e_R \bar{u}_R u_L D}^{(1\sim 4)}(0,0) & \left| \begin{aligned} & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{u}_{Rr}^a D_\mu u_{Lsb}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (D_\mu \bar{u}_{Rr}^a u_{Lsb}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Rp} u_{Lsb}) (D_\mu \bar{u}_{Rr}^a \gamma^\nu e_{Rt}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Rp} D_\mu u_{Lsb}) (\bar{u}_{Rr}^a \gamma^\nu e_{Rt}) \end{aligned} \right. \quad (3.575)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \nu_L \bar{\nu}_L \bar{u}_R u_L D}^{(1\sim 4)}(0,0) & \left| \begin{aligned} & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (D_\mu u_{Lrb} C \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{u}_{Rp}^a \nu_{Ls}) (\bar{\nu}_{Lt} \gamma^\nu D_\mu u_{Lrb}) \\ & i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu u_{Lrb}) (\bar{u}_{Rp}^a D_\mu \nu_{Ls}) \end{aligned} \right. \quad (3.576)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L d_L^2 \bar{\nu}_L u_L D}^{(1\sim 8)}(1,-1) & \left| \begin{aligned} & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{acd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{acd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu d_{Lrb} C u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu d_{Lrb} C u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{acd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{acd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu d_{Lrb} C u_{Lsc}) \\ & \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_a^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu d_{Lrb} C u_{Lsc}) \end{aligned} \right. \quad (3.577)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L u_L \bar{u}_L D}^{(1 \sim 16)}(0, 0) & \left| \begin{aligned}
 & i \left(\lambda^A \right)_{\bar{d}}^b G_L^{A\mu}{}_{\nu} (d_{Lrb} C D_{\mu} u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^d \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b G_L^{A\mu}{}_{\nu} (d_{Lrb} C D_{\mu} u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^c \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} (d_{Lra} C D_{\mu} u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^d \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} (d_{Lrb} C D_{\mu} u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^b \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} (D_{\mu} d_{Lrb} C u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^d \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} (D_{\mu} d_{Lrb} C u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^c \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} (D_{\mu} d_{Lra} C u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^d \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} (D_{\mu} d_{Lrb} C u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^{\nu} C \bar{u}_{Lt}^b \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lt}^d \gamma^{\nu} D_{\mu} d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^{\nu} D_{\mu} d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^d \gamma^{\nu} D_{\mu} d_{Lra} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^b \gamma^{\nu} D_{\mu} d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a D_{\mu} u_{Lsa} \right) \left(\bar{u}_{Lt}^d \gamma^{\nu} d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a D_{\mu} u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^{\nu} d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} \left(\bar{d}_{Rp}^a D_{\mu} u_{Lsc} \right) \left(\bar{u}_{Lt}^d \gamma^{\nu} d_{Lra} \right) \\
 & i \left(\lambda^A \right)_{\bar{d}}^a G_L^{A\mu}{}_{\nu} \left(\bar{u}_{Lt}^b \gamma^{\nu} d_{Lrb} \right) \left(\bar{d}_{Rp}^a D_{\mu} u_{Lsc} \right)
 \end{aligned} \right. \quad (3.578)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L d_L e_L u_R u_L D}^{(1 \sim 8)}(1, 1) & \left| \begin{aligned}
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{acd} G_L^{A\mu}{}_{\nu} (e_{Lr} C D_{\mu} u_{Lsb}) (d_{Lpa} C \gamma^{\nu} u_{Rtc}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{bcd} G_L^{A\mu}{}_{\nu} (e_{Lr} C D_{\mu} u_{Lsb}) (d_{Lpa} C \gamma^{\nu} u_{Rtc}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{acd} G_L^{A\mu}{}_{\nu} (D_{\mu} e_{Lr} C u_{Lsb}) (d_{Lpa} C \gamma^{\nu} u_{Rtc}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{bcd} G_L^{A\mu}{}_{\nu} (D_{\mu} e_{Lr} C u_{Lsb}) (d_{Lpa} C \gamma^{\nu} u_{Rtc}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{acd} G_L^{A\mu}{}_{\nu} (d_{Lpa} C u_{Lsb}) (D_{\mu} e_{Lr} C \gamma^{\nu} u_{Rtc}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{bcd} G_L^{A\mu}{}_{\nu} (d_{Lpa} C u_{Lsb}) (D_{\mu} e_{Lr} C \gamma^{\nu} u_{Rtc}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{acd} G_L^{A\mu}{}_{\nu} (e_{Lr} C \gamma^{\nu} u_{Rtc}) (d_{Lpa} C D_{\mu} u_{Lsb}) \\
 & i \left(\lambda^A \right)_{\bar{d}}^b \epsilon^{bcd} G_L^{A\mu}{}_{\nu} (e_{Lr} C \gamma^{\nu} u_{Rtc}) (d_{Lpa} C D_{\mu} u_{Lsb})
 \end{aligned} \right. \quad (3.579)
 \end{aligned}$$

$$\mathcal{O}_{G_L d_R d_L \nu_L u_L D}^{(1\sim 8)}(1, 1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (D_\mu u_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (D_\mu u_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (D_\mu u_{Lrb} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (D_\mu u_{Lrb} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (d_{Lpa} C D_\mu \nu_{Ls}) (u_{Lrb} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (d_{Lpa} C D_\mu \nu_{Ls}) (u_{Lrb} C \gamma^\nu d_{Rtc}) \end{array} \right. \quad (3.580)$$

$$\mathcal{O}_{G_L \bar{d}_R e_L \bar{\nu}_L u_L D}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (e_{Lr} C D_\mu u_{Lsb}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (D_\mu e_{Lr} C u_{Lsb}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a u_{Lsb}) (\bar{\nu}_{Lt} \gamma^\nu D_\mu e_{Lr}) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu e_{Lr}) (\bar{d}_{Rp}^a D_\mu u_{Lsb}) \end{array} \right. \quad (3.581)$$

$$\mathcal{O}_{G_L \bar{d}_R e_R \nu_L u_L D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (D_\mu u_{Lrb} C \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \nu_{Ls}) (D_\mu u_{Lrb} C \gamma^\nu e_{Rt}) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu (u_{Lrb} C \gamma^\nu e_{Rt}) (\bar{d}_{Rp}^a D_\mu \nu_{Ls}) \end{array} \right. \quad (3.582)$$

$$\mathcal{O}_{G_L \bar{e}_R e_L u_L \bar{u}_L D}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (e_{Lr} C D_\mu u_{Lsa}) (\bar{e}_{Rp} \gamma^\nu C \bar{u}_{Lt}^b) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (D_\mu e_{Lr} C u_{Lsa}) (\bar{e}_{Rp} \gamma^\nu C \bar{u}_{Lt}^b) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\bar{e}_{Rp} u_{Lsa}) (\bar{u}_{Lt}^b \gamma^\nu D_\mu e_{Lr}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\bar{e}_{Rp} D_\mu u_{Lsa}) (\bar{u}_{Lt}^b \gamma^\nu e_{Lr}) \end{array} \right. \quad (3.583)$$

$$\mathcal{O}_{G_L \bar{d}_L e_L \nu_L u_L D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu e_{Lp}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (D_\mu u_{Lra} C \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu e_{Lp}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (e_{Lp} C \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu D_\mu u_{Lra}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (e_{Lp} C D_\mu \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu u_{Lra}) \end{array} \right. \quad (3.584)$$

$$\mathcal{O}_{G_L \nu_L^2 u_L \bar{u}_L D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Lt}^b \gamma^\nu u_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (u_{Lpa} C \nu_{Ls}) (\bar{u}_{Lt}^b \gamma^\nu D_\mu \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Lt}^b \gamma^\nu u_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (u_{Lpa} C \nu_{Ls}) (\bar{u}_{Lt}^b \gamma^\nu D_\mu \nu_{Lr}) \end{array} \right. \quad (3.585)$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R \bar{e}_L \bar{u}_R^2 D}^{(1\sim 8)}(-1, -1) & \left| \begin{aligned}
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt}\right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt}\right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c\right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt}\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c\right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt}\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt}\right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt}\right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c\right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt}\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c\right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt}\right)
 \end{aligned} \right. \quad (3.586)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_L \bar{e}_R \bar{u}_R^2 D}^{(1\sim 8)}(-1, -1) & \left| \begin{aligned}
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^d G_L^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b\right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^d G_L^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b\right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^b\right) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^b\right) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b\right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b\right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{acd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^b\right) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c\right) \\
 & \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon_{abd} \left(\lambda^A\right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^b\right) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c\right)
 \end{aligned} \right. \quad (3.587)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L \bar{u}_R u_R D}^{(1\sim 16)}(0, 0) & \left| \begin{aligned}
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(D_\mu \bar{u}_{Rs}^c d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtc} \right) \left(D_\mu \bar{u}_{Rs}^c d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(D_\mu \bar{u}_{Rs}^c d_{Lra} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtd} \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(D_\mu \bar{u}_{Rs}^b d_{Lrb} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtd} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(\bar{u}_{Rs}^c D_\mu d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtc} \right) \left(\bar{u}_{Rs}^c D_\mu d_{Lrb} \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(\bar{u}_{Rs}^c D_\mu d_{Lra} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtd} \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(\bar{u}_{Rs}^b D_\mu d_{Lrb} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtd} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu d_{Lrb} C \gamma^\nu u_{Rta} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu d_{Lrb} C \gamma^\nu u_{Rtc} \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu d_{Lra} C \gamma^\nu u_{Rtd} \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \left(D_\mu d_{Lrb} C \gamma^\nu u_{Rtd} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(d_{Lrb} C \gamma^\nu u_{Rta} \right) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^c \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(d_{Lrb} C \gamma^\nu u_{Rtc} \right) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^c \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(d_{Lra} C \gamma^\nu u_{Rtd} \right) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^c \right) \\
 & i \left(\lambda^A \right)_\nu^d G_L^{A\mu} \left(d_{Lrb} C \gamma^\nu u_{Rtd} \right) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^b \right)
 \end{aligned} \right. \quad (3.588)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L d_L \bar{e}_R \bar{\nu}_L \bar{u}_R D}^{(1\sim 4)}(0, -2) & \left| \begin{aligned}
 & i \left(\lambda^A \right)_\nu^a G_L^{A\mu} \left(\bar{\nu}_{Lt} \gamma^\nu d_{Lpa} \right) \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^b \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{\nu}_{Lt} \gamma^\nu d_{Lpa} \right) \left(D_\mu \bar{e}_{Rr} C \bar{u}_{Rs}^b \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{u}_{Rs}^b d_{Lpa} \right) \left(D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{\nu}_{Lt} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{e}_{Rr} \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{u}_{Rs}^b d_{Lpa} \right)
 \end{aligned} \right. \quad (3.589)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L d_L \bar{e}_L \nu_L \bar{u}_R D}^{(1\sim 4)}(0, 0) & \left| \begin{aligned}
 & i \left(\lambda^A \right)_\nu^a G_L^{A\mu} \left(\bar{e}_{Lt} \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}^b D_\mu \nu_{Ls} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(\bar{e}_{Lt} \gamma^\nu d_{Lpa} \right) \left(D_\mu \bar{u}_{Rr}^b \nu_{Ls} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(d_{Lpa} C \nu_{Ls} \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt} \right) \\
 & i \left(\lambda^A \right)_\nu^b G_L^{A\mu} \left(d_{Lpa} C D_\mu \nu_{Ls} \right) \left(\bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt} \right)
 \end{aligned} \right. \quad (3.590)
 \end{aligned}$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \bar{\nu}_L \bar{u}_R D}^{(1\sim 8)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.591)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{e}_R \bar{u}_R \bar{u}_L D}^{(1\sim 8)}(-1, -1) \left| \begin{array}{l} i\epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(D_\mu \bar{e}_{Rr} C \bar{u}_{Rs}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(D_\mu \bar{e}_{Rr} C \bar{u}_{Rs}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \left(D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \left(D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^b \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^c \right) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^b \right) \end{array} \right. \quad (3.592)$$

$$\mathcal{O}_{G_L \bar{d}_R \bar{d}_L \nu_L \bar{u}_R D}^{(1\sim 8)}(-1, 1) \left| \begin{array}{l} i\epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{u}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{u}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(D_\mu \bar{u}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(D_\mu \bar{u}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{acd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a D_\mu \nu_{Ls} \right) \left(\bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^c \right) \\ i\epsilon_{abd} \left(\lambda^A \right)_b^{\hat{d}} G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a D_\mu \nu_{Ls} \right) \left(\bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.593)$$

$$\mathcal{O}_{G_L \bar{e}_R e_L \bar{u}_R u_R D}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} \gamma^\nu u_{Rtb} \right) \left(D_\mu \bar{u}_{Rs}^a e_{Lr} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} \gamma^\nu u_{Rtb} \right) \left(\bar{u}_{Rs}^a D_\mu e_{Lr} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^a \right) \left(D_\mu e_{Lr} C \gamma^\nu u_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(e_{Lr} C \gamma^\nu u_{Rtb} \right) \left(\bar{e}_{Rp} C D_\mu \bar{u}_{Rs}^a \right) \end{array} \right. \quad (3.594)$$

$$\mathcal{O}_{G_L d_R d_L^2 \bar{e}_R D}^{(1\sim 8)}(1, -1) \left| \begin{array}{l}
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc})
 \end{array} \right. \quad (3.599)$$

$$\mathcal{O}_{G_L d_L^2 \nu_L u_R D}^{(1\sim 8)}(1, 1) \left| \begin{array}{l}
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{acd} G_L^{A\mu}{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\
 \mathcal{Y} \left[\begin{smallmatrix} p \\ \bar{r} \end{smallmatrix} \right] i \left(\lambda^A \right)_d^b \epsilon^{bcd} G_L^{A\mu}{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc})
 \end{array} \right. \quad (3.600)$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R^2 d_R d_L D}^{(1\sim 16)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (\bar{d}_{Rr}^b D_\mu d_{Lsa}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (\bar{d}_{Rr}^b D_\mu d_{Lsb}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtb}) (\bar{d}_{Rr}^b D_\mu d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rta}) (\bar{d}_{Rr}^b D_\mu d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (D_\mu \bar{d}_{Rr}^b d_{Lsa}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (D_\mu \bar{d}_{Rr}^b d_{Lsb}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtb}) (D_\mu \bar{d}_{Rr}^b d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rta}) (D_\mu \bar{d}_{Rr}^b d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (\bar{d}_{Rr}^b D_\mu d_{Lsa}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (\bar{d}_{Rr}^b D_\mu d_{Lsb}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtb}) (\bar{d}_{Rr}^b D_\mu d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rta}) (\bar{d}_{Rr}^b D_\mu d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (D_\mu \bar{d}_{Rr}^b d_{Lsa}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (D_\mu \bar{d}_{Rr}^b d_{Lsb}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtb}) (D_\mu \bar{d}_{Rr}^b d_{Lsc}) \\
 & \mathcal{Y}_{\left[\frac{p}{r}\right]} i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rta}) (D_\mu \bar{d}_{Rr}^b d_{Lsc})
 \end{aligned} \right. \quad (3.601)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L e_L \bar{e}_L D}^{(1\sim 4)}(0,0) & \left| \begin{aligned}
 & i(\lambda^A)_b^b G_L^{A\mu}{}_\nu (d_{Lrb} C D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt}) \\
 & i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (D_\mu d_{Lrb} C e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt}) \\
 & i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a e_{Ls}) (\bar{e}_{Lt} \gamma^\nu D_\mu d_{Lrb}) \\
 & i(\lambda^A)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Lt} \gamma^\nu d_{Lrb}) (\bar{d}_{Rp}^a D_\mu e_{Ls})
 \end{aligned} \right. \quad (3.602)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L \bar{e}_R e_R D}^{(1\sim 4)}(0,0) & \left| \begin{aligned}
 & i(\lambda^A)_b^b G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) \\
 & i(\lambda^A)_a^b G_L^{A\mu}{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) \\
 & i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{e}_{Rs}) (D_\mu d_{Lrb} C \gamma^\nu e_{Rt}) \\
 & i(\lambda^A)_a^g G_L^{A\mu}{}_\nu (d_{Lrb} C \gamma^\nu e_{Rt}) (\bar{d}_{Rp}^a C D_\mu \bar{e}_{Rs})
 \end{aligned} \right. \quad (3.603)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{G_L \bar{d}_R d_L \nu_L \bar{\nu}_L D}^{(1\sim 4)}(0,0) & \left| \begin{aligned}
 & i(\lambda^A)_b^b G_L^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \\
 & i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \\
 & i(\lambda^A)_b^g G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{\nu}_{Lt} \gamma^\nu D_\mu d_{Lrb}) \\
 & i(\lambda^A)_a^g G_L^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lrb}) (\bar{d}_{Rp}^a D_\mu \nu_{Ls})
 \end{aligned} \right. \quad (3.604)
 \end{aligned}$$

$$\mathcal{O}_{G_L d_L \bar{d}_L \bar{e}_R e_L D}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\bar{e}_{Rr} D_\mu e_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu d_{Lpa}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rr} e_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu d_{Lpa}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (d_{Lpa} C e_{Ls}) (D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{d}_{Lt}^b) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (d_{Lpa} C D_\mu e_{Ls}) (\bar{e}_{Rr} \gamma^\nu C \bar{d}_{Lt}^b) \end{array} \right. \quad (3.605)$$

$$\mathcal{O}_{G_L d_L \bar{e}_R \nu_L \bar{u}_L D}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\bar{e}_{Rr} D_\mu \nu_{Ls}) (\bar{u}_{Lt}^b \gamma^\nu d_{Lpa}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (D_\mu \bar{e}_{Rr} \nu_{Ls}) (\bar{u}_{Lt}^b \gamma^\nu d_{Lpa}) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^b) \\ i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (d_{Lpa} C D_\mu \nu_{Ls}) (\bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^b) \end{array} \right. \quad (3.606)$$

$$\mathcal{O}_{G_L d_L \bar{d}_L \nu_L^2 D}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu d_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu D_\mu \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu d_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i \left(\lambda^A \right)_b^a G_L^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu D_\mu \nu_{Lr}) \end{array} \right. \quad (3.607)$$

$$\mathcal{O}_{G_L \bar{d}_R^3 e_R D}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ s \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ s \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ s \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (D_\mu \bar{d}_{Rr}^b C \bar{d}_{Rs}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c) \end{array} \right. \quad (3.608)$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \bar{d}_L e_L D}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu}{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (D_\mu \bar{d}_{Rr}^b e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu}{}_\nu (D_\mu \bar{d}_{Rr}^b e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu}{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu (D_\mu \bar{d}_{Rr}^b e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i \epsilon_{abd} \left(\lambda^A \right)_c^d G_L^{A\mu}{}_\nu (D_\mu \bar{d}_{Rr}^b e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \end{array} \right. \quad (3.609)$$

$$\mathcal{O}_{G_L \bar{d}_R^2 \nu_L \bar{u}_L D}^{(1\sim 8)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(D_\mu \bar{d}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(D_\mu \bar{d}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(\bar{d}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(D_\mu \bar{d}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abd} \left(\lambda^A \right)_b^d G_L^{A\mu}{}_\nu \left(D_\mu \bar{d}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.610)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R \bar{e}_R e_L D}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{e}_{Rr} D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(D_\mu \bar{e}_{Rr} e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(D_\mu \bar{e}_{Rr} \gamma^\nu d_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{e}_{Rr} \gamma^\nu d_{Rtb} \right) \left(\bar{d}_{Rp}^a D_\mu e_{Ls} \right) \end{array} \right. \quad (3.611)$$

$$\mathcal{O}_{G_L \bar{d}_R e_L \nu_L u_R D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(e_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(D_\mu e_{Lr} C \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu e_{Lr} C \gamma^\nu u_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(e_{Lr} C \gamma^\nu u_{Rtb} \right) \left(\bar{d}_{Rp}^a D_\mu \nu_{Ls} \right) \end{array} \right. \quad (3.612)$$

$$\mathcal{O}_{G_L \bar{d}_R d_R \nu_L^2 D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\nu_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu \nu_{Lr} C \gamma^\nu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\nu_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_a^b G_L^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu \nu_{Lr} C \gamma^\nu d_{Rtb} \right) \end{array} \right. \quad (3.613)$$

$$\mathcal{O}_{F_L \bar{u}_R u_L^2 \bar{u}_L D}^{(1\sim 8)}(0, 0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(u_{Lrb} C D_\mu u_{Lsa} \right) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(u_{Lra} C D_\mu u_{Lsc} \right) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(\bar{u}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lt}^b \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^\nu D_\mu u_{Lra} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(u_{Lrb} C D_\mu u_{Lsa} \right) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(u_{Lra} C D_\mu u_{Lsc} \right) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(\bar{u}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lt}^b \gamma^\nu D_\mu u_{Lrb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_L^\mu{}_\nu \left(\bar{u}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^\nu D_\mu u_{Lra} \right) \end{array} \right. \quad (3.614)$$

$$\mathcal{O}_{F_L d_L e_R u_L^2 D}^{(1\sim 4)}(1, 1) \left| \begin{array}{l} \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C \gamma^\nu e_{Rt}) (u_{Lrb} C D_\mu u_{Lsc}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C u_{Lsc}) (D_\mu u_{Lrb} C \gamma^\nu e_{Rt}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C \gamma^\nu e_{Rt}) (u_{Lrb} C D_\mu u_{Lsc}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C u_{Lsc}) (D_\mu u_{Lrb} C \gamma^\nu e_{Rt}) \end{array} \right. \quad (3.615)$$

$$\mathcal{O}_{F_L d_R e_L u_L^2 D}^{(1\sim 4)}(1, 1) \left| \begin{array}{l} \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (u_{Lra} C D_\mu u_{Lsb}) (e_{Lp} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (e_{Lp} C u_{Lsb}) (D_\mu u_{Lra} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (u_{Lra} C D_\mu u_{Lsb}) (e_{Lp} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y}_{\left[\begin{smallmatrix} r \\ s \end{smallmatrix}\right]} i\epsilon^{abc} F_L^\mu{}_\nu (e_{Lp} C u_{Lsb}) (D_\mu u_{Lra} C \gamma^\nu d_{Rtc}) \end{array} \right. \quad (3.616)$$

$$\mathcal{O}_{F_L \bar{u}_R^2 u_R u_L D}^{(1\sim 8)}(0, 0) \left| \begin{array}{l} \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rtb} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsa} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rtb} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsa} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsb} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rtb} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsa} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rtb} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsa} \right) \\ \mathcal{Y}_{\left[\begin{smallmatrix} p \\ r \end{smallmatrix}\right]} iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsb} \right) \end{array} \right. \quad (3.617)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L \bar{u}_R u_L D}^{(1\sim 8)}(0, 0) \left| \begin{array}{l} iF_L^\mu{}_\nu \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Lt}^c \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}^a D_\mu u_{Lsc} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Lt}^c \gamma^\nu d_{Lpa} \right) \left(D_\mu \bar{u}_{Rr}^a u_{Lsc} \right) \\ iF_L^\mu{}_\nu (d_{Lpa} C u_{Lsb}) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^a \right) \\ iF_L^\mu{}_\nu (d_{Lpa} C u_{Lsc}) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ iF_L^\mu{}_\nu (d_{Lpa} C D_\mu u_{Lsb}) \left(\bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^a \right) \\ iF_L^\mu{}_\nu (d_{Lpa} C D_\mu u_{Lsc}) \left(\bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.618)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R \bar{u}_R u_L D}^{(1\sim 8)}(0, 0) \left| \begin{array}{l} iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsa} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsa} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(D_\mu \bar{u}_{Rr}^b u_{Lsb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu d_{Rtb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsb} \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu d_{Rta} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a D_\mu u_{Lsa} \right) \left(\bar{u}_{Rr}^b \gamma^\nu d_{Rtb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a D_\mu u_{Lsb} \right) \left(\bar{u}_{Rr}^b \gamma^\nu d_{Rta} \right) \end{array} \right. \quad (3.619)$$

$$\mathcal{O}_{F_L e_L \bar{e}_L \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (\bar{u}_{Rr}^a D_\mu u_{Lsa}) \\ iF_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (D_\mu \bar{u}_{Rr}^a u_{Lsa}) \\ iF_L^\mu{}_\nu (e_{Lp} C u_{Lsa}) (D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{e}_{Lt}) \\ iF_L^\mu{}_\nu (e_{Lp} C D_\mu u_{Lsa}) (\bar{u}_{Rr}^a \gamma^\nu C \bar{e}_{Lt}) \end{array} \right. \quad (3.620)$$

$$\mathcal{O}_{F_L \bar{e}_R e_R \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{u}_{Rr}^a D_\mu u_{Lsa}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (D_\mu \bar{u}_{Rr}^a u_{Lsa}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} u_{Lsa}) (D_\mu \bar{u}_{Rr}^a \gamma^\nu e_{Rt}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} D_\mu u_{Lsa}) (\bar{u}_{Rr}^a \gamma^\nu e_{Rt}) \end{array} \right. \quad (3.621)$$

$$\mathcal{O}_{F_L \nu_L \bar{\nu}_L \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \\ iF_L^\mu{}_\nu (D_\mu u_{Lra} C \nu_{Ls}) \left(\bar{u}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \\ iF_L^\mu{}_\nu \left(\bar{u}_{Rp}^a \nu_{Ls} \right) (\bar{\nu}_{Lt} \gamma^\nu D_\mu u_{Lra}) \\ iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu u_{Lra}) \left(\bar{u}_{Rp}^a D_\mu \nu_{Ls} \right) \end{array} \right. \quad (3.622)$$

$$\mathcal{O}_{F_L d_L^2 \bar{\nu}_L u_L D}(1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu d_{Lrb} C u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu d_{Lrb} C u_{Lsc}) \end{array} \right. \quad (3.623)$$

$$\mathcal{O}_{F_L d_R d_L u_L \bar{u}_L D}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (d_{Lrb} C D_\mu u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ iF_L^\mu{}_\nu (d_{Lra} C D_\mu u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ iF_L^\mu{}_\nu (D_\mu d_{Lrb} C u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ iF_L^\mu{}_\nu (D_\mu d_{Lra} C u_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lt}^b \gamma^\nu D_\mu d_{Lrb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^\nu D_\mu d_{Lra} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a D_\mu u_{Lsa} \right) \left(\bar{u}_{Lt}^b \gamma^\nu d_{Lrb} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a D_\mu u_{Lsc} \right) \left(\bar{u}_{Lt}^c \gamma^\nu d_{Lra} \right) \end{array} \right. \quad (3.624)$$

$$\mathcal{O}_{F_L d_L e_L u_R u_L D}(1,1) \left| \begin{array}{l} i\epsilon^{abc} F_L^\mu{}_\nu (e_{Lr} C D_\mu u_{Lsb}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ i\epsilon^{abc} F_L^\mu{}_\nu (D_\mu e_{Lr} C u_{Lsb}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C u_{Lsb}) (D_\mu e_{Lr} C \gamma^\nu u_{Rtc}) \\ i\epsilon^{abc} F_L^\mu{}_\nu (e_{Lr} C \gamma^\nu u_{Rtc}) (d_{Lpa} C D_\mu u_{Lsb}) \end{array} \right. \quad (3.625)$$

$$\mathcal{O}_{F_L d_R d_L \nu_L u_L D}(1,1) \left| \begin{array}{l} i\epsilon^{abc} F_L^\mu{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i\epsilon^{abc} F_L^\mu{}_\nu (D_\mu u_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) (D_\mu u_{Lrb} C \gamma^\nu d_{Rtc}) \\ i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lpa} C D_\mu \nu_{Ls}) (u_{Lrb} C \gamma^\nu d_{Rtc}) \end{array} \right. \quad (3.626)$$

$$\mathcal{O}_{F_L \bar{d}_R e_L \bar{\nu}_L u_L D}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (e_{Lr} C D_\mu u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \\ iF_L^\mu{}_\nu (D_\mu e_{Lr} C u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) (\bar{\nu}_{Lt} \gamma^\nu D_\mu e_{Lr}) \\ iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \left(\bar{d}_{Rp}^a D_\mu u_{Lsa} \right) \end{array} \right. \quad (3.627)$$

$$\mathcal{O}_{F_L \bar{d}_R e_R \nu_L u_L D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} iF_L^\mu{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \\ iF_L^\mu{}_\nu (D_\mu u_{Lra} C \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (D_\mu u_{Lra} C \gamma^\nu e_{Rt}) \\ iF_L^\mu{}_\nu (u_{Lra} C \gamma^\nu e_{Rt}) \left(\bar{d}_{Rp}^a D_\mu \nu_{Ls} \right) \end{array} \right. \quad (3.628)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L u_L \bar{u}_L D}^{(1\sim 4)}(0, 0) \left| \begin{array}{l} iF_L^\mu{}_\nu (e_{Lr} C D_\mu u_{Lsa}) (\bar{e}_{Rp} \gamma^\nu C \bar{u}_{Lt}^a) \\ iF_L^\mu{}_\nu (D_\mu e_{Lr} C u_{Lsa}) (\bar{e}_{Rp} \gamma^\nu C \bar{u}_{Lt}^a) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} u_{Lsa}) (\bar{u}_{Lt}^a \gamma^\nu D_\mu e_{Lr}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} D_\mu u_{Lsa}) (\bar{u}_{Lt}^a \gamma^\nu e_{Lr}) \end{array} \right. \quad (3.629)$$

$$\mathcal{O}_{F_L \bar{d}_L e_L \nu_L u_L D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} iF_L^\mu{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu e_{Lp} \right) \\ iF_L^\mu{}_\nu (D_\mu u_{Lra} C \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu e_{Lp} \right) \\ iF_L^\mu{}_\nu (e_{Lp} C \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu D_\mu u_{Lra} \right) \\ iF_L^\mu{}_\nu (e_{Lp} C D_\mu \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu u_{Lra} \right) \end{array} \right. \quad (3.630)$$

$$\mathcal{O}_{F_L \nu_L^2 u_L \bar{u}_L D}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu u_{Lpa}) \\ \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (u_{Lpa} C \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu D_\mu \nu_{Lr}) \\ \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu u_{Lpa}) \\ \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (u_{Lpa} C \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu D_\mu \nu_{Lr}) \end{array} \right. \quad (3.631)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{e}_L \bar{u}_R^2 D}^{(1\sim 4)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \left(D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{e}_{Lt} \right) \end{array} \right. \quad (3.632)$$

$$\mathcal{O}_{F_L \bar{d}_L \bar{e}_R \bar{u}_R^2 D}^{(1\sim 4)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^b \right) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rs}^b \right) \left(D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.633)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \bar{u}_R u_R D}^{(1\sim 8)}(0, 0) \left| \begin{array}{l} iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(D_\mu \bar{u}_{Rs}^b d_{Lrb} \right) \\ iF_L^\mu{}_\nu (D_\mu \bar{u}_{Rs}^c d_{Lra}) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtc} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \left(\bar{u}_{Rs}^b D_\mu d_{Lrb} \right) \\ iF_L^\mu{}_\nu (\bar{u}_{Rs}^c D_\mu d_{Lra}) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtc} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) (D_\mu d_{Lrb} C \gamma^\nu u_{Rta}) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) (D_\mu d_{Lra} C \gamma^\nu u_{Rtc}) \\ iF_L^\mu{}_\nu (d_{Lrb} C \gamma^\nu u_{Rta}) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^b \right) \\ iF_L^\mu{}_\nu (d_{Lra} C \gamma^\nu u_{Rtc}) \left(\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.634)$$

$$\mathcal{O}_{F_L d_L \bar{e}_R \bar{\nu}_L \bar{u}_R D}^{(1\sim 4)}(0, -2) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^a) \\ iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu \bar{e}_{Rr} C \bar{u}_{Rs}^a) \\ iF_L^\mu{}_\nu (\bar{u}_{Rs}^a d_{Lpa}) (D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{\nu}_{Lt}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rr} \gamma^\nu C \bar{\nu}_{Lt}) (D_\mu \bar{u}_{Rs}^a d_{Lpa}) \end{vmatrix} \quad (3.635)$$

$$\mathcal{O}_{F_L d_L \bar{e}_L \nu_L \bar{u}_R D}^{(1\sim 4)}(0, 0) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu d_{Lpa}) (\bar{u}_{Rr}^a D_\mu \nu_{Ls}) \\ iF_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu d_{Lpa}) (D_\mu \bar{u}_{Rr}^a \nu_{Ls}) \\ iF_L^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) (D_\mu \bar{u}_{Rr}^a \gamma^\nu C \bar{e}_{Lt}) \\ iF_L^\mu{}_\nu (d_{Lpa} C D_\mu \nu_{Ls}) (\bar{u}_{Rr}^a \gamma^\nu C \bar{e}_{Lt}) \end{vmatrix} \quad (3.636)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 \bar{\nu}_L \bar{u}_R D}^{(1\sim 4)}(-1, -1) \begin{vmatrix} \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(D_\mu \bar{d}_{Rr}^b C \bar{u}_{Rs}^c \right) \end{vmatrix} \quad (3.637)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{e}_R \bar{u}_R \bar{u}_L D}^{(1\sim 4)}(-1, -1) \begin{vmatrix} i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{abc} F_L^\mu{}_\nu \left(D_\mu \bar{e}_{Rr} C \bar{u}_{Rs}^b \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) (D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^c) \\ i\epsilon_{abc} F_L^\mu{}_\nu (\bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^c) (\bar{d}_{Rp}^a C D_\mu \bar{u}_{Rs}^b) \end{vmatrix} \quad (3.638)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{d}_L \nu_L \bar{u}_R D}^{(1\sim 4)}(-1, 1) \begin{vmatrix} i\epsilon_{abc} F_L^\mu{}_\nu (\bar{u}_{Rr}^b D_\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ i\epsilon_{abc} F_L^\mu{}_\nu (D_\mu \bar{u}_{Rr}^b \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ i\epsilon_{abc} F_L^\mu{}_\nu (\bar{d}_{Rp}^a \nu_{Ls}) (D_\mu \bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^c) \\ i\epsilon_{abc} F_L^\mu{}_\nu (\bar{d}_{Rp}^a D_\mu \nu_{Ls}) (\bar{u}_{Rr}^b \gamma^\nu C \bar{d}_{Lt}^c) \end{vmatrix} \quad (3.639)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L \bar{u}_R u_R D}^{(1\sim 4)}(0, 0) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu u_{Rta}) (D_\mu \bar{u}_{Rs}^a e_{Lr}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu u_{Rta}) (\bar{u}_{Rs}^a D_\mu e_{Lr}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (D_\mu e_{Lr} C \gamma^\nu u_{Rta}) \\ iF_L^\mu{}_\nu (e_{Lr} C \gamma^\nu u_{Rta}) (\bar{e}_{Rp} C D_\mu \bar{u}_{Rs}^a) \end{vmatrix} \quad (3.640)$$

$$\mathcal{O}_{F_L \bar{d}_R \bar{e}_R \nu_L \bar{u}_R D}^{(1\sim 4)}(0, 0) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu d_{Rta}) (\bar{u}_{Rr}^a D_\mu \nu_{Ls}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu d_{Rta}) (D_\mu \bar{u}_{Rr}^a \nu_{Ls}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} \nu_{Ls}) (D_\mu \bar{u}_{Rr}^a \gamma^\nu d_{Rta}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} D_\mu \nu_{Ls}) (\bar{u}_{Rr}^a \gamma^\nu d_{Rta}) \end{vmatrix} \quad (3.641)$$

$$\mathcal{O}_{F_L \nu_L^2 \bar{u}_R u_R D}^{(1\sim 4)}(0, 2) \begin{vmatrix} \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu u_{Rta}) \\ \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (\bar{u}_{Rp}^a \nu_{Ls}) (D_\mu \nu_{Lr} C \gamma^\nu u_{Rta}) \\ \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu u_{Rta}) \\ \mathcal{Y} \left[\frac{r}{s} \right] iF_L^\mu{}_\nu (\bar{u}_{Rp}^a \nu_{Ls}) (D_\mu \nu_{Lr} C \gamma^\nu u_{Rta}) \end{vmatrix} \quad (3.642)$$

$$\mathcal{O}_{F_L \bar{d}_L^3 \bar{e}_L D}^{(1\sim 3)}(1, -1) \begin{vmatrix} \mathcal{Y} \left[\frac{p}{r} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu d_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{s} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu d_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{s} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu d_{Lsc}) \end{vmatrix} \quad (3.643)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L^2 \bar{d}_L D}^{(1\sim 8)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu (d_{Lrb} C D_\mu d_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu (d_{Lra} C D_\mu d_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Lt}^b \gamma^\nu D_\mu d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lsc} \right) \left(\bar{d}_{Lt}^c \gamma^\nu D_\mu d_{Lra} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu (d_{Lrb} C D_\mu d_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu (d_{Lra} C D_\mu d_{Lsc}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Lt}^b \gamma^\nu D_\mu d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lsc} \right) \left(\bar{d}_{Lt}^c \gamma^\nu D_\mu d_{Lra} \right) \end{array} \right. \quad (3.644)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L^2 \bar{e}_R D}^{(1\sim 4)}(1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (\bar{e}_{Rs} D_\mu d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \end{array} \right. \quad (3.645)$$

$$\mathcal{O}_{F_L d_L^2 \nu_L u_R D}^{(1\sim 4)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i\epsilon^{abc} F_L^\mu{}_\nu (D_\mu d_{Lrb} C \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \end{array} \right. \quad (3.646)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 d_R d_L D}^{(1\sim 8)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(\bar{d}_{Rr}^b D_\mu d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(\bar{d}_{Rr}^b D_\mu d_{Lsb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(D_\mu \bar{d}_{Rr}^b d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(D_\mu \bar{d}_{Rr}^b d_{Lsb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(\bar{d}_{Rr}^b D_\mu d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(\bar{d}_{Rr}^b D_\mu d_{Lsb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(D_\mu \bar{d}_{Rr}^b d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(D_\mu \bar{d}_{Rr}^b d_{Lsb} \right) \end{array} \right. \quad (3.647)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L e_L \bar{e}_L D}^{(1\sim 4)}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (d_{Lra} C D_\mu e_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \\ iF_L^\mu{}_\nu (D_\mu d_{Lra} C e_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{e}_{Lt} \gamma^\nu D_\mu d_{Lra} \right) \\ iF_L^\mu{}_\nu \left(\bar{e}_{Lt} \gamma^\nu d_{Lra} \right) \left(\bar{d}_{Rp}^a D_\mu e_{Ls} \right) \end{array} \right. \quad (3.648)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \bar{e}_R e_R D}^{(1\sim 4)}(0,0) \left| \begin{array}{l} iF_L^\mu{}_\nu (D_\mu \bar{e}_{Rs} d_{Lra}) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \\ iF_L^\mu{}_\nu (\bar{e}_{Rs} D_\mu d_{Lra}) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) (D_\mu d_{Lra} C \gamma^\nu e_{Rt}) \\ iF_L^\mu{}_\nu (d_{Lra} C \gamma^\nu e_{Rt}) \left(\bar{d}_{Rp}^a C D_\mu \bar{e}_{Rs} \right) \end{array} \right. \quad (3.649)$$

$$\mathcal{O}_{F_L \bar{d}_R d_L \nu_L \bar{\nu}_L D}^{(1\sim 4)}(0,0) \begin{vmatrix} iF_L^\mu{}_\nu (d_{Lra} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \\ iF_L^\mu{}_\nu (D_\mu d_{Lra} C \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (\bar{\nu}_{Lt} \gamma^\nu D_\mu d_{Lra}) \\ iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lra}) \left(\bar{d}_{Rp}^a D_\mu \nu_{Ls} \right) \end{vmatrix} \quad (3.650)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L \bar{e}_R e_L D}^{(1\sim 4)}(0,0) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{e}_{Rr} D_\mu e_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \\ iF_L^\mu{}_\nu (D_\mu \bar{e}_{Rr} e_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \\ iF_L^\mu{}_\nu (d_{Lpa} C e_{Ls}) \left(D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{d}_{Lt}^a \right) \\ iF_L^\mu{}_\nu (d_{Lpa} C D_\mu e_{Ls}) \left(\bar{e}_{Rr} \gamma^\nu C \bar{d}_{Lt}^a \right) \end{vmatrix} \quad (3.651)$$

$$\mathcal{O}_{F_L d_L \bar{e}_R \nu_L \bar{u}_L D}^{(1\sim 4)}(0,0) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{e}_{Rr} D_\mu \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu d_{Lpa}) \\ iF_L^\mu{}_\nu (D_\mu \bar{e}_{Rr} \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu d_{Lpa}) \\ iF_L^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) (D_\mu \bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^a) \\ iF_L^\mu{}_\nu (d_{Lpa} C D_\mu \nu_{Ls}) (\bar{e}_{Rr} \gamma^\nu C \bar{u}_{Lt}^a) \end{vmatrix} \quad (3.652)$$

$$\mathcal{O}_{F_L d_L \bar{d}_L \nu_L^2 D}^{(1\sim 4)}(0,2) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu D_\mu \nu_{Lr} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu D_\mu \nu_{Lr} \right) \end{vmatrix} \quad (3.653)$$

$$\mathcal{O}_{F_L \bar{d}_R^3 e_R D}^{(1\sim 3)}(-1,1) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \left(\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c \right) \end{vmatrix} \quad (3.654)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 \bar{d}_L e_L D}^{(1\sim 4)}(-1,1) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rr}^b D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(D_\mu \bar{d}_{Rr}^b e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rr}^b D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(D_\mu \bar{d}_{Rr}^b e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c \right) \end{vmatrix} \quad (3.655)$$

$$\mathcal{O}_{F_L \bar{d}_R^2 \nu_L \bar{u}_L D}^{(1\sim 4)}(-1,1) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(D_\mu \bar{d}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(\bar{d}_{Rr}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] i\epsilon_{abc} F_L^\mu{}_\nu \left(D_\mu \bar{d}_{Rr}^b \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \end{vmatrix} \quad (3.656)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R \bar{e}_R e_L D}^{(1\sim 4)}(0,0) \begin{vmatrix} iF_L^\mu{}_\nu (\bar{e}_{Rr} D_\mu e_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \\ iF_L^\mu{}_\nu (D_\mu \bar{e}_{Rr} e_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) (D_\mu \bar{e}_{Rr} \gamma^\nu d_{Rta}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rr} \gamma^\nu d_{Rta}) \left(\bar{d}_{Rp}^a D_\mu e_{Ls} \right) \end{vmatrix} \quad (3.657)$$

$$\mathcal{O}_{F_L \bar{d}_R e_L \nu_L u_R D}^{(1\sim 4)}(0, 2) \begin{vmatrix} iF_L^\mu{}_\nu (e_{Lr} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \\ iF_L^\mu{}_\nu (D_\mu e_{Lr} C \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \\ iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (D_\mu e_{Lr} C \gamma^\nu u_{Rta}) \\ iF_L^\mu{}_\nu (e_{Lr} C \gamma^\nu u_{Rta}) \left(\bar{d}_{Rp}^a D_\mu \nu_{Ls} \right) \end{vmatrix} \quad (3.658)$$

$$\mathcal{O}_{F_L \bar{d}_R d_R \nu_L^2 D}^{(1\sim 4)}(0, 2) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (D_\mu \nu_{Lr} C \gamma^\nu d_{Rta}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (D_\mu \nu_{Lr} C \gamma^\nu d_{Rta}) \end{vmatrix} \quad (3.659)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L^2 \bar{e}_L D}^{(1\sim 4)}(0, 0) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (e_{Lr} C D_\mu e_{Ls}) (\bar{e}_{Rp} \gamma^\nu C \bar{e}_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Lt} \gamma^\nu D_\mu e_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (e_{Lr} C D_\mu e_{Ls}) (\bar{e}_{Rp} \gamma^\nu C \bar{e}_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Lt} \gamma^\nu D_\mu e_{Lr}) \end{vmatrix} \quad (3.660)$$

$$\mathcal{O}_{F_L \bar{e}_R^2 e_R e_L D}^{(1\sim 4)}(0, 0) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{e}_{Rr} D_\mu e_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (D_\mu \bar{e}_{Rr} e_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{e}_{Rr} D_\mu e_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (D_\mu \bar{e}_{Rr} e_{Ls}) \end{vmatrix} \quad (3.661)$$

$$\mathcal{O}_{F_L \bar{e}_R e_L \nu_L \bar{\nu}_L D}^{(1\sim 4)}(0, 0) \begin{vmatrix} iF_L^\mu{}_\nu (e_{Lr} C D_\mu \nu_{Ls}) (\bar{e}_{Rp} \gamma^\nu C \bar{\nu}_{Lt}) \\ iF_L^\mu{}_\nu (D_\mu e_{Lr} C \nu_{Ls}) (\bar{e}_{Rp} \gamma^\nu C \bar{\nu}_{Lt}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} \nu_{Ls}) (\bar{\nu}_{Lt} \gamma^\nu D_\mu e_{Lr}) \\ iF_L^\mu{}_\nu (\bar{e}_{Rp} D_\mu \nu_{Ls}) (\bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \end{vmatrix} \quad (3.662)$$

$$\mathcal{O}_{F_L e_L \bar{e}_L \nu_L^2 D}^{(1\sim 4)}(0, 2) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (e_{Lp} C \nu_{Ls}) (\bar{e}_{Lt} \gamma^\nu D_\mu \nu_{Lr}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (e_{Lp} C \nu_{Ls}) (\bar{e}_{Lt} \gamma^\nu D_\mu \nu_{Lr}) \end{vmatrix} \quad (3.663)$$

$$\mathcal{O}_{F_L \bar{e}_R e_R \nu_L^2 D}^{(1\sim 4)}(0, 2) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \nu_{Ls}) (D_\mu \nu_{Lr} C \gamma^\nu e_{Rt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{e}_{Rp} \nu_{Ls}) (D_\mu \nu_{Lr} C \gamma^\nu e_{Rt}) \end{vmatrix} \quad (3.664)$$

$$\mathcal{O}_{F_L \nu_L^3 \bar{\nu}_L D}^{(1\sim 3)}(0, 2) \begin{vmatrix} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu \nu_{Lp}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu \nu_{Lp}) (D_\mu \nu_{Lr} C \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \end{smallmatrix} \right] iF_L^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu \nu_{Lp}) (\nu_{Lr} C D_\mu \nu_{Ls}) \end{vmatrix} \quad (3.665)$$

$$\mathcal{O}_{F_R d_R e_L u_L^2 D}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{rs}] i\epsilon^{abc} F_R^\mu{}_\nu (e_{Lp} C u_{Lra}) (u_{Lsb} C \gamma^\nu D_\mu d_{Rtc}) \\ \mathcal{Y}[\overline{rs}] i\epsilon^{abc} F_R^\mu{}_\nu (u_{Lra} C D_\mu u_{Lsb}) (e_{Lp} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y}[\overline{rs}] i\epsilon^{abc} F_R^\mu{}_\nu (e_{Lp} C u_{Lra}) (u_{Lsb} C \gamma^\nu D_\mu d_{Rtc}) \end{array} \right. \quad (3.671)$$

$$\mathcal{O}_{G_R \bar{u}_R^2 u_R u_L D}^{(1\sim 12)}(0, 0) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (u_{Lsc} C \gamma^\nu D_\mu u_{Rta}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (u_{Lsa} C \gamma^\nu D_\mu u_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a u_{Lsc}) (\bar{u}_{Rr}^b \gamma^\nu D_\mu u_{Rta}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \gamma^\nu D_\mu u_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \gamma^\nu u_{Rta}) (\bar{u}_{Rr}^b D_\mu u_{Lsc}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \gamma^\nu u_{Rtd}) (\bar{u}_{Rr}^b D_\mu u_{Lsa}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (u_{Lsc} C \gamma^\nu D_\mu u_{Rta}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (u_{Lsa} C \gamma^\nu D_\mu u_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a u_{Lsc}) (\bar{u}_{Rr}^b \gamma^\nu D_\mu u_{Rta}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \gamma^\nu D_\mu u_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \gamma^\nu u_{Rta}) (\bar{u}_{Rr}^b D_\mu u_{Lsc}) \\ \mathcal{Y}[\overline{p}r] i(\lambda^A)^c_{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \gamma^\nu u_{Rtd}) (\bar{u}_{Rr}^b D_\mu u_{Lsa}) \end{array} \right. \quad (3.672)$$

$$\mathcal{O}_{F_R \bar{u}_R^2 u_R u_L D}^{(1\sim 6)}(0, 0) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (u_{Lsa} C \gamma^\nu D_\mu u_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \gamma^\nu D_\mu u_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a \gamma^\nu u_{Rtb}) (\bar{u}_{Rr}^b D_\mu u_{Lsa}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (u_{Lsa} C \gamma^\nu D_\mu u_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \gamma^\nu D_\mu u_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a \gamma^\nu u_{Rtb}) (\bar{u}_{Rr}^b D_\mu u_{Lsa}) \end{array} \right. \quad (3.673)$$

$$\mathcal{O}_{G_R d_L \bar{d}_L \bar{u}_R u_L D}^{(1\sim 12)}(0, 0) \left| \begin{array}{l} i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{u}_{Rr}^a d_{Lpa}) (D_\mu \bar{d}_{Lt}^d \gamma^\nu u_{Lsc}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{u}_{Rr}^b d_{Lpa}) (D_\mu \bar{d}_{Lt}^a \gamma^\nu u_{Lsc}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{u}_{Rr}^b d_{Lpa}) (D_\mu \bar{d}_{Lt}^d \gamma^\nu u_{Lsb}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{u}_{Rr}^b d_{Lpa}) (D_\mu \bar{d}_{Lt}^c \gamma^\nu u_{Lsc}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^a \gamma^\nu C D_\mu \bar{d}_{Lt}^d) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^a) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lsb}) (\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^d) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Lt}^d \gamma^\nu d_{Lpa}) (\bar{u}_{Rr}^a D_\mu u_{Lsc}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Lt}^a \gamma^\nu d_{Lpa}) (\bar{u}_{Rr}^b D_\mu u_{Lsc}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Lt}^d \gamma^\nu d_{Lpa}) (\bar{u}_{Rr}^b D_\mu u_{Lsb}) \\ i(\lambda^A)^c_{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Lt}^c \gamma^\nu d_{Lpa}) (\bar{u}_{Rr}^b D_\mu u_{Lsc}) \end{array} \right. \quad (3.674)$$

$$\mathcal{O}_{F_R d_L \bar{d}_L \bar{u}_R u_L D}^{(1\sim 6)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{u}_{Rr}^b d_{Lpa} \right) \left(D_\mu \bar{d}_{Lt}^a \gamma^\nu u_{Lsb} \right) \\ i F_R^\mu{}_\nu \left(\bar{u}_{Rr}^a d_{Lpa} \right) \left(D_\mu \bar{d}_{Lt}^c \gamma^\nu u_{Lsc} \right) \\ i F_R^\mu{}_\nu \left(d_{Lpa} C u_{Lsb} \right) \left(\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^a \right) \\ i F_R^\mu{}_\nu \left(d_{Lpa} C u_{Lsc} \right) \left(\bar{u}_{Rr}^a \gamma^\nu C D_\mu \bar{d}_{Lt}^c \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Lt}^c \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}^a D_\mu u_{Lsc} \right) \end{array} \right. \quad (3.675)$$

$$\mathcal{O}_{G_R \bar{d}_R d_R \bar{u}_R u_L D}^{(1\sim 12)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(u_{Lsc} C \gamma^\nu D_\mu d_{Rta} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(u_{Lsa} C \gamma^\nu D_\mu d_{Rtd} \right) \\ i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(u_{Lsc} C \gamma^\nu D_\mu d_{Rtb} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(u_{Lsb} C \gamma^\nu D_\mu d_{Rtd} \right) \\ i \left(\lambda^A \right)_b^e G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D_\mu d_{Rta} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D_\mu d_{Rtd} \right) \\ i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D_\mu d_{Rtb} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsb} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D_\mu d_{Rtd} \right) \\ i \left(\lambda^A \right)_b^e G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsc} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtd} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsa} \right) \\ i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsc} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtd} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \end{array} \right. \quad (3.676)$$

$$\mathcal{O}_{F_R \bar{d}_R d_R \bar{u}_R u_L D}^{(1\sim 6)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(u_{Lsa} C \gamma^\nu D_\mu d_{Rtb} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(u_{Lsb} C \gamma^\nu D_\mu d_{Rta} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D_\mu d_{Rtb} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsb} \right) \left(\bar{u}_{Rr}^b \gamma^\nu D_\mu d_{Rta} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsa} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \left(\bar{u}_{Rr}^b D_\mu u_{Lsb} \right) \end{array} \right. \quad (3.677)$$

$$\mathcal{O}_{G_R e_L \bar{e}_L \bar{u}_R u_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a e_{Lp} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu u_{Lsb} \right) \\ i \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(e_{Lp} C u_{Lsb} \right) \left(\bar{u}_{Rr}^a \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ i \left(\lambda^A \right)_b^e G_R^{A\mu}{}_\nu \left(\bar{e}_{Lt} \gamma^\nu e_{Lp} \right) \left(\bar{u}_{Rr}^a D_\mu u_{Lsb} \right) \end{array} \right. \quad (3.678)$$

$$\mathcal{O}_{F_R e_L \bar{e}_L \bar{u}_R u_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{u}_{Rr}^a e_{Lp} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu u_{Lsa} \right) \\ i F_R^\mu{}_\nu \left(e_{Lp} C u_{Lsa} \right) \left(\bar{u}_{Rr}^a \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ i F_R^\mu{}_\nu \left(\bar{e}_{Lt} \gamma^\nu e_{Lp} \right) \left(\bar{u}_{Rr}^a D_\mu u_{Lsa} \right) \end{array} \right. \quad (3.679)$$

$$\mathcal{O}_{G_R \bar{e}_R e_R \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_\nu^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rr}^a) (u_{Lsb} C \gamma^\nu D_\mu e_{Rt}) \\ i \left(\lambda^A \right)_\nu^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} u_{Lsb}) (\bar{u}_{Rr}^a \gamma^\nu D_\mu e_{Rt}) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{u}_{Rr}^a D_\mu u_{Lsb}) \end{array} \right. \quad (3.680)$$

$$\mathcal{O}_{F_R \bar{e}_R e_R \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rr}^a) (u_{Lsa} C \gamma^\nu D_\mu e_{Rt}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} u_{Lsa}) (\bar{u}_{Rr}^a \gamma^\nu D_\mu e_{Rt}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{u}_{Rr}^a D_\mu u_{Lsa}) \end{array} \right. \quad (3.681)$$

$$\mathcal{O}_{G_R \nu_L \bar{\nu}_L \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_\nu^b G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a u_{Lrb}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Ls}) \\ i \left(\lambda^A \right)_\nu^b G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \nu_{Ls}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lrb}) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \end{array} \right. \quad (3.682)$$

$$\mathcal{O}_{F_R \nu_L \bar{\nu}_L \bar{u}_R u_L D}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu (\bar{u}_{Rp}^a u_{Lra}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Ls}) \\ i F_R^\mu{}_\nu (\bar{u}_{Rp}^a \nu_{Ls}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lra}) \\ i F_R^\mu{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt}) \end{array} \right. \quad (3.683)$$

$$\mathcal{O}_{G_R d_L^2 \bar{\nu}_L u_L D}(1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_\nu^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C d_{Lrb}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_\nu^d \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lsc}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lrb}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C d_{Lrb}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_\nu^d \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lsc}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lrb}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \left(\lambda^A \right)_d^d \epsilon^{bcd} G_R^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \end{array} \right. \quad (3.684)$$

$$\mathcal{O}_{F_R d_L^2 \bar{\nu}_L u_L D}(1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C u_{Lsc}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lrb}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} F_R^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (d_{Lrb} C D_\mu u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C d_{Lrb}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lsc}) \end{array} \right. \quad (3.685)$$

$$\mathcal{O}_{G_R \bar{d}_R d_L u_L \bar{u}_L D}^{(1 \sim 12)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_d^c G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(D_\mu \bar{u}_{Lt}^d \gamma^\nu u_{Lsc} \right) \\ i \left(\lambda^A \right)_d^c G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu u_{Lsc} \right) \\ i \left(\lambda^A \right)_d^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{u}_{Lt}^d \gamma^\nu u_{Lsa} \right) \\ i \left(\lambda^A \right)_d^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu u_{Lsc} \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(D_\mu \bar{u}_{Lt}^d \gamma^\nu d_{Lra} \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu d_{Lrb} \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(D_\mu \bar{u}_{Lt}^d \gamma^\nu d_{Lrb} \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu d_{Lrb} \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(d_{Lra} C D_\mu u_{Lsc} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^d \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(d_{Lrb} C D_\mu u_{Lsc} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ i \left(\lambda^A \right)_d^a G_R^{A\mu}{}_\nu \left(d_{Lrb} C D_\mu u_{Lsa} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^d \right) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(d_{Lrb} C D_\mu u_{Lsc} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.686)$$

$$\mathcal{O}_{F_R \bar{d}_R d_L u_L \bar{u}_L D}^{(1 \sim 6)}(0, 0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu u_{Lsa} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu u_{Lsc} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu d_{Lrb} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu d_{Lra} \right) \\ i F_R^\mu{}_\nu \left(d_{Lrb} C D_\mu u_{Lsa} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^b \right) \\ i F_R^\mu{}_\nu \left(d_{Lra} C D_\mu u_{Lsc} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.687)$$

$$\mathcal{O}_{G_R d_L e_L u_R u_L D}^{(1 \sim 6)}(1, 1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu \left(d_{Lpa} C e_{Lr} \right) \left(u_{Lsb} C \gamma^\nu D_\mu u_{Rtc} \right) \\ i \left(\lambda^A \right)_d^a \epsilon^{abd} G_R^{A\mu}{}_\nu \left(d_{Lpa} C e_{Lr} \right) \left(u_{Lsb} C \gamma^\nu D_\mu u_{Rtc} \right) \\ i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu \left(d_{Lpa} C u_{Lsb} \right) \left(e_{Lr} C \gamma^\nu D_\mu u_{Rtc} \right) \\ i \left(\lambda^A \right)_d^a \epsilon^{abd} G_R^{A\mu}{}_\nu \left(d_{Lpa} C u_{Lsb} \right) \left(e_{Lr} C \gamma^\nu D_\mu u_{Rtc} \right) \\ i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu \left(e_{Lr} C D_\mu u_{Lsb} \right) \left(d_{Lpa} C \gamma^\nu u_{Rtc} \right) \\ i \left(\lambda^A \right)_d^a \epsilon^{abd} G_R^{A\mu}{}_\nu \left(e_{Lr} C D_\mu u_{Lsb} \right) \left(d_{Lpa} C \gamma^\nu u_{Rtc} \right) \end{array} \right. \quad (3.688)$$

$$\mathcal{O}_{F_R d_L e_L u_R u_L D}^{(1 \sim 3)}(1, 1) \left| \begin{array}{l} i \epsilon^{abc} F_R^\mu{}_\nu \left(d_{Lpa} C e_{Lr} \right) \left(u_{Lsb} C \gamma^\nu D_\mu u_{Rtc} \right) \\ i \epsilon^{abc} F_R^\mu{}_\nu \left(d_{Lpa} C u_{Lsb} \right) \left(e_{Lr} C \gamma^\nu D_\mu u_{Rtc} \right) \\ i \epsilon^{abc} F_R^\mu{}_\nu \left(e_{Lr} C D_\mu u_{Lsb} \right) \left(d_{Lpa} C \gamma^\nu u_{Rtc} \right) \end{array} \right. \quad (3.689)$$

$$\mathcal{O}_{G_R d_R d_L \nu_L u_L D}^{(1\sim 6)}(1,1) \left| \begin{array}{l} i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lrb}) (\nu_{Ls} C \gamma^\nu D_\mu d_{Rtc}) \\ i \left(\lambda^A \right)_d^d \epsilon^{abd} G_R^{A\mu}{}_\nu (d_{Lpa} C u_{Lrb}) (\nu_{Ls} C \gamma^\nu D_\mu d_{Rtc}) \\ i \left(\lambda^A \right)_d^d \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \gamma^\nu D_\mu d_{Rtc}) \\ i \left(\lambda^A \right)_d^d \epsilon^{abd} G_R^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \gamma^\nu D_\mu d_{Rtc}) \\ i \left(\lambda^A \right)_d^d \epsilon^{bcd} G_R^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ i \left(\lambda^A \right)_d^d \epsilon^{abd} G_R^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \end{array} \right. \quad (3.690)$$

$$\mathcal{O}_{F_R d_R d_L \nu_L u_L D}^{(1\sim 3)}(1,1) \left| \begin{array}{l} i \epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C u_{Lrb}) (\nu_{Ls} C \gamma^\nu D_\mu d_{Rtc}) \\ i \epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \gamma^\nu D_\mu d_{Rtc}) \\ i \epsilon^{abc} F_R^\mu{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \end{array} \right. \quad (3.691)$$

$$\mathcal{O}_{G_R \bar{d}_R e_L \bar{\nu}_L u_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a e_{Lr} \right) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lsb}) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lsb} \right) (D_\mu \bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu (e_{Lr} C D_\mu u_{Lsb}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.692)$$

$$\mathcal{O}_{F_R \bar{d}_R e_L \bar{\nu}_L u_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a e_{Lr} \right) (D_\mu \bar{\nu}_{Lt} \gamma^\nu u_{Lsa}) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lsa} \right) (D_\mu \bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \\ i F_R^\mu{}_\nu (e_{Lr} C D_\mu u_{Lsa}) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.693)$$

$$\mathcal{O}_{G_R \bar{d}_R e_R \nu_L u_L D}^{(1\sim 3)}(0,2) \left| \begin{array}{l} i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a u_{Lrb} \right) (\nu_{Ls} C \gamma^\nu D_\mu e_{Rt}) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (u_{Lrb} C \gamma^\nu D_\mu e_{Rt}) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu (u_{Lrb} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \end{array} \right. \quad (3.694)$$

$$\mathcal{O}_{F_R \bar{d}_R e_R \nu_L u_L D}^{(1\sim 3)}(0,2) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a u_{Lra} \right) (\nu_{Ls} C \gamma^\nu D_\mu e_{Rt}) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (u_{Lra} C \gamma^\nu D_\mu e_{Rt}) \\ i F_R^\mu{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \end{array} \right. \quad (3.695)$$

$$\mathcal{O}_{G_R \bar{e}_R e_L u_L \bar{u}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a (\bar{e}_{Rp} e_{Lr}) G_R^{A\mu}{}_\nu \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu u_{Lsa} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} u_{Lsa}) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu e_{Lr} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu (e_{Lr} C D_\mu u_{Lsa}) \left(\bar{e}_{Rp} \gamma^\nu C \bar{u}_{Lt}^b \right) \end{array} \right. \quad (3.696)$$

$$\mathcal{O}_{F_R \bar{e}_R e_L u_L \bar{u}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu (\bar{e}_{Rp} e_{Lr}) (D_\mu \bar{u}_{Lt}^a \gamma^\nu u_{Lsa}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} u_{Lsa}) (D_\mu \bar{u}_{Lt}^a \gamma^\nu e_{Lr}) \\ i F_R^\mu{}_\nu (e_{Lr} C D_\mu u_{Lsa}) (\bar{e}_{Rp} \gamma^\nu C \bar{u}_{Lt}^a) \end{array} \right. \quad (3.697)$$

$$\mathcal{O}_{G_R \bar{d}_L e_L \nu_L u_L D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} i \left(\lambda^A \right)_a^a G_R^{A\mu}{}_\nu (e_{Lp} C u_{Lra}) \left(D_\mu \bar{d}_{Lt}^b \gamma^\nu \nu_{Ls} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu (e_{Lp} C \nu_{Ls}) \left(D_\mu \bar{d}_{Lt}^b \gamma^\nu u_{Lra} \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) \left(\bar{d}_{Lt}^b \gamma^\nu e_{Lp} \right) \end{array} \right. \quad (3.698)$$

$$\mathcal{O}_{F_R \bar{d}_L e_L \nu_L u_L D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} i F_R^\mu{}_\nu (e_{Lp} C u_{Lra}) \left(D_\mu \bar{d}_{Lt}^a \gamma^\nu \nu_{Ls} \right) \\ i F_R^\mu{}_\nu (e_{Lp} C \nu_{Ls}) \left(D_\mu \bar{d}_{Lt}^a \gamma^\nu u_{Lra} \right) \\ i F_R^\mu{}_\nu (u_{Lra} C D_\mu \nu_{Ls}) \left(\bar{d}_{Lt}^a \gamma^\nu e_{Lp} \right) \end{array} \right. \quad (3.699)$$

$$\mathcal{O}_{G_R \nu_L^2 u_L \bar{u}_L D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \left(\lambda^A \right)_a^a G_R^{A\mu}{}_\nu (u_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) \left(\bar{u}_{Lt}^b \gamma^\nu u_{Lpa} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu (u_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu \nu_{Ls} \right) \end{array} \right. \quad (3.700)$$

$$\mathcal{O}_{F_R \nu_L^2 u_L \bar{u}_L D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i F_R^\mu{}_\nu (u_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{u}_{Lt}^a \gamma^\nu \nu_{Ls} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i F_R^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) \left(\bar{u}_{Lt}^a \gamma^\nu u_{Lpa} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i F_R^\mu{}_\nu (u_{Lpa} C \nu_{Lr}) \left(D_\mu \bar{u}_{Lt}^a \gamma^\nu \nu_{Ls} \right) \end{array} \right. \quad (3.701)$$

$$\mathcal{O}_{G_R \bar{d}_R \bar{e}_L \bar{u}_R^2 D}^{(1\sim 6)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{u}_{Rs}^c \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{bcd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{u}_{Rs}^c \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{u}_{Rs}^c \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{bcd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{u}_{Rs}^c \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.702)$$

$$\mathcal{O}_{F_R \bar{d}_R \bar{e}_L \bar{u}_R^2 D}^{(1\sim 3)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{u}_{Rs}^c \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \left(\bar{u}_{Rr}^b C D_\mu \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{u}_{Rs}^c \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \end{array} \right. \quad (3.703)$$

$$\mathcal{O}_{G_R \bar{d}_L \bar{e}_R \bar{u}_R^2 D}^{(1\sim 6)}(-1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \left(\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{bcd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \left(\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \left(\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{bcd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \left(\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b \right) \left(\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c \right) \end{array} \right. \quad (3.704)$$

$$\mathcal{O}_{F_R \bar{d}_L \bar{e}_R \bar{u}_R^2 D}^{(1\sim 3)}(-1, -1) \left| \begin{array}{l} \mathcal{Y}[\overline{[rs]}] i\epsilon_{abc} F_R^\mu{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rr}^a) (\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ \mathcal{Y}[\overline{[r]s}] i\epsilon_{abc} F_R^\mu{}_\nu (\bar{u}_{Rr}^a C D_\mu \bar{u}_{Rs}^b) (\bar{e}_{Rp} \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y}[\overline{[s]}] i\epsilon_{abc} F_R^\mu{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rr}^a) (\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \end{array} \right. \quad (3.705)$$

$$\mathcal{O}_{G_R \bar{d}_R d_L \bar{u}_R u_R D}^{(1\sim 12)}(0, 0) \left| \begin{array}{l} i(\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^c \gamma^\nu D_\mu u_{Rta}) \\ i(\lambda^A)^{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c \gamma^\nu D_\mu u_{Rtd}) \\ i(\lambda^A)^{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^b \gamma^\nu D_\mu u_{Rtd}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^c \gamma^\nu D_\mu u_{Rtc}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) (d_{Lrb} C \gamma^\nu D_\mu u_{Rta}) \\ i(\lambda^A)^{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) (d_{Lra} C \gamma^\nu D_\mu u_{Rtd}) \\ i(\lambda^A)^{\bar{d}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) (d_{Lrb} C \gamma^\nu D_\mu u_{Rtd}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) (d_{Lrb} C \gamma^\nu D_\mu u_{Rtc}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu u_{Rta}) (D_\mu \bar{u}_{Rs}^c d_{Lrb}) \\ i(\lambda^A)^{\bar{d}} G_R^{A\mu}{}_\nu (D_\mu \bar{u}_{Rs}^c d_{Lra}) (\bar{d}_{Rp}^a \gamma^\nu u_{Rtd}) \\ i(\lambda^A)^{\bar{d}} G_R^{A\mu}{}_\nu (D_\mu \bar{u}_{Rs}^b d_{Lrb}) (\bar{d}_{Rp}^a \gamma^\nu u_{Rtd}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu u_{Rtc}) (D_\mu \bar{u}_{Rs}^c d_{Lrb}) \end{array} \right. \quad (3.706)$$

$$\mathcal{O}_{F_R \bar{d}_R d_L \bar{u}_R u_R D}^{(1\sim 6)}(0, 0) \left| \begin{array}{l} iF_R^\mu{}_\nu (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^b \gamma^\nu D_\mu u_{Rta}) \\ iF_R^\mu{}_\nu (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c \gamma^\nu D_\mu u_{Rtc}) \\ iF_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) (d_{Lrb} C \gamma^\nu D_\mu u_{Rta}) \\ iF_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) (d_{Lra} C \gamma^\nu D_\mu u_{Rtc}) \\ iF_R^\mu{}_\nu (\bar{d}_{Rp}^a \gamma^\nu u_{Rta}) (D_\mu \bar{u}_{Rs}^b d_{Lrb}) \\ iF_R^\mu{}_\nu (D_\mu \bar{u}_{Rs}^c d_{Lra}) (\bar{d}_{Rp}^a \gamma^\nu u_{Rtc}) \end{array} \right. \quad (3.707)$$

$$\mathcal{O}_{G_R d_L \bar{e}_R \bar{\nu}_L \bar{u}_R D}^{(1\sim 3)}(0, -2) \left| \begin{array}{l} i(\lambda^A)^a G_R^{A\mu}{}_\nu (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rs}^b \gamma^\nu C D_\mu \bar{\nu}_{Lt}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{u}_{Rs}^b d_{Lpa}) (\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{\nu}_{Lt}) \\ i(\lambda^A)^{\bar{b}} G_R^{A\mu}{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^b) \end{array} \right. \quad (3.708)$$

$$\mathcal{O}_{F_R d_L \bar{e}_R \bar{\nu}_L \bar{u}_R D}^{(1\sim 3)}(0, -2) \left| \begin{array}{l} iF_R^\mu{}_\nu (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rs}^a \gamma^\nu C D_\mu \bar{\nu}_{Lt}) \\ iF_R^\mu{}_\nu (\bar{u}_{Rs}^a d_{Lpa}) (\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{\nu}_{Lt}) \\ iF_R^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu d_{Lpa}) (\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}^a) \end{array} \right. \quad (3.709)$$

$$\mathcal{O}_{G_R d_L \bar{e}_L \nu_L \bar{u}_R D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(\bar{u}_{Rr}{}^b d_{Lpa} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu \nu_{Ls} \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(d_{Lpa} C \nu_{Ls} \right) \left(\bar{u}_{Rr}{}^b \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(\bar{e}_{Lt} \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}{}^b D_\mu \nu_{Ls} \right) \end{array} \right. \quad (3.710)$$

$$\mathcal{O}_{F_R d_L \bar{e}_L \nu_L \bar{u}_R D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{u}_{Rr}{}^a d_{Lpa} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu \nu_{Ls} \right) \\ i F_R^\mu{}_\nu \left(d_{Lpa} C \nu_{Ls} \right) \left(\bar{u}_{Rr}{}^a \gamma^\nu C D_\mu \bar{e}_{Lt} \right) \\ i F_R^\mu{}_\nu \left(\bar{e}_{Lt} \gamma^\nu d_{Lpa} \right) \left(\bar{u}_{Rr}{}^a D_\mu \nu_{Ls} \right) \end{array} \right. \quad (3.711)$$

$$\mathcal{O}_{G_R \bar{d}_R^2 \bar{\nu}_L \bar{u}_R D}^{(1\sim 6)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{d}_{Rr}{}^b \right) \left(\bar{u}_{Rs}{}^c \gamma^\nu C D_\mu \bar{\nu}_{Lt} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{u}_{Rs}{}^c \right) \left(\bar{d}_{Rr}{}^b \gamma^\nu C D_\mu \bar{\nu}_{Lt} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}{}^b C D_\mu \bar{u}_{Rs}{}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{d}_{Rr}{}^b \right) \left(\bar{u}_{Rs}{}^c \gamma^\nu C D_\mu \bar{\nu}_{Lt} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{u}_{Rs}{}^c \right) \left(\bar{d}_{Rr}{}^b \gamma^\nu C D_\mu \bar{\nu}_{Lt} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}{}^b C D_\mu \bar{u}_{Rs}{}^c \right) \end{array} \right. \quad (3.712)$$

$$\mathcal{O}_{F_R \bar{d}_R^2 \bar{\nu}_L \bar{u}_R D}^{(1\sim 3)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{u}_{Rs}{}^c \right) \left(\bar{d}_{Rr}{}^b \gamma^\nu C D_\mu \bar{\nu}_{Lt} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}{}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \left(\bar{d}_{Rr}{}^b C D_\mu \bar{u}_{Rs}{}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{d}_{Rr}{}^b \right) \left(\bar{u}_{Rs}{}^c \gamma^\nu C D_\mu \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.713)$$

$$\mathcal{O}_{G_R \bar{d}_R \bar{e}_R \bar{u}_R \bar{u}_L D}^{(1\sim 6)}(-1,-1) \left| \begin{array}{l} i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{e}_{Rr} \right) \left(\bar{u}_{Rs}{}^b \gamma^\nu C D_\mu \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{bcd} \left(\lambda^A \right)_a^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{e}_{Rr} \right) \left(\bar{u}_{Rs}{}^b \gamma^\nu C D_\mu \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{u}_{Rs}{}^b \right) \left(\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{bcd} \left(\lambda^A \right)_a^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{u}_{Rs}{}^b \right) \left(\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}{}^b \right) \left(\bar{d}_{Rp}{}^a \gamma^\nu C \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{bcd} \left(\lambda^A \right)_a^d G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}{}^b \right) \left(\bar{d}_{Rp}{}^a \gamma^\nu C \bar{u}_{Lt}{}^c \right) \end{array} \right. \quad (3.714)$$

$$\mathcal{O}_{F_R \bar{d}_R \bar{e}_R \bar{u}_R \bar{u}_L D}^{(1\sim 3)}(-1,-1) \left| \begin{array}{l} i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{e}_{Rr} \right) \left(\bar{u}_{Rs}{}^b \gamma^\nu C D_\mu \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}{}^a C \bar{u}_{Rs}{}^b \right) \left(\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{u}_{Lt}{}^c \right) \\ i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{e}_{Rr} C D_\mu \bar{u}_{Rs}{}^b \right) \left(\bar{d}_{Rp}{}^a \gamma^\nu C \bar{u}_{Lt}{}^c \right) \end{array} \right. \quad (3.715)$$

$$\mathcal{O}_{G_R \bar{d}_R \bar{d}_L \nu_L \bar{u}_R D}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} i\epsilon_{acd} (\lambda^A)^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) (D_\mu \bar{d}_{Lt}^c \gamma^\nu \nu_{Ls}) \\ i\epsilon_{bcd} (\lambda^A)^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) (D_\mu \bar{d}_{Lt}^c \gamma^\nu \nu_{Ls}) \\ i\epsilon_{acd} (\lambda^A)^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ i\epsilon_{bcd} (\lambda^A)^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ i\epsilon_{acd} (\lambda^A)^d G_R^{A\mu}{}_\nu (\bar{u}_{Rr}^b D_\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ i\epsilon_{bcd} (\lambda^A)^d G_R^{A\mu}{}_\nu (\bar{u}_{Rr}^b D_\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \end{array} \right. \quad (3.716)$$

$$\mathcal{O}_{F_R \bar{d}_R \bar{d}_L \nu_L \bar{u}_R D}^{(1\sim 3)}(-1, 1) \left| \begin{array}{l} i\epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) (D_\mu \bar{d}_{Lt}^c \gamma^\nu \nu_{Ls}) \\ i\epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ i\epsilon_{abc} F_R^\mu{}_\nu (\bar{u}_{Rr}^b D_\mu \nu_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \end{array} \right. \quad (3.717)$$

$$\mathcal{O}_{G_R \bar{e}_R e_L \bar{u}_R u_R D}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i (\lambda^A)^b (\bar{e}_{Rp} e_{Lr}) G_R^{A\mu}{}_\nu (\bar{u}_{Rs}^a \gamma^\nu D_\mu u_{Rtb}) \\ i (\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (e_{Lr} C \gamma^\nu D_\mu u_{Rtb}) \\ i (\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} \gamma^\nu u_{Rtb}) (D_\mu \bar{u}_{Rs}^a e_{Lr}) \end{array} \right. \quad (3.718)$$

$$\mathcal{O}_{F_R \bar{e}_R e_L \bar{u}_R u_R D}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i F_R^\mu{}_\nu (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a \gamma^\nu D_\mu u_{Rta}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (e_{Lr} C \gamma^\nu D_\mu u_{Rta}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu u_{Rta}) (D_\mu \bar{u}_{Rs}^a e_{Lr}) \end{array} \right. \quad (3.719)$$

$$\mathcal{O}_{G_R d_R \bar{e}_R \nu_L \bar{u}_R D}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i (\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (\nu_{Ls} C \gamma^\nu D_\mu d_{Rtb}) \\ i (\lambda^A)^b (\bar{e}_{Rp} \nu_{Ls}) G_R^{A\mu}{}_\nu (\bar{u}_{Rs}^a \gamma^\nu D_\mu d_{Rtb}) \\ i (\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{e}_{Rp} \gamma^\nu d_{Rtb}) (\bar{u}_{Rs}^a D_\mu \nu_{Ls}) \end{array} \right. \quad (3.720)$$

$$\mathcal{O}_{F_R d_R \bar{e}_R \nu_L \bar{u}_R D}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i F_R^\mu{}_\nu (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (\nu_{Ls} C \gamma^\nu D_\mu d_{Rta}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} \nu_{Ls}) (\bar{u}_{Rs}^a \gamma^\nu D_\mu d_{Rta}) \\ i F_R^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu d_{Rta}) (\bar{u}_{Rs}^a D_\mu \nu_{Ls}) \end{array} \right. \quad (3.721)$$

$$\mathcal{O}_{G_R \nu_L^2 \bar{u}_R u_R D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \nu_{Lr}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rtb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\lambda^A)^b G_R^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu u_{Rtb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i (\lambda^A)^b G_R^{A\mu}{}_\nu (\bar{u}_{Rp}^a \nu_{Lr}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rtb}) \end{array} \right. \quad (3.722)$$

$$\mathcal{O}_{F_R \nu_L^2 \bar{u}_R u_R D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a \nu_{Lr}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rta}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i F_R^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{u}_{Rp}^a \gamma^\nu u_{Rta}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] i F_R^\mu{}_\nu (\bar{u}_{Rp}^a \nu_{Lr}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rta}) \end{array} \right. \quad (3.723)$$

$$\mathcal{O}_{F_R d_R d_L^2 \bar{e}_R D}^{(1\sim 3)}(1, -1) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i\epsilon^{abc} F_R^\mu{}_\nu (\bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C \gamma^\nu D_\mu d_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i\epsilon^{abc} F_R^\mu{}_\nu (D_\mu \bar{e}_{Rs} d_{Lrb}) (d_{Lpa} C \gamma^\nu d_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i\epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C d_{Lrb}) (\bar{e}_{Rs} \gamma^\nu D_\mu d_{Rtc}) \end{array} \right. \quad (3.729)$$

$$\mathcal{O}_{G_R d_L^2 \nu_L u_R D}^{(1\sim 6)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C d_{Lrb}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \gamma^\nu D_\mu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C d_{Lrb}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \gamma^\nu D_\mu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_d^a \epsilon^{bcd} G_R^{A\mu}{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \end{array} \right. \quad (3.730)$$

$$\mathcal{O}_{F_R d_L^2 \nu_L u_R D}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i\epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \gamma^\nu D_\mu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i\epsilon^{abc} F_R^\mu{}_\nu (d_{Lrb} C D_\mu \nu_{Ls}) (d_{Lpa} C \gamma^\nu u_{Rtc}) \\ \mathcal{Y}[\overline{p}r] i\epsilon^{abc} F_R^\mu{}_\nu (d_{Lpa} C d_{Lrb}) (\nu_{Ls} C \gamma^\nu D_\mu u_{Rtc}) \end{array} \right. \quad (3.731)$$

$$\mathcal{O}_{G_R \bar{d}_R^2 d_R d_L D}^{(1\sim 12)}(0, 0) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (d_{Lsc} C \gamma^\nu D_\mu d_{Rta}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (d_{Lsa} C \gamma^\nu D_\mu d_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lsc}) (\bar{d}_{Rr}^b \gamma^\nu D_\mu d_{Rta}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \gamma^\nu D_\mu d_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rta}) (\bar{d}_{Rr}^b D_\mu d_{Lsc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (\bar{d}_{Rr}^b D_\mu d_{Lsa}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (d_{Lsc} C \gamma^\nu D_\mu d_{Rta}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (d_{Lsa} C \gamma^\nu D_\mu d_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lsc}) (\bar{d}_{Rr}^b \gamma^\nu D_\mu d_{Rta}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \gamma^\nu D_\mu d_{Rtd}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rta}) (\bar{d}_{Rr}^b D_\mu d_{Lsc}) \\ \mathcal{Y}[\overline{p}r] i \left(\lambda^A \right)_b^c G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtd}) (\bar{d}_{Rr}^b D_\mu d_{Lsa}) \end{array} \right. \quad (3.732)$$

$$\mathcal{O}_{F_R \bar{d}_R^2 d_R d_L D}^{(1\sim 6)}(0, 0) \left| \begin{array}{l} \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (d_{Lsa} C \gamma^\nu D_\mu d_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \gamma^\nu D_\mu d_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtb}) (\bar{d}_{Rr}^b D_\mu d_{Lsa}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (d_{Lsa} C \gamma^\nu D_\mu d_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \gamma^\nu D_\mu d_{Rtb}) \\ \mathcal{Y}[\overline{p}r] i F_R^\mu{}_\nu (\bar{d}_{Rp}^a \gamma^\nu d_{Rtb}) (\bar{d}_{Rr}^b D_\mu d_{Lsa}) \end{array} \right. \quad (3.733)$$

$$\mathcal{O}_{G_R \bar{d}_R d_L e_L \bar{e}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu e_{Ls} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu d_{Lrb} \right) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(d_{Lrb} C D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \end{array} \right. \quad (3.734)$$

$$\mathcal{O}_{F_R \bar{d}_R d_L e_L \bar{e}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu e_{Ls} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(D_\mu \bar{e}_{Lt} \gamma^\nu d_{Lra} \right) \\ i F_R^\mu{}_\nu \left(d_{Lra} C D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{e}_{Lt} \right) \end{array} \right. \quad (3.735)$$

$$\mathcal{O}_{G_R \bar{d}_R d_L \bar{e}_R e_R D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{e}_{Rs} \gamma^\nu D_\mu e_{Rt} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \left(d_{Lrb} C \gamma^\nu D_\mu e_{Rt} \right) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(D_\mu \bar{e}_{Rs} d_{Lrb} \right) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \end{array} \right. \quad (3.736)$$

$$\mathcal{O}_{F_R \bar{d}_R d_L \bar{e}_R e_R D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{e}_{Rs} \gamma^\nu D_\mu e_{Rt} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \left(d_{Lra} C \gamma^\nu D_\mu e_{Rt} \right) \\ i F_R^\mu{}_\nu \left(D_\mu \bar{e}_{Rs} d_{Lra} \right) \left(\bar{d}_{Rp}^a \gamma^\nu e_{Rt} \right) \end{array} \right. \quad (3.737)$$

$$\mathcal{O}_{G_R \bar{d}_R d_L \nu_L \bar{\nu}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(D_\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Ls} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lrb} \right) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(d_{Lrb} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.738)$$

$$\mathcal{O}_{F_R \bar{d}_R d_L \nu_L \bar{\nu}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(D_\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Ls} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(D_\mu \bar{\nu}_{Lt} \gamma^\nu d_{Lra} \right) \\ i F_R^\mu{}_\nu \left(d_{Lra} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{\nu}_{Lt} \right) \end{array} \right. \quad (3.739)$$

$$\mathcal{O}_{G_R d_L \bar{d}_L \bar{e}_R e_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} d_{Lpa} \right) \left(D_\mu \bar{d}_{Lt}^b \gamma^\nu e_{Ls} \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(d_{Lpa} C e_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{d}_{Lt}^b \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} D_\mu e_{Ls} \right) \left(\bar{d}_{Lt}^b \gamma^\nu d_{Lpa} \right) \end{array} \right. \quad (3.740)$$

$$\mathcal{O}_{F_R d_L \bar{d}_L \bar{e}_R e_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{e}_{Rr} d_{Lpa} \right) \left(D_\mu \bar{d}_{Lt}^a \gamma^\nu e_{Ls} \right) \\ i F_R^\mu{}_\nu \left(d_{Lpa} C e_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{d}_{Lt}^a \right) \\ i F_R^\mu{}_\nu \left(\bar{e}_{Rr} D_\mu e_{Ls} \right) \left(\bar{d}_{Lt}^a \gamma^\nu d_{Lpa} \right) \end{array} \right. \quad (3.741)$$

$$\mathcal{O}_{G_R d_L \bar{e}_R \nu_L \bar{\nu}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} d_{Lpa} \right) \left(D_\mu \bar{u}_{Lt}^b \gamma^\nu \nu_{Ls} \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(d_{Lpa} C \nu_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{u}_{Lt}^b \right) \\ i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} D_\mu \nu_{Ls} \right) \left(\bar{u}_{Lt}^b \gamma^\nu d_{Lpa} \right) \end{array} \right. \quad (3.742)$$

$$\mathcal{O}_{F_R d_L \bar{e}_R \nu_L \bar{u}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} i F_R^\mu{}_\nu (\bar{e}_{Rr} d_{Lpa}) (D_\mu \bar{u}_{Lt}^a \gamma^\nu \nu_{Ls}) \\ i F_R^\mu{}_\nu (d_{Lpa} C \nu_{Ls}) (\bar{e}_{Rr} \gamma^\nu C D_\mu \bar{u}_{Lt}^a) \\ i F_R^\mu{}_\nu (\bar{e}_{Rr} D_\mu \nu_{Ls}) (\bar{u}_{Lt}^a \gamma^\nu d_{Lpa}) \end{array} \right. \quad (3.743)$$

$$\mathcal{O}_{G_R d_L \bar{d}_L \nu_L^2 D}^{(1\sim 3)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu (d_{Lpa} C \nu_{Lr}) (D_\mu \bar{d}_{Lt}^b \gamma^\nu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{d}_{Lt}^b \gamma^\nu d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] i \left(\lambda^A \right)_b^a G_R^{A\mu}{}_\nu (d_{Lpa} C \nu_{Lr}) (D_\mu \bar{d}_{Lt}^b \gamma^\nu \nu_{Ls}) \end{array} \right. \quad (3.744)$$

$$\mathcal{O}_{F_R d_L \bar{d}_L \nu_L^2 D}^{(1\sim 3)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] i F_R^\mu{}_\nu (d_{Lpa} C \nu_{Lr}) (D_\mu \bar{d}_{Lt}^a \gamma^\nu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] i F_R^\mu{}_\nu (\nu_{Lr} C D_\mu \nu_{Ls}) (\bar{d}_{Lt}^a \gamma^\nu d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] i F_R^\mu{}_\nu (d_{Lpa} C \nu_{Lr}) (D_\mu \bar{d}_{Lt}^a \gamma^\nu \nu_{Ls}) \end{array} \right. \quad (3.745)$$

$$\mathcal{O}_{G_R \bar{d}_R^3 e_R D}^{(1\sim 4)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ s \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c \gamma^\nu D_\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ s \end{array} \right] i \epsilon_{bcd} \left(\lambda^A \right)_a^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c \gamma^\nu D_\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c \gamma^\nu D_\mu e_{Rt}) \end{array} \right. \quad (3.746)$$

$$\mathcal{O}_{F_R \bar{d}_R^3 e_R D}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rp}^a \gamma^\nu e_{Rt}) (\bar{d}_{Rr}^b C D_\mu \bar{d}_{Rs}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ s \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c \gamma^\nu D_\mu e_{Rt}) \end{array} \right. \quad (3.747)$$

$$\mathcal{O}_{G_R \bar{d}_R^2 \bar{d}_L e_L D}^{(1\sim 6)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (D_\mu \bar{d}_{Lt}^c \gamma^\nu e_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (D_\mu \bar{d}_{Lt}^c \gamma^\nu e_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \end{array} \right. \quad (3.748)$$

$$\mathcal{O}_{F_R \bar{d}_R^2 \bar{d}_L e_L D}^{(1\sim 3)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \gamma^\nu C D_\mu \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rr}^b D_\mu e_{Ls}) (\bar{d}_{Rp}^a \gamma^\nu C \bar{d}_{Lt}^c) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] i \epsilon_{abc} F_R^\mu{}_\nu (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (D_\mu \bar{d}_{Lt}^c \gamma^\nu e_{Ls}) \end{array} \right. \quad (3.749)$$

$$\mathcal{O}_{G_R \bar{d}_R^2 \nu_L \bar{u}_L D}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu \nu_{Ls} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(\bar{d}_{Rr}^b \gamma^\nu C D_\mu \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu \nu_{Ls} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(\bar{d}_{Rr}^b \gamma^\nu C D_\mu \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{acd} \left(\lambda^A \right)_b^d G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \end{array} \right. \quad (3.750)$$

$$\mathcal{O}_{F_R \bar{d}_R^2 \nu_L \bar{u}_L D}^{(1\sim 3)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(\bar{d}_{Rr}^b \gamma^\nu C D_\mu \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}^b D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu C \bar{u}_{Lt}^c \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] i \epsilon_{abc} F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(D_\mu \bar{u}_{Lt}^c \gamma^\nu \nu_{Ls} \right) \end{array} \right. \quad (3.751)$$

$$\mathcal{O}_{G_R \bar{d}_R d_R \bar{e}_R e_L D}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \left(e_{Ls} C \gamma^\nu D_\mu d_{Rtb} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu D_\mu d_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(\bar{e}_{Rr} D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \end{array} \right. \quad (3.752)$$

$$\mathcal{O}_{F_R \bar{d}_R d_R \bar{e}_R e_L D}^{(1\sim 3)}(0, 0) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \left(e_{Ls} C \gamma^\nu D_\mu d_{Rta} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{e}_{Rr} \gamma^\nu D_\mu d_{Rta} \right) \\ i F_R^\mu{}_\nu \left(\bar{e}_{Rr} D_\mu e_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \end{array} \right. \quad (3.753)$$

$$\mathcal{O}_{G_R \bar{d}_R e_L \nu_L u_R D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\nu_{Ls} C \gamma^\nu D_\mu u_{Rtb} \right) \\ i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(e_{Lr} C \gamma^\nu D_\mu u_{Rtb} \right) \\ i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(e_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rtb} \right) \end{array} \right. \quad (3.754)$$

$$\mathcal{O}_{F_R \bar{d}_R e_L \nu_L u_R D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\nu_{Ls} C \gamma^\nu D_\mu u_{Rta} \right) \\ i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Ls} \right) \left(e_{Lr} C \gamma^\nu D_\mu u_{Rta} \right) \\ i F_R^\mu{}_\nu \left(e_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu u_{Rta} \right) \end{array} \right. \quad (3.755)$$

$$\mathcal{O}_{G_R \bar{d}_R d_R \nu_L^2 D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Lr} \right) \left(\nu_{Ls} C \gamma^\nu D_\mu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_b^b G_R^{A\mu}{}_\nu \left(\nu_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rtb} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i \left(\lambda^A \right)_a^b G_R^{A\mu}{}_\nu \left(\bar{d}_{Rp}^a \nu_{Lr} \right) \left(\nu_{Ls} C \gamma^\nu D_\mu d_{Rtb} \right) \end{array} \right. \quad (3.756)$$

$$\mathcal{O}_{F_R \bar{d}_R d_R \nu_L^2 D}^{(1\sim 3)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Lr} \right) \left(\nu_{Ls} C \gamma^\nu D_\mu d_{Rta} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_R^\mu{}_\nu \left(\nu_{Lr} C D_\mu \nu_{Ls} \right) \left(\bar{d}_{Rp}^a \gamma^\nu d_{Rta} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] i F_R^\mu{}_\nu \left(\bar{d}_{Rp}^a \nu_{Lr} \right) \left(\nu_{Ls} C \gamma^\nu D_\mu d_{Rta} \right) \end{array} \right. \quad (3.757)$$

$$\mathcal{O}_{F_R \bar{e}_R e_L^2 \bar{e}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} e_{Lr}) (D_\mu \bar{e}_{Lt} \gamma^\nu e_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (e_{Lr} C D_\mu e_{Ls}) (\bar{e}_{Rp} \gamma^\nu C \bar{e}_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} e_{Lr}) (D_\mu \bar{e}_{Lt} \gamma^\nu e_{Ls}) \end{array} \right. \quad (3.758)$$

$$\mathcal{O}_{F_R \bar{e}_R^2 e_R e_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} \gamma^\nu D_\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\bar{e}_{Rr} D_\mu e_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} C \bar{e}_{Rr}) (e_{Ls} C \gamma^\nu D_\mu e_{Rt}) \end{array} \right. \quad (3.759)$$

$$\mathcal{O}_{F_R \bar{e}_R e_L \nu_L \bar{\nu}_L D}^{(1\sim 3)}(0,0) \left| \begin{array}{l} iF_R^\mu{}_\nu (\bar{e}_{Rp} e_{Lr}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Ls}) \\ iF_R^\mu{}_\nu (\bar{e}_{Rp} \nu_{Ls}) (D_\mu \bar{\nu}_{Lt} \gamma^\nu e_{Lr}) \\ iF_R^\mu{}_\nu (e_{Lr} C D_\mu \nu_{Ls}) (\bar{e}_{Rp} \gamma^\nu C \bar{\nu}_{Lt}) \end{array} \right. \quad (3.760)$$

$$\mathcal{O}_{F_R e_L \bar{e}_L \nu_L^2 D}^{(1\sim 3)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (e_{Lp} C \nu_{Lr}) (D_\mu \bar{e}_{Lt} \gamma^\nu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Lt} \gamma^\nu e_{Lp}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_R^\mu{}_\nu (e_{Lp} C \nu_{Lr}) (D_\mu \bar{e}_{Lt} \gamma^\nu \nu_{Ls}) \end{array} \right. \quad (3.761)$$

$$\mathcal{O}_{F_R \bar{e}_R e_R \nu_L^2 D}^{(1\sim 3)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} \nu_{Lr}) (\nu_{Ls} C \gamma^\nu D_\mu e_{Rt}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} \gamma^\nu e_{Rt}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{e}_{Rp} \nu_{Lr}) (\nu_{Ls} C \gamma^\nu D_\mu e_{Rt}) \end{array} \right. \quad (3.762)$$

$$\mathcal{O}_{F_R \nu_L^3 \bar{\nu}_L D}^{(1,2)}(0,2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] iF_R^\mu{}_\nu (\bar{\nu}_{Lt} \gamma^\nu \nu_{Lp}) (\nu_{Lr} C D_\mu \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix} \right] i (\nu_{Lp} C \nu_{Lr}) F_R^\mu{}_\nu (D_\mu \bar{\nu}_{Lt} \gamma^\nu \nu_{Ls}) \end{array} \right. \quad (3.763)$$

3.5.3 Classes involving six-fermions: ψ^6

There are 58 complex types in this class.

$$(\Delta B, \Delta L) = (0, 0)$$

$$\mathcal{O}_{\bar{u}_R^3 u_L^3}^{(1\sim 8)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix}, \begin{smallmatrix} t & u \\ v \end{smallmatrix} \right] (u_{Lub} C u_{Lvc}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{u}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix}, \begin{smallmatrix} t & u \\ v \end{smallmatrix} \right] (u_{Lub} C u_{Lva}) (\bar{u}_{Rs}^c u_{Ltc}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix}, \begin{smallmatrix} t & u \\ v \end{smallmatrix} \right] (u_{Luc} C u_{Lva}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{u}_{Rs}^c u_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix}, \begin{smallmatrix} t & u \\ v \end{smallmatrix} \right] (\bar{u}_{Rp}^a u_{Lta}) (\bar{u}_{Rr}^b u_{Lub}) (\bar{u}_{Rs}^c u_{Lvc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t & u & v \end{smallmatrix} \right] (u_{Lub} C u_{Lvc}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{u}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t & u & v \end{smallmatrix} \right] (\bar{u}_{Rp}^a u_{Lta}) (\bar{u}_{Rr}^b u_{Lub}) (\bar{u}_{Rs}^c u_{Lvc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t & u \\ v \end{smallmatrix} \right] (u_{Lub} C u_{Lva}) (\bar{u}_{Rs}^c u_{Ltc}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s \end{smallmatrix}, \begin{smallmatrix} t & u & v \end{smallmatrix} \right] (u_{Lub} C u_{Lva}) (\bar{u}_{Rs}^c u_{Ltc}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.764)$$

$$\begin{aligned}
 \mathcal{O}_{\bar{e}_R e_L \bar{u}_R^2 u_L^2}^{(1\sim 10)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{e}_R p e_{Lr}) (u_{Lua} C u_{Lvb}) (\bar{u}_{Rs}^a C \bar{u}_{Rt}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{e}_R p e_{Lr}) (\bar{u}_{Rs}^a u_{Lua}) (\bar{u}_{Rt}^b u_{Lvb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Lr} C u_{Lua}) (\bar{u}_{Rt}^b u_{Lvb}) (\bar{e}_R p C \bar{u}_{Rs}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{e}_R p e_{Lr}) (u_{Lua} C u_{Lvb}) (\bar{u}_{Rs}^a C \bar{u}_{Rt}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{e}_R p e_{Lr}) (\bar{u}_{Rs}^a u_{Lua}) (\bar{u}_{Rt}^b u_{Lvb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Lr} C u_{Lua}) (\bar{u}_{Rt}^b u_{Lvb}) (\bar{e}_R p C \bar{u}_{Rs}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (u_{Lua} C u_{Lvb}) (\bar{u}_{Rt}^b e_{Lr}) (\bar{e}_R p C \bar{u}_{Rs}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Lr} C u_{Lua}) (\bar{u}_{Rt}^b u_{Lvb}) (\bar{e}_R p C \bar{u}_{Rs}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (u_{Lua} C u_{Lvb}) (\bar{u}_{Rt}^b e_{Lr}) (\bar{e}_R p C \bar{u}_{Rs}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Lr} C u_{Lua}) (\bar{u}_{Rt}^b u_{Lvb}) (\bar{e}_R p C \bar{u}_{Rs}^a)
 \end{aligned} \right. \quad (3.766)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{d_L \bar{e}_R \nu_L \bar{u}_R^2 u_L}^{(1\sim 10)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (u_{Lub} C \nu_{Lv}) (\bar{u}_{Rs}^b C \bar{u}_{Rt}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rt}^a \nu_{Lv}) (\bar{u}_{Rs}^b u_{Lub}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (u_{Lub} C \nu_{Lv}) (\bar{u}_{Rs}^b d_{Lpa}) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} u_{Lub}) (\bar{u}_{Rt}^a \nu_{Lv}) (\bar{u}_{Rs}^b d_{Lpa}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} u_{Luc}) (\bar{u}_{Rs}^a d_{Lpa}) (\bar{u}_{Rt}^c \nu_{Lv}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (u_{Lub} C \nu_{Lv}) (\bar{u}_{Rs}^b C \bar{u}_{Rt}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rt}^a \nu_{Lv}) (\bar{u}_{Rs}^b u_{Lub}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (u_{Lub} C \nu_{Lv}) (\bar{u}_{Rs}^b d_{Lpa}) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} u_{Lub}) (\bar{u}_{Rt}^a \nu_{Lv}) (\bar{u}_{Rs}^b d_{Lpa}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} u_{Luc}) (\bar{u}_{Rs}^a d_{Lpa}) (\bar{u}_{Rt}^c \nu_{Lv})
 \end{aligned} \right. \quad (3.767)
 \end{aligned}$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_L \bar{u}_R u_L}^{(1\sim 10)}(0,0) \left| \begin{array}{l} (\bar{e}_R s e_L t) (\bar{d}_R^a d_{Lrb}) (\bar{u}_R^b u_{Lva}) \\ (\bar{e}_R s e_L t) (\bar{d}_R^a d_{Lra}) (\bar{u}_R^c u_{Lvc}) \\ (e_{Lt} C u_{Lva}) (\bar{d}_R^a d_{Lrb}) (\bar{e}_R s C \bar{u}_R^b) \\ (e_{Lt} C u_{Lvc}) (\bar{d}_R^a d_{Lra}) (\bar{e}_R s C \bar{u}_R^c) \\ (d_{Lrb} C e_{Lt}) (\bar{u}_R^b u_{Lva}) (\bar{d}_R^a C \bar{e}_R s) \\ (d_{Lra} C e_{Lt}) (\bar{u}_R^c u_{Lvc}) (\bar{d}_R^a C \bar{e}_R s) \\ (e_{Lt} C u_{Lva}) (\bar{u}_R^b d_{Lrb}) (\bar{d}_R^a C \bar{e}_R s) \\ (e_{Lt} C u_{Lvc}) (\bar{u}_R^c d_{Lra}) (\bar{d}_R^a C \bar{e}_R s) \\ (\bar{e}_R s u_{Lva}) (\bar{d}_R^a e_{Lt}) (\bar{u}_R^b d_{Lrb}) \\ (\bar{e}_R s u_{Lvc}) (\bar{d}_R^a e_{Lt}) (\bar{u}_R^c d_{Lra}) \end{array} \right. \quad (3.769)$$

$$\mathcal{O}_{\bar{e}_R^2 e_L^2 \bar{u}_R u_L}^{(1\sim 5)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (\bar{e}_R p e_L s) (\bar{e}_R r e_L t) (\bar{u}_R^a u_{Lva}) \\ \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (\bar{e}_R p e_L s) (e_{Lt} C u_{Lva}) (\bar{e}_R r C \bar{u}_R^a) \\ \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (\bar{e}_R p e_L s) (e_{Lt} C u_{Lva}) (\bar{e}_R r C \bar{u}_R^a) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t \end{smallmatrix} \right] (\bar{e}_R p C \bar{e}_R r) (e_{Lt} C u_{Lva}) (\bar{u}_R^a e_L s) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t \end{smallmatrix} \right] (e_{Ls} C e_{Lt}) (\bar{e}_R p C \bar{e}_R r) (\bar{u}_R^a u_{Lva}) \end{array} \right. \quad (3.770)$$

$$\mathcal{O}_{\bar{d}_R d_L^2 \bar{e}_R \nu_L \bar{u}_R}^{(1\sim 10)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_R t d_{Lsa}) (\bar{u}_R^b \nu_{Lv}) (\bar{d}_R^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_R t d_{Lsc}) (\bar{d}_R^a d_{Lra}) (\bar{u}_R^c \nu_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_R t \nu_{Lv}) (\bar{d}_R^a d_{Lrb}) (\bar{u}_R^b d_{Lsa}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_R t \nu_{Lv}) (\bar{d}_R^a d_{Lra}) (\bar{u}_R^c d_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (d_{Lsa} C \nu_{Lv}) (\bar{u}_R^b d_{Lrb}) (\bar{d}_R^a C \bar{e}_R t) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_R t d_{Lsa}) (\bar{u}_R^b \nu_{Lv}) (\bar{d}_R^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_R t d_{Lsc}) (\bar{d}_R^a d_{Lra}) (\bar{u}_R^c \nu_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_R t \nu_{Lv}) (\bar{d}_R^a d_{Lrb}) (\bar{u}_R^b d_{Lsa}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_R t \nu_{Lv}) (\bar{d}_R^a d_{Lra}) (\bar{u}_R^c d_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (d_{Lsa} C \nu_{Lv}) (\bar{u}_R^b d_{Lrb}) (\bar{d}_R^a C \bar{e}_R t) \end{array} \right. \quad (3.771)$$

$$\mathcal{O}_{d_L \bar{e}_R^2 e_L \nu_L \bar{u}_R}^{(1\sim 5)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_R s e_L t) (\bar{e}_R r d_{Lpa}) (\bar{u}_R^a \nu_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (e_{Lt} C \nu_{Lv}) (\bar{e}_R r d_{Lpa}) (\bar{e}_R s C \bar{u}_R^a) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_R s \nu_{Lv}) (d_{Lpa} C e_{Lt}) (\bar{e}_R r C \bar{u}_R^a) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_R s e_L t) (\bar{e}_R r d_{Lpa}) (\bar{u}_R^a \nu_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (e_{Lt} C \nu_{Lv}) (\bar{e}_R r d_{Lpa}) (\bar{e}_R s C \bar{u}_R^a) \end{array} \right. \quad (3.772)$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^3 d_L^3}^{(1\sim 14)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p & t \\ r & u \\ s & v \end{smallmatrix} \right] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & t \\ r & u \\ s & v \end{smallmatrix} \right] (\bar{d}_{Rp}^a d_{Lta}) (\bar{d}_{Rr}^b d_{Lub}) (\bar{d}_{Rs}^c d_{Lvc}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (d_{Lub} C d_{Lva}) (\bar{d}_{Rs}^c d_{Ltc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (d_{Luc} C d_{Lva}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Ltb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (\bar{d}_{Rp}^a d_{Lta}) (\bar{d}_{Rr}^b d_{Lub}) (\bar{d}_{Rs}^c d_{Lvc}) \\
 & \mathcal{Y} [p r s, t u v] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta}) \\
 & \mathcal{Y} [p r s, t u v] (\bar{d}_{Rp}^a d_{Lta}) (\bar{d}_{Rr}^b d_{Lub}) (\bar{d}_{Rs}^c d_{Lvc}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s & t & u \\ v \end{smallmatrix} \right] (d_{Lub} C d_{Lva}) (\bar{d}_{Rs}^c d_{Ltc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s & t & u \\ v \end{smallmatrix} \right] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (d_{Lub} C d_{Lva}) (\bar{d}_{Rs}^c d_{Ltc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t \\ s & u \\ v \end{smallmatrix} \right] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (d_{Lub} C d_{Lvc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lta})
 \end{aligned} \right.
 \end{aligned} \tag{3.773}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^2 d_L^2 \bar{e}_R e_L}^{(1\sim 10)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (\bar{e}_{Ru} e_{Lv}) (d_{Lsa} C d_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (\bar{e}_{Ru} e_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b d_{Ltb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (d_{Ltb} C e_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b C \bar{e}_{Ru}) \\
 & \mathcal{Y} [p r, s t] (\bar{e}_{Ru} e_{Lv}) (d_{Lsa} C d_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} [p r, s t] (\bar{e}_{Ru} e_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b d_{Ltb}) \\
 & \mathcal{Y} [p r, s t] (d_{Ltb} C e_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b C \bar{e}_{Ru}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (\bar{e}_{Ru} d_{Lsa}) (d_{Ltb} C e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix} \right] (d_{Ltb} C e_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b C \bar{e}_{Ru}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t \end{smallmatrix} \right] (\bar{e}_{Ru} d_{Lsa}) (d_{Ltb} C e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & s \\ t \end{smallmatrix} \right] (d_{Ltb} C e_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b C \bar{e}_{Ru})
 \end{aligned} \right.
 \end{aligned} \tag{3.774}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R d_L \bar{e}_R^2 e_L^2}^{(1\sim 5)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} s & u \\ t & v \end{smallmatrix} \right] (\bar{e}_{Rs} e_{Lu}) (\bar{e}_{Rt} e_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s & u \\ t & v \end{smallmatrix} \right] (\bar{e}_{Rt} e_{Lv}) (d_{Lra} C e_{Lu}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s & u \\ t & v \end{smallmatrix} \right] (e_{Lu} C e_{Lv}) (\bar{e}_{Rt} d_{Lra}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} s & t & u \\ v \end{smallmatrix} \right] (\bar{e}_{Rt} e_{Lv}) (d_{Lra} C e_{Lu}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\
 & \mathcal{Y} [s t, u v] (e_{Lu} C e_{Lv}) (\bar{e}_{Rs} C \bar{e}_{Rt}) (\bar{d}_{Rp}^a d_{Lra})
 \end{aligned} \right.
 \end{aligned} \tag{3.775}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{e}_R^3 e_L^3}^{(1,2)}(0,0) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p & t \\ r & u \\ s & v \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Lt}) (\bar{e}_{Rr} e_{Lu}) (\bar{e}_{Rs} e_{Lv}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p & r & t & u \\ s & v \end{smallmatrix} \right] (e_{Lu} C e_{Lv}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{e}_{Rs} e_{Lt})
 \end{aligned} \right.
 \end{aligned} \tag{3.776}$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L^2 \bar{u}_R u_L}^{(1\sim 10)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (u_{Lta} C \nu_{Lv}) (\bar{u}_{Rs}^b \nu_{Lu}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (u_{Ltc} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c \nu_{Lu}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (u_{Lta} C \nu_{Lv}) (d_{Lrb} C \nu_{Lu}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (d_{Lra} C \nu_{Lu}) (u_{Ltc} C \nu_{Lv}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (d_{Lrb} C \nu_{Lu}) (\bar{d}_{Rp}^a u_{Lta}) (\bar{u}_{Rs}^b \nu_{Lv}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (d_{Lra} C \nu_{Lu}) (\bar{u}_{Rs}^c \nu_{Lv}) (\bar{d}_{Rp}^a u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^b u_{Lta}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (d_{Lrb} C u_{Lta}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (d_{Lra} C u_{Ltc}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \end{array} \right. \quad (3.780)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L^2 \bar{u}_R u_L}^{(1\sim 5)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\bar{e}_{Rp} e_{Lr}) (u_{Lta} C \nu_{Lv}) (\bar{u}_{Rs}^a \nu_{Lu}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (e_{Lr} C \nu_{Lu}) (u_{Lta} C \nu_{Lv}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (e_{Lr} C \nu_{Lu}) (\bar{e}_{Rp} u_{Lta}) (\bar{u}_{Rs}^a \nu_{Lv}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a u_{Lta}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline u \\ \hline v \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (e_{Lr} C u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.781)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L e_L \nu_L u_L}^{(1\sim 10)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (d_{Lsa} C e_{Lt}) (u_{Lub} C \nu_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (d_{Lsa} C u_{Lub}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (u_{Lub} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b e_{Lt}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b u_{Lub}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (d_{Lsa} C \nu_{Lv}) (\bar{d}_{Rp}^a e_{Lt}) (\bar{d}_{Rr}^b u_{Lub}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (d_{Lsa} C e_{Lt}) (u_{Lub} C \nu_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (d_{Lsa} C u_{Lub}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (u_{Lub} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b e_{Lt}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b u_{Lub}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline p \\ \hline r \\ \hline \end{array} \right] (d_{Lsa} C \nu_{Lv}) (\bar{d}_{Rp}^a e_{Lt}) (\bar{d}_{Rr}^b u_{Lub}) \end{array} \right. \quad (3.782)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R e_L^2 \nu_L u_L}^{(1\sim 5)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|} \hline s \\ \hline t \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (e_{Ls} C u_{Lua}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline s \\ \hline t \\ \hline \end{array} \right] (\bar{e}_{Rr} e_{Lt}) (u_{Lua} C \nu_{Lv}) (\bar{d}_{Rp}^a e_{Ls}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline s \\ \hline t \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (\bar{e}_{Rr} u_{Lua}) (\bar{d}_{Rp}^a e_{Ls}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline s \\ \hline t \\ \hline \end{array} \right] (e_{Ls} C e_{Lt}) (u_{Lua} C \nu_{Lv}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ \mathcal{Y} \left[\begin{array}{|c|} \hline s \\ \hline t \\ \hline \end{array} \right] (e_{Lt} C \nu_{Lv}) (\bar{e}_{Rr} u_{Lua}) (\bar{d}_{Rp}^a e_{Ls}) \end{array} \right. \quad (3.783)$$

$$(\Delta B, \Delta L) = (0, \pm 4)$$

$$\mathcal{O}_{\nu_L^4 \bar{u}_R u_L}^{(1,2)}(0, 4) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Lt} C \nu_{Lv}) (u_{Lra} C \nu_{Lu}) (\bar{u}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (\nu_{Lu} C \nu_{Lv}) (\bar{u}_{Rp}^a u_{Lra}) \end{array} \right. \quad (3.789)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L^3 u_L}^{(1\sim 3)}(0, 4) \left\{ \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|} \hline t \\ \hline u \\ \hline v \\ \hline \end{array} \right] (e_{Lr} C \nu_{Lu}) (u_{Lsa} C \nu_{Lv}) (\bar{d}_{Rp}^a \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] (\nu_{Lu} C \nu_{Lv}) (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsa}) \end{array} \right\} \quad (3.790)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L^4}^{(1,2)}(0, 4) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Lt} C \nu_{Lv}) (d_{Lra} C \nu_{Lu}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (\nu_{Lu} C \nu_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.791)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L^4}^{(1,2)}(0, 4) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Lt} C \nu_{Lv}) (\bar{e}_{Rp} \nu_{Ls}) (e_{Lr} C \nu_{Lu}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (\nu_{Lu} C \nu_{Lv}) (\bar{e}_{Rp} e_{Lr}) \end{array} \right. \quad (3.792)$$

$$(\Delta B, \Delta L) = (0, \pm 6)$$

$$\mathcal{O}_{\nu_L^6}(0, 6) \left| \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline s & t \\ \hline u & v \\ \hline \end{array} \right] (\nu_{Lp} C \nu_{Lr}) (\nu_{Ls} C \nu_{Lt}) (\nu_{Lu} C \nu_{Lv}) \right. \quad (3.793)$$

$$(\Delta B, \Delta L) = (\pm 1, \pm 1)$$

$$\mathcal{O}_{d_L e_L \bar{u}_R u_L^3}^{(1\sim 8)}(1, 1) \left\{ \begin{array}{l} \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{cde} (d_{Lpa} C e_{Lr}) (u_{Lud} C u_{Lve}) (\bar{u}_{Rs}^a u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{ace} (d_{Lpa} C e_{Lr}) (u_{Lub} C u_{Lve}) (\bar{u}_{Rs}^b u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{cde} (e_{Lr} C u_{Ltc}) (u_{Lud} C u_{Lve}) (\bar{u}_{Rs}^a d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{ace} (u_{Lub} C u_{Lve}) (e_{Lr} C u_{Ltc}) (\bar{u}_{Rs}^b d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{ade} (e_{Lr} C u_{Lud}) (d_{Lpa} C u_{Ltb}) (\bar{u}_{Rs}^b u_{Lve}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{ace} (d_{Lpa} C e_{Lr}) (u_{Lub} C u_{Lve}) (\bar{u}_{Rs}^b u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{ace} (u_{Lub} C u_{Lve}) (e_{Lr} C u_{Ltc}) (\bar{u}_{Rs}^b d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{|c|c|} \hline t & u \\ \hline v & \\ \hline \end{array} \right] \epsilon^{cde} (e_{Lr} C u_{Lud}) (d_{Lpa} C u_{Ltc}) (\bar{u}_{Rs}^a u_{Lve}) \end{array} \right\} \quad (3.794)$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R d_L^4 \bar{e}_R}^{(1\sim 6)}(1, -1) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|c|c|} \hline r & s & t & u \\ \hline \end{array} \right] \epsilon^{bde} (\bar{e}_{Rv} d_{Lue}) (d_{Lsa} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline r & s & t \\ \hline u \\ \hline \end{array} \right] \epsilon^{bde} (\bar{e}_{Rv} d_{Lue}) (d_{Lsa} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline r & s & t \\ \hline u \\ \hline \end{array} \right] \epsilon^{cde} (\bar{e}_{Rv} d_{Ltd}) (d_{Lsc} C d_{Lue}) (\bar{d}_{Rp}^a d_{Lra}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|} \hline r & s \\ \hline t & u \\ \hline \end{array} \right] \epsilon^{cde} (\bar{e}_{Rv} d_{Lue}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lra}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline r \\ \hline t \\ \hline u \\ \hline \end{array} \right] \epsilon^{cde} (\bar{e}_{Rv} d_{Lue}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lra}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline r \\ \hline t \\ \hline u \\ \hline \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rv} d_{Lua}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \end{aligned} \right. \quad (3.811)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{d_L^3 \bar{e}_R^2 e_L}^{(1\sim 3)}(1, -1) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline p & r & s \\ \hline t & u \\ \hline \end{array} \right] \epsilon^{abc} (\bar{e}_{Rt} d_{Lpa}) (\bar{e}_{Ru} d_{Lrb}) (d_{Lsc} C e_{Lv}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline s & u \\ \hline \end{array} \right] \epsilon^{abc} (\bar{e}_{Ru} e_{Lv}) (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline p & r \\ \hline s & u \\ \hline \end{array} \right] \epsilon^{abc} (\bar{e}_{Ru} e_{Lv}) (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) \end{aligned} \right. \quad (3.812)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^4 d_{Le}}^{(1\sim 6)}(-1, 1) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|c|c|} \hline p & r & s & t \\ \hline \end{array} \right] \epsilon_{bcd} (\bar{d}_{Rt}^d e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lua}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline p & r & s \\ \hline t \\ \hline \end{array} \right] \epsilon_{bcd} (d_{Lua} C e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c C \bar{d}_{Rt}^d) \\ & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline p & r & s \\ \hline t \\ \hline \end{array} \right] \epsilon_{bcd} (\bar{d}_{Rt}^d e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lua}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline s & t \\ \hline \end{array} \right] \epsilon_{bcd} (\bar{d}_{Rt}^d e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c d_{Lua}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline p & r \\ \hline s & t \\ \hline \end{array} \right] \epsilon_{bcd} (d_{Lua} C e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c C \bar{d}_{Rt}^d) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline p & r \\ \hline s & t \\ \hline \end{array} \right] \epsilon_{abd} (\bar{d}_{Rs}^c d_{Luc}) (\bar{d}_{Rt}^d e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{aligned} \right. \quad (3.813)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^3 \bar{e}_R e_L^2}^{(1\sim 3)}(-1, 1) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline p & r & s \\ \hline u & v \\ \hline \end{array} \right] \epsilon_{abc} (\bar{d}_{Rr}^b e_{Lu}) (\bar{d}_{Rs}^c e_{Lv}) (\bar{d}_{Rp}^a C \bar{e}_{Rt}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline s & u \\ \hline \end{array} \right] \epsilon_{abc} (\bar{e}_{Rt} e_{Lv}) (\bar{d}_{Rs}^c e_{Lu}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline p & r \\ \hline s & u \\ \hline \end{array} \right] \epsilon_{abc} (e_{Lu} C e_{Lv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c C \bar{e}_{Rt}) \end{aligned} \right. \quad (3.814)
 \end{aligned}$$

$$(\Delta B, \Delta L) = (\pm 1, \pm 3)$$

$$\begin{aligned}
 \mathcal{O}_{e_L^2 \nu_L \nu_L^3 u_L^3}^{(1\sim 3)}(1, 3) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|c|c|} \hline p & r & s & t \\ \hline u & v \\ \hline \end{array} \right] \epsilon^{abc} (e_{Lp} C u_{Lsa}) (e_{Lr} C u_{Ltb}) (u_{Luc} C \nu_{Lv}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline p & r & s \\ \hline t & u \\ \hline \end{array} \right] \epsilon^{abc} (e_{Lp} C u_{Lsa}) (e_{Lr} C u_{Ltb}) (u_{Luc} C \nu_{Lv}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline p & r \\ \hline s & t \\ \hline \end{array} \right] \epsilon^{abc} (e_{Lp} C e_{Lr}) (u_{Lsa} C u_{Ltb}) (u_{Luc} C \nu_{Lv}) \end{aligned} \right. \quad (3.815)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{d_L e_L \nu_L^2 u_L^2}^{(1\sim 5)}(1, 3) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] \epsilon^{abc} (d_{Lpa} C e_{Lr}) (u_{Lsb} C \nu_{Lu}) (u_{Ltc} C \nu_{Lv}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] \epsilon^{abc} (e_{Lr} C \nu_{Lu}) (u_{Ltc} C \nu_{Lv}) (d_{Lpa} C u_{Lsb}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|c|} \hline s & t & u \\ \hline v \\ \hline \end{array} \right] \epsilon^{abc} (\nu_{Lu} C \nu_{Lv}) (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] \epsilon^{abc} (e_{Lr} C \nu_{Lu}) (u_{Ltc} C \nu_{Lv}) (d_{Lpa} C u_{Lsb}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline s & t \\ \hline u & v \\ \hline \end{array} \right] \epsilon^{abc} (\nu_{Lu} C \nu_{Lv}) (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) \end{aligned} \right. \quad (3.816)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{d_L^2 \nu_L^3 u_L}^{(1\sim 3)}(1, 3) & \left| \begin{aligned} & \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline t & u \\ \hline \end{array} \right] \epsilon^{abc} (d_{Lpa} C \nu_{Lt}) (d_{Lrb} C \nu_{Lu}) (u_{Lsc} C \nu_{Lv}) \\ & \mathcal{Y} \left[\begin{array}{|c|c|} \hline p & r \\ \hline t & u \\ \hline \end{array} \right] \epsilon^{abc} (\nu_{Lu} C \nu_{Lv}) (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \\ & \mathcal{Y} \left[\begin{array}{|c|} \hline p & r \\ \hline t & u \\ \hline \end{array} \right] \epsilon^{abc} (\nu_{Lu} C \nu_{Lv}) (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \end{aligned} \right. \quad (3.817)
 \end{aligned}$$

$$\mathcal{O}_{e_R \bar{e}_L \bar{u}_R^2 u_L^2}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} \boxed{p} & \boxed{s} \\ \hline \boxed{r} & \boxed{t} \end{array} \right] (\bar{e}_{Lv} e_{Ru}) (u_{Lsa} C u_{Ltb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{p} & \boxed{s} \\ \hline \boxed{r} & \boxed{t} \end{array} \right] (\bar{e}_{Lv} e_{Ru}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \\ \mathcal{Y} [\boxed{p|r}, \boxed{s|t}] (\bar{e}_{Lv} e_{Ru}) (u_{Lsa} C u_{Ltb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} [\boxed{p|r}, \boxed{s|t}] (\bar{e}_{Lv} e_{Ru}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \end{array} \right. \quad (3.825)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{u}_R u_L^2 \bar{u}_L}^{(1\sim 12)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (u_{Lsc} C u_{Ltb}) (\bar{u}_{Rr}^b d_{Lpa}) (\bar{d}_{Lu}^a C \bar{u}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (u_{Lsc} C u_{Ltd}) (\bar{u}_{Rr}^a d_{Lpa}) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (u_{Lsc} C u_{Ltb}) (\bar{u}_{Rr}^b d_{Lpa}) (\bar{d}_{Lu}^c C \bar{u}_{Lv}^a) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) (\bar{d}_{Lu}^a C \bar{u}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^a u_{Ltd}) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) (\bar{d}_{Lu}^c C \bar{u}_{Lv}^a) \\ \mathcal{Y} [\boxed{s|t}] (u_{Lsc} C u_{Ltb}) (\bar{u}_{Rr}^b d_{Lpa}) (\bar{d}_{Lu}^a C \bar{u}_{Lv}^c) \\ \mathcal{Y} [\boxed{s|t}] (u_{Lsc} C u_{Ltd}) (\bar{u}_{Rr}^a d_{Lpa}) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^c) \\ \mathcal{Y} [\boxed{s|t}] (u_{Lsc} C u_{Ltb}) (\bar{u}_{Rr}^b d_{Lpa}) (\bar{d}_{Lu}^c C \bar{u}_{Lv}^a) \\ \mathcal{Y} [\boxed{s|t}] (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) (\bar{d}_{Lu}^a C \bar{u}_{Lv}^c) \\ \mathcal{Y} [\boxed{s|t}] (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^a u_{Ltd}) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^c) \\ \mathcal{Y} [\boxed{s|t}] (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) (\bar{d}_{Lu}^c C \bar{u}_{Lv}^a) \end{array} \right. \quad (3.826)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{u}_R u_L^2 \bar{u}_L}^{(1\sim 12)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (u_{Lsc} C u_{Lta}) (\bar{u}_{Lv}^c d_{Rub}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (u_{Lsa} C u_{Ltb}) (\bar{u}_{Lv}^e d_{Rue}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (u_{Lsc} C u_{Ltb}) (\bar{u}_{Lv}^c d_{Rua}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{u}_{Rr}^b u_{Lta}) (\bar{d}_{Rp}^a u_{Lsc}) (\bar{u}_{Lv}^c d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{d}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) (\bar{u}_{Lv}^e d_{Rue}) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{u}_{Rr}^b u_{Ltb}) (\bar{d}_{Rp}^a u_{Lsc}) (\bar{u}_{Lv}^c d_{Rua}) \\ \mathcal{Y} [\boxed{s|t}] (u_{Lsc} C u_{Lta}) (\bar{u}_{Lv}^c d_{Rub}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} [\boxed{s|t}] (u_{Lsa} C u_{Ltb}) (\bar{u}_{Lv}^e d_{Rue}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} [\boxed{s|t}] (u_{Lsc} C u_{Ltb}) (\bar{u}_{Lv}^c d_{Rua}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} [\boxed{s|t}] (\bar{u}_{Rr}^b u_{Lta}) (\bar{d}_{Rp}^a u_{Lsc}) (\bar{u}_{Lv}^c d_{Rub}) \\ \mathcal{Y} [\boxed{s|t}] (\bar{d}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) (\bar{u}_{Lv}^e d_{Rue}) \\ \mathcal{Y} [\boxed{s|t}] (\bar{u}_{Rr}^b u_{Ltb}) (\bar{d}_{Rp}^a u_{Lsc}) (\bar{u}_{Lv}^c d_{Rua}) \end{array} \right. \quad (3.827)$$

$$\mathcal{O}_{\bar{d}_R e_R \bar{\nu}_L \bar{u}_R u_L^2}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{\nu}_{Lv} e_{Ru}) (u_{Lsa} C u_{Ltb}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c|c} \boxed{s} \\ \hline \boxed{t} \end{array} \right] (\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \\ \mathcal{Y} [\boxed{s|t}] (\bar{\nu}_{Lv} e_{Ru}) (u_{Lsa} C u_{Ltb}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} [\boxed{s|t}] (\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \end{array} \right. \quad (3.828)$$

$$\mathcal{O}_{e_L \bar{e}_L \bar{u}_R^2 u_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] (\bar{e}_{Lu} u_{Rvb}) (\bar{u}_{Rr}^a e_{Lp}) (\bar{u}_{Rs}^b u_{Lta}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] (\bar{e}_{Lu} u_{Rva}) (\bar{u}_{Rr}^a e_{Lp}) (\bar{u}_{Rs}^b u_{Ltb}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \ s \end{array} \right] (\bar{e}_{Lu} u_{Rvb}) (\bar{u}_{Rr}^a e_{Lp}) (\bar{u}_{Rs}^b u_{Lta}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \ s \end{array} \right] (\bar{e}_{Lu} u_{Rva}) (\bar{u}_{Rr}^a e_{Lp}) (\bar{u}_{Rs}^b u_{Ltb}) \end{array} \right. \quad (3.839)$$

$$\mathcal{O}_{\bar{e}_R e_R \bar{u}_R^2 u_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] (e_{Ru} C u_{Rvb}) (\bar{u}_{Rs}^b u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \\ s \end{array} \right] (e_{Ru} C u_{Rva}) (\bar{u}_{Rs}^b u_{Ltb}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \ s \end{array} \right] (e_{Ru} C u_{Rvb}) (\bar{u}_{Rs}^b u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ \mathcal{Y} \left[\begin{array}{c} \overline{r} \ s \end{array} \right] (e_{Ru} C u_{Rva}) (\bar{u}_{Rs}^b u_{Ltb}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \end{array} \right. \quad (3.840)$$

$$\mathcal{O}_{\nu_L \bar{\nu}_L \bar{u}_R^2 u_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] (\bar{\nu}_{Lv} u_{Rub}) (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] (\bar{\nu}_{Lv} u_{Rub}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \end{array} \right] (\bar{\nu}_{Lv} u_{Rub}) (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \end{array} \right] (\bar{\nu}_{Lv} u_{Rub}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \nu_{Lt}) \end{array} \right. \quad (3.841)$$

$$\mathcal{O}_{d_R \bar{e}_L \nu_L \bar{u}_R^2 u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] (\bar{e}_{Lv} d_{Rub}) (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] (\bar{e}_{Lv} d_{Rub}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \end{array} \right] (\bar{e}_{Lv} d_{Rub}) (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \end{array} \right] (\bar{e}_{Lv} d_{Rub}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \nu_{Lt}) \end{array} \right. \quad (3.842)$$

$$\mathcal{O}_{d_L^2 \bar{d}_L^2 \bar{u}_R u_L}^{(1\sim 12)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r, \overline{u} \ v \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r, \overline{u} \ v \end{array} \right] (d_{Lrb} C u_{Ltc}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^a) (\bar{u}_{Rs}^c d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r, \overline{u} \ v \end{array} \right] (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r, \overline{u} \ v \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^c u_{Ltc}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^a) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r, \overline{u} \ v \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r, \overline{u} \ v \end{array} \right] (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, \overline{u} \ v \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^c u_{Ltc}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^a) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, \overline{u} \ v \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, \overline{u} \ v \end{array} \right] (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, \overline{u} \ v \end{array} \right] (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, \overline{u} \ v \end{array} \right] (d_{Lrb} C u_{Ltc}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^a) (\bar{u}_{Rs}^c d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, \overline{u} \ v \end{array} \right] (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \end{array} \right. \quad (3.843)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{u}_R u_R u_L \bar{u}_L}^{(1\sim 12)}(0,0) \left| \begin{array}{l}
 \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rs}^c u_{Lta} \right) \left(\bar{u}_{Lv}^b u_{Ruc} \right) \\
 \left(\bar{u}_{Lv}^e u_{Rue} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \\
 \left(\bar{u}_{Rs}^c u_{Ltc} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Lv}^b u_{Rua} \right) \\
 \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Lv}^d u_{Rua} \right) \left(\bar{u}_{Rs}^b u_{Ltd} \right) \\
 \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c u_{Ltd} \right) \left(\bar{u}_{Lv}^d u_{Ruc} \right) \\
 \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c u_{Ltc} \right) \left(\bar{u}_{Lv}^e u_{Rue} \right) \\
 \left(d_{Lrb} C u_{Lta} \right) \left(\bar{u}_{Lv}^b u_{Ruc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 \left(\bar{u}_{Lv}^e u_{Rue} \right) \left(d_{Lrb} C u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 \left(d_{Lrb} C u_{Ltc} \right) \left(\bar{u}_{Lv}^b u_{Rua} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 \left(d_{Lrb} C u_{Ltd} \right) \left(\bar{u}_{Lv}^d u_{Rua} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 \left(d_{Lra} C u_{Ltd} \right) \left(\bar{u}_{Lv}^d u_{Ruc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 \left(\bar{u}_{Lv}^e u_{Rue} \right) \left(d_{Lra} C u_{Ltc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right)
 \end{array} \right. \quad (3.844)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{d}_L \bar{u}_R u_L}^{(1\sim 12)}(0,0) \left| \begin{array}{l}
 \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rs}^c u_{Lta} \right) \left(\bar{d}_{Lv}^b d_{Ruc} \right) \\
 \left(\bar{d}_{Lv}^e d_{Rue} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \\
 \left(\bar{u}_{Rs}^c u_{Ltc} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lv}^b d_{Rua} \right) \\
 \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lv}^d d_{Rua} \right) \left(\bar{u}_{Rs}^b u_{Ltd} \right) \\
 \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{d}_{Lv}^d d_{Ruc} \right) \left(\bar{u}_{Rs}^c u_{Ltd} \right) \\
 \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c u_{Ltc} \right) \left(\bar{d}_{Lv}^e d_{Rue} \right) \\
 \left(d_{Lrb} C u_{Lta} \right) \left(\bar{d}_{Lv}^b d_{Ruc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 \left(\bar{d}_{Lv}^e d_{Rue} \right) \left(d_{Lrb} C u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 \left(d_{Lrb} C u_{Ltc} \right) \left(\bar{d}_{Lv}^b d_{Rua} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 \left(d_{Lrb} C u_{Ltd} \right) \left(\bar{d}_{Lv}^d d_{Rua} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 \left(d_{Lra} C u_{Ltd} \right) \left(\bar{d}_{Lv}^d d_{Ruc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 \left(\bar{d}_{Lv}^e d_{Rue} \right) \left(d_{Lra} C u_{Ltc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right)
 \end{array} \right. \quad (3.845)$$

$$\mathcal{O}_{\bar{d}_R d_L e_R \bar{e}_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l}
 \left(\bar{e}_{Lv} e_{Ru} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \\
 \left(\bar{e}_{Lv} e_{Ru} \right) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c u_{Ltc} \right) \\
 \left(\bar{e}_{Lv} e_{Ru} \right) \left(d_{Lrb} C u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 \left(\bar{e}_{Lv} e_{Ru} \right) \left(d_{Lra} C u_{Ltc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right)
 \end{array} \right. \quad (3.846)$$

$$\mathcal{O}_{\bar{d}_L \bar{d}_L e_L \bar{e}_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l}
 \left(d_{Lpa} C e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \left(\bar{d}_{Lu}^a C \bar{e}_{Lv} \right) \\
 \left(d_{Lpa} C e_{Lr} \right) \left(\bar{u}_{Rs}^a u_{Ltc} \right) \left(\bar{d}_{Lu}^c C \bar{e}_{Lv} \right) \\
 \left(e_{Lr} C u_{Ltb} \right) \left(\bar{u}_{Rs}^b d_{Lpa} \right) \left(\bar{d}_{Lu}^a C \bar{e}_{Lv} \right) \\
 \left(e_{Lr} C u_{Ltc} \right) \left(\bar{u}_{Rs}^a d_{Lpa} \right) \left(\bar{d}_{Lu}^c C \bar{e}_{Lv} \right)
 \end{array} \right. \quad (3.847)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_R \bar{u}_R u_L}^{(1\sim 4)}(0,0) \begin{vmatrix} (\bar{e}_{Rr} d_{Lpa}) \left(\bar{d}_{Lu}^a e_{Rv} \right) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \\ (\bar{e}_{Rr} d_{Lpa}) \left(\bar{d}_{Lu}^c e_{Rv} \right) \left(\bar{u}_{Rs}^a u_{Ltc} \right) \\ (\bar{e}_{Rr} u_{Ltb}) \left(\bar{d}_{Lu}^a e_{Rv} \right) \left(\bar{u}_{Rs}^b d_{Lpa} \right) \\ (\bar{e}_{Rr} u_{Ltc}) \left(\bar{u}_{Rs}^a d_{Lpa} \right) \left(\bar{d}_{Lu}^c e_{Rv} \right) \end{vmatrix} \quad (3.848)$$

$$\mathcal{O}_{d_L \bar{e}_L \nu_L \bar{u}_R u_L \bar{u}_L}^{(1\sim 4)}(0,0) \begin{vmatrix} (u_{Lsb} C \nu_{Lt}) \left(\bar{u}_{Rr}^b d_{Lpa} \right) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ (u_{Lsc} C \nu_{Lt}) \left(\bar{u}_{Rr}^a d_{Lpa} \right) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \\ \left(\bar{u}_{Rr}^b \nu_{Lt} \right) (d_{Lpa} C u_{Lsb}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ \left(\bar{u}_{Rr}^a \nu_{Lt} \right) (d_{Lpa} C u_{Lsc}) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \end{vmatrix} \quad (3.849)$$

$$\mathcal{O}_{d_L \bar{d}_L \nu_L \bar{\nu}_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \begin{vmatrix} (u_{Lsb} C \nu_{Lt}) \left(\bar{u}_{Rr}^b d_{Lpa} \right) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ (u_{Lsc} C \nu_{Lt}) \left(\bar{u}_{Rr}^a d_{Lpa} \right) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ \left(\bar{u}_{Rr}^b \nu_{Lt} \right) (d_{Lpa} C u_{Lsb}) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ \left(\bar{u}_{Rr}^a \nu_{Lt} \right) (d_{Lpa} C u_{Lsc}) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \end{vmatrix} \quad (3.850)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R^2 \bar{u}_R u_L}^{(1\sim 12)}(0,0) \begin{vmatrix} \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rr}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rva}) \left(\bar{d}_{Rr}^b u_{Ltc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rva}) (\bar{u}_{Rs}^c u_{Ltc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rr}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rva}) (\bar{u}_{Rs}^c u_{Ltc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rr}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rvc}) \left(\bar{d}_{Rr}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (d_{Rub} C d_{Rva}) \left(\bar{d}_{Rr}^b u_{Ltc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{vmatrix} \quad (3.851)$$

$$\mathcal{O}_{\bar{d}_R e_L \bar{\nu}_L \bar{u}_R u_R u_L}^{(1\sim 4)}(0,0) \begin{vmatrix} (\bar{\nu}_{Lv} u_{Rub}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \\ (\bar{\nu}_{Lv} u_{Rua}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \\ (\bar{\nu}_{Lv} u_{Rub}) (e_{Lr} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ (\bar{\nu}_{Lv} u_{Rua}) (e_{Lr} C u_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \end{vmatrix} \quad (3.852)$$

$$\mathcal{O}_{\bar{d}_R d_R e_L \bar{e}_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \begin{vmatrix} (\bar{e}_{Lv} d_{Rub}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \\ (\bar{e}_{Lv} d_{Rua}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \\ (\bar{e}_{Lv} d_{Rub}) (e_{Lr} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ (\bar{e}_{Lv} d_{Rua}) (e_{Lr} C u_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \end{vmatrix} \quad (3.853)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_R \bar{u}_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (d_{Rub} C e_{Rv}) \left(\bar{u}_{Rs}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ (d_{Rua} C e_{Rv}) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ (\bar{e}_{Rr} u_{Lta}) (d_{Rub} C e_{Rv}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ (\bar{e}_{Rr} u_{Ltb}) (d_{Rua} C e_{Rv}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \end{array} \right. \quad (3.854)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{\nu}_L \bar{\nu}_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{\nu}_{Lv} d_{Rub}) (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ (\bar{\nu}_{Lv} d_{Rua}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ (\bar{\nu}_{Lv} d_{Rub}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \\ (\bar{\nu}_{Lv} d_{Rua}) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a u_{Lsb} \right) \end{array} \right. \quad (3.855)$$

$$\mathcal{O}_{e_L^2 \bar{e}_L^2 \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (e_{Lr} C u_{Lta}) (\bar{u}_{Rs}^a e_{Lp}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (e_{Lp} C e_{Lr}) (\bar{e}_{Lu} C \bar{e}_{Lv}) (\bar{u}_{Rs}^a u_{Lta}) \end{array} \right. \quad (3.856)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{u}_R u_R u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a u_{Ltb}) \left(\bar{u}_{Lv}^b u_{Rua} \right) \\ (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a u_{Lta}) (\bar{u}_{Lv}^c u_{Ruc}) \\ (e_{Lr} C u_{Ltb}) \left(\bar{u}_{Lv}^b u_{Rua} \right) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ (e_{Lr} C u_{Lta}) (\bar{u}_{Lv}^c u_{Ruc}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.857)$$

$$\mathcal{O}_{d_R \bar{d}_L \bar{e}_R e_L \bar{u}_R u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) \left(\bar{d}_{Lv}^b d_{Rua} \right) (\bar{u}_{Rs}^a u_{Ltb}) \\ (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a u_{Lta}) \left(\bar{d}_{Lv}^c d_{Ruc} \right) \\ (e_{Lr} C u_{Ltb}) \left(\bar{d}_{Lv}^b d_{Rua} \right) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ (e_{Lr} C u_{Lta}) \left(\bar{d}_{Lv}^c d_{Ruc} \right) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.858)$$

$$\mathcal{O}_{\bar{e}_R e_R e_L \bar{e}_L \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (\bar{e}_{Lv} e_{Ru}) (\bar{u}_{Rs}^a u_{Lta}) \\ (\bar{e}_{Lv} e_{Ru}) (e_{Lr} C u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.859)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L \bar{\nu}_L \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rr}^a e_{Lp}) \\ (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (e_{Lp} C u_{Lsa}) (\bar{u}_{Rr}^a \nu_{Lt}) \end{array} \right. \quad (3.860)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R^2 \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rr} u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{u}{v} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{u}_{Rs}^a u_{Lta}) \end{array} \right. \quad (3.861)$$

$$\mathcal{O}_{d_R \bar{e}_R \nu_L \bar{u}_R u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (u_{Lsb} C \nu_{Lt}) \left(\bar{u}_{Lv}^b d_{Rua} \right) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Lv}^c d_{Ruc}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ (\bar{e}_{Rp} u_{Lsb}) (\bar{u}_{Rr}^a \nu_{Lt}) \left(\bar{u}_{Lv}^b d_{Rua} \right) \\ (\bar{e}_{Rp} u_{Lsa}) (\bar{u}_{Rr}^a \nu_{Lt}) (\bar{u}_{Lv}^c d_{Ruc}) \end{array} \right. \quad (3.862)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L \bar{\nu}_L \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{\nu}_{Lv} e_{Ru}) (u_{Lsa} C \nu_{Lt}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ (\bar{\nu}_{Lv} e_{Ru}) (\bar{e}_{Rp} u_{Lsa}) (\bar{u}_{Rr}^a \nu_{Lt}) \end{array} \right. \quad (3.863)$$

$$\mathcal{O}_{\nu_L^2 \bar{\nu}_L^2 \bar{u}_R u_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t}, \frac{u}{v} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (u_{Lra} C \nu_{Lt}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \\ \mathcal{Y} \left[\frac{s}{t}, \frac{u}{v} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{u}_{Rp}^a u_{Lra} \right) \end{array} \right. \quad (3.864)$$

$$\mathcal{O}_{\bar{d}_R d_L^2 \bar{d}_L u_L \bar{u}_L}^{(1\sim 12)}(0,0) \left\{ \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsc} C u_{Lta}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsc} C u_{Lta}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsa} C u_{Ltd}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^d \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsa} C u_{Ltd}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lra} \right) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^d \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lra} \right) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsc} C u_{Lta}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsc} C u_{Lta}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsa} C u_{Ltd}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^d \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] (d_{Lsa} C u_{Ltd}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lra} \right) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^d \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{[r]} \\ s \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lra} \right) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^c \right) \end{array} \right. \quad (3.865)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R d_L u_L \bar{u}_L}^{(1\sim 12)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] (d_{Lsc} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^c d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] (d_{Lsa} C u_{Ltd}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^d d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] (\bar{u}_{Lv}^e d_{Rue}) (d_{Lsa} C u_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \left(\bar{d}_{Rr}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a d_{Lsc} \right) (\bar{u}_{Lv}^c d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b u_{Ltd} \right) (\bar{u}_{Lv}^d d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b u_{Ltb} \right) (\bar{u}_{Lv}^e d_{Rue}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] (d_{Lsc} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^c d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] (d_{Lsa} C u_{Ltd}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^d d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] (\bar{u}_{Lv}^e d_{Rue}) (d_{Lsa} C u_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \left(\bar{d}_{Rr}^b u_{Lta} \right) \left(\bar{d}_{Rp}^a d_{Lsc} \right) (\bar{u}_{Lv}^c d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b u_{Ltd} \right) (\bar{u}_{Lv}^d d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right] \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b u_{Ltb} \right) (\bar{u}_{Lv}^e d_{Rue}) \end{array} \right. \quad (3.866)$$

$$\mathcal{O}_{d_R^2 d_L e_R \bar{\nu}_L u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y}_{\left[\frac{p}{r}\right]}(\bar{\nu}_{Lv} e_{Ru}) (d_{Lsa} C u_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y}_{\left[\frac{p}{r}\right]}(\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b u_{Ltb}) \\ \mathcal{Y}_{\left[\frac{p}{r}\right]}(\bar{\nu}_{Lv} e_{Ru}) (d_{Lsa} C u_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y}_{\left[\frac{p}{r}\right]}(\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b u_{Ltb}) \end{array} \right. \quad (3.867)$$

$$\mathcal{O}_{\bar{d}_R d_L e_L \bar{e}_L u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{e}_{Lu} C \bar{u}_{Lv}^b \right) \\ (e_{Ls} C u_{Ltc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{e}_{Lv} C \bar{u}_{Lv}^c \right) \\ \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Lrb} C u_{Lta}) \left(\bar{e}_{Lu} C \bar{u}_{Lv}^b \right) \\ \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Lra} C u_{Ltc}) \left(\bar{e}_{Lv} C \bar{u}_{Lv}^c \right) \end{array} \right. \quad (3.868)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{d}_L e_L \bar{\nu}_L u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{\nu}_{Lv} \right) \\ (e_{Ls} C u_{Ltc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Lrb} C u_{Lta}) \left(\bar{d}_{Lu}^b C \bar{\nu}_{Lv} \right) \\ \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Lra} C u_{Ltc}) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \end{array} \right. \quad (3.869)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_R u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rs} u_{Lta}) \left(\bar{u}_{Lv}^b e_{Ru} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ (\bar{e}_{Rs} u_{Ltc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Lv}^c e_{Ru} \right) \\ \left(\bar{u}_{Lv}^b e_{Ru} \right) (d_{Lrb} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \\ \left(\bar{u}_{Lv}^c e_{Ru} \right) (d_{Lra} C u_{Ltc}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \end{array} \right. \quad (3.870)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L \bar{\nu}_L u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Lu}^b C \bar{\nu}_{Lv} \right) \\ (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ (d_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Lu}^b C \bar{\nu}_{Lv} \right) \\ (d_{Lra} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lu}^c C \bar{\nu}_{Lv} \right) \end{array} \right. \quad (3.871)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_L u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) (e_{Ls} C u_{Ltb}) \left(\bar{d}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ (\bar{e}_{Rr} d_{Lpa}) (e_{Ls} C u_{Ltb}) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^a \right) \\ (\bar{e}_{Rr} u_{Ltb}) (d_{Lpa} C e_{Ls}) \left(\bar{d}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ (\bar{e}_{Rr} u_{Ltb}) (d_{Lpa} C e_{Ls}) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^a \right) \end{array} \right. \quad (3.872)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L u_L \bar{u}_L^2}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{u}{v} \right] (\bar{e}_{Rr} d_{Lpa}) (u_{Lsb} C \nu_{Lt}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C u_{Lsb}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] (\bar{e}_{Rr} d_{Lpa}) (u_{Lsb} C \nu_{Lt}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C u_{Lsb}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \end{array} \right. \quad (3.873)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R e_L \bar{\nu}_L u_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (\bar{\nu}_{Lv} d_{Rub}) (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{\nu}_{Lv} d_{Rub}) \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{d}_{Rr}^b u_{Lta} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{\nu}_{Lv} d_{Rub}) (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{\nu}_{Lv} d_{Rub}) \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{d}_{Rr}^b u_{Lta} \right) \end{array} \right. \quad (3.874)$$

$$\mathcal{O}_{\bar{d}_R e_L^2 \bar{e}_L \bar{\nu}_L u_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \\ \mathcal{Y} \left[\frac{r}{s} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a e_{Lr} \right) \end{array} \right. \quad (3.875)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_L u_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (e_{Ls} C u_{Ltb}) \left(\bar{u}_{Lv}^b d_{Rua} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ (e_{Ls} C u_{Lta}) \left(\bar{u}_{Lv}^c d_{Ruc} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ (\bar{e}_{Rr} u_{Ltb}) \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{u}_{Lv}^b d_{Rua} \right) \\ (\bar{e}_{Rr} u_{Lta}) \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{u}_{Lv}^c d_{Ruc} \right) \end{array} \right. \quad (3.876)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R e_R e_L \bar{\nu}_L u_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{\nu}_{Lv} e_{Ru}) (e_{Ls} C u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ (\bar{\nu}_{Lv} e_{Ru}) (\bar{e}_{Rr} u_{Lta}) \left(\bar{d}_{Rp}^a e_{Ls} \right) \end{array} \right. \quad (3.877)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L \bar{\nu}_L^2 u_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{uv}] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) \\ \mathcal{Y}[\overline{uv}] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsa}) \end{array} \right. \quad (3.878)$$

$$\mathcal{O}_{\bar{e}_R e_L^2 \bar{e}_L u_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{rs}] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C u_{Lta}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ \mathcal{Y}[\overline{rs}] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C u_{Lta}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \end{array} \right. \quad (3.879)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R e_L^2 \bar{\nu}_L u_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{rs}] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C u_{Lta}) (\bar{d}_{Lu}^a C \bar{\nu}_{Lv}) \\ \mathcal{Y}[\overline{rs}] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C u_{Lta}) (\bar{d}_{Lu}^a C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.880)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R e_L u_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{pr}] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} u_{Lta}) (\bar{u}_{Lv}^a e_{Ru}) \\ \mathcal{Y}[\overline{pr}] (\bar{e}_{Rp} C \bar{e}_{Rr}) (e_{Ls} C u_{Lta}) (\bar{u}_{Lv}^a e_{Ru}) \end{array} \right. \quad (3.881)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L \bar{\nu}_L u_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \\ (e_{Lr} C \nu_{Lt}) (\bar{e}_{Rp} u_{Lsa}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.882)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{u}_R^2 u_R^2}^{(1\sim 12)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^c C \bar{u}_{Rt}^b) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{u}_{Rt}^b d_{Lrb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rvd}) (\bar{u}_{Rt}^d d_{Lra}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^c C \bar{u}_{Rt}^b) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rvd}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c C \bar{u}_{Rt}^d) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{u}_{Rt}^b d_{Lrb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^c C \bar{u}_{Rt}^b) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rvd}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Rs}^c C \bar{u}_{Rt}^d) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{u}_{Rt}^d d_{Lra}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Rs}^c C \bar{u}_{Rt}^b) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rva}) (\bar{u}_{Rt}^b d_{Lrb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Ruc} C u_{Rvd}) (\bar{u}_{Rt}^d d_{Lra}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \end{array} \right. \quad (3.883)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_L \nu_L \bar{u}_R^2 u_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{rs}] (\bar{e}_{Lu} u_{Rvb}) (\bar{u}_{Rs}^a \nu_{Lt}) (\bar{u}_{Rr}^b d_{Lpa}) \\ \mathcal{Y}[\overline{rs}] (\bar{e}_{Lu} u_{Rvc}) (\bar{u}_{Rr}^a d_{Lpa}) (\bar{u}_{Rs}^c \nu_{Lt}) \\ \mathcal{Y}[\overline{rs}] (\bar{e}_{Lu} u_{Rvb}) (\bar{u}_{Rs}^a \nu_{Lt}) (\bar{u}_{Rr}^b d_{Lpa}) \\ \mathcal{Y}[\overline{rs}] (\bar{e}_{Lu} u_{Rvc}) (\bar{u}_{Rr}^a d_{Lpa}) (\bar{u}_{Rs}^c \nu_{Lt}) \end{array} \right. \quad (3.884)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{u}_R^2 u_R^2}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Rua} C u_{Rvb}) (\bar{u}_{Rt}^b e_{Lr}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (u_{Rua} C u_{Rvb}) (\bar{u}_{Rt}^b e_{Lr}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (\bar{e}_{Rp} e_{Lr}) (u_{Rua} C u_{Rvb}) (\bar{u}_{Rs}^a C \bar{u}_{Rt}^b) \\ \mathcal{Y}[\overline{st}, \overline{uv}] (\bar{e}_{Rp} e_{Lr}) (u_{Rua} C u_{Rvb}) (\bar{u}_{Rs}^a C \bar{u}_{Rt}^b) \end{array} \right. \quad (3.885)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \nu_L \bar{u}_R^2 u_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{rs}] (\bar{u}_{Rs}^b \nu_{Lt}) (d_{Rua} C u_{Rvb}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ \mathcal{Y}[\overline{rs}] (\bar{u}_{Rs}^b \nu_{Lt}) (d_{Rub} C u_{Rva}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ \mathcal{Y}[\overline{rs}] (\bar{u}_{Rs}^b \nu_{Lt}) (d_{Rua} C u_{Rvb}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \\ \mathcal{Y}[\overline{rs}] (\bar{u}_{Rs}^b \nu_{Lt}) (d_{Rub} C u_{Rva}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \end{array} \right. \quad (3.886)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_R \bar{u}_R u_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (e_{Ru} C u_{Rva}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{e}_{Rs} C \bar{u}_{Rt}^b \right) \\ (e_{Ru} C u_{Rvc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{e}_{Rs} C \bar{u}_{Rt}^c \right) \\ (e_{Ru} C u_{Rva}) \left(\bar{u}_{Rt}^b d_{Lrb} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \\ (e_{Ru} C u_{Rvc}) \left(\bar{u}_{Rt}^c d_{Lra} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \end{array} \right. \quad (3.891)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L \bar{\nu}_L \bar{u}_R u_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{\nu}_{Lv} u_{Rua}) \left(\bar{u}_{Rs}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ (\bar{\nu}_{Lv} u_{Ruc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c \nu_{Lt} \right) \\ (\bar{\nu}_{Lv} u_{Rua}) \left(d_{Lrb} C \nu_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ (\bar{\nu}_{Lv} u_{Ruc}) \left(d_{Lra} C \nu_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.892)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{e}_L \bar{\nu}_L \bar{u}_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Lv} d_{Rua}) \left(\bar{u}_{Rs}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ (\bar{e}_{Lv} d_{Ruc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c \nu_{Lt} \right) \\ (\bar{e}_{Lv} d_{Rua}) \left(d_{Lrb} C \nu_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ (\bar{e}_{Lv} d_{Ruc}) \left(d_{Lra} C \nu_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.893)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_L \bar{u}_R u_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rt}^b e_{Ls} \right) \left(\bar{d}_{Lu}^a u_{Rvb} \right) \\ (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rt}^a e_{Ls} \right) \left(\bar{d}_{Lu}^c u_{Rvc} \right) \\ (d_{Lpa} C e_{Ls}) \left(\bar{d}_{Lu}^a u_{Rvb} \right) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) \\ (d_{Lpa} C e_{Ls}) \left(\bar{d}_{Lu}^c u_{Rvc} \right) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^a \right) \end{array} \right. \quad (3.894)$$

$$\mathcal{O}_{d_L e_L \bar{e}_L^2 \nu_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{uv}] (\bar{e}_{Lu} C \bar{e}_{Lv}) (d_{Lpa} C e_{Lr}) (\bar{u}_{Rs}^a \nu_{Lt}) \\ \mathcal{Y}[\overline{uv}] (\bar{e}_{Lu} C \bar{e}_{Lv}) (e_{Lr} C \nu_{Lt}) (\bar{u}_{Rs}^a d_{Lpa}) \end{array} \right. \quad (3.895)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L \bar{u}_R u_R \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rs}^b \nu_{Lt} \right) (\bar{u}_{Lv}^a u_{Rub}) \\ (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rs}^a \nu_{Lt} \right) (\bar{u}_{Lv}^c u_{Ruc}) \\ (\bar{e}_{Rr} \nu_{Lt}) \left(\bar{u}_{Rs}^b d_{Lpa} \right) (\bar{u}_{Lv}^a u_{Rub}) \\ (\bar{e}_{Rr} \nu_{Lt}) \left(\bar{u}_{Rs}^a d_{Lpa} \right) (\bar{u}_{Lv}^c u_{Ruc}) \end{array} \right. \quad (3.896)$$

$$\mathcal{O}_{d_R d_L \bar{d}_L \bar{e}_R \nu_L \bar{u}_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rs}^b \nu_{Lt} \right) \left(\bar{d}_{Lv}^a d_{Rub} \right) \\ (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rs}^a \nu_{Lt} \right) \left(\bar{d}_{Lv}^c d_{Ruc} \right) \\ (\bar{e}_{Rr} \nu_{Lt}) \left(\bar{d}_{Lv}^a d_{Rub} \right) \left(\bar{u}_{Rs}^b d_{Lpa} \right) \\ (\bar{e}_{Rr} \nu_{Lt}) \left(\bar{u}_{Rs}^a d_{Lpa} \right) \left(\bar{d}_{Lv}^c d_{Ruc} \right) \end{array} \right. \quad (3.897)$$

$$\mathcal{O}_{d_L \bar{e}_R e_R \bar{e}_L \nu_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Lv} e_{Ru}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rs}^a \nu_{Lt}) \\ (\bar{e}_{Lv} e_{Ru}) (\bar{e}_{Rr} \nu_{Lt}) (\bar{u}_{Rs}^a d_{Lpa}) \end{array} \right. \quad (3.898)$$

$$\mathcal{O}_{d_L \bar{e}_L \nu_L^2 \bar{\nu}_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{s}] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C \nu_{Ls}) (\bar{u}_{Rr}^a \nu_{Lt}) \\ \mathcal{Y}[\overline{s}] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (\bar{u}_{Rr}^a d_{Lpa}) \end{array} \right. \quad (3.899)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_L \bar{u}_R u_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \left(\bar{u}_{Rt}^b e_{Ls} \right) (d_{Rua} C u_{Rvb}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ \left(\bar{u}_{Rt}^b e_{Ls} \right) (d_{Rub} C u_{Rva}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Rua} C u_{Rvb}) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) \\ \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Rub} C u_{Rva}) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) \end{array} \right. \quad (3.900)$$

$$\mathcal{O}_{\bar{d}_R d_R^2 \bar{e}_R \nu_L \bar{u}_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{uv}] (d_{Rua} C d_{Rvb}) (\bar{u}_{Rs}^b \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ \mathcal{Y}[\overline{uv}] (\bar{e}_{Rr} \nu_{Lt}) (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \\ \mathcal{Y}[\overline{u}] (d_{Rua} C d_{Rvb}) (\bar{u}_{Rs}^b \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ \mathcal{Y}[\overline{u}] (\bar{e}_{Rr} \nu_{Lt}) (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \end{array} \right. \quad (3.901)$$

$$\mathcal{O}_{\bar{e}_R e_L^2 \bar{e}_L \bar{u}_R u_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{rs}] (\bar{e}_{Rp} e_{Lr}) (\bar{e}_{Lu} u_{Rva}) (\bar{u}_{Rt}^a e_{Ls}) \\ \mathcal{Y}[\overline{rs}] (\bar{e}_{Rp} e_{Lr}) (\bar{e}_{Lu} u_{Rva}) (\bar{u}_{Rt}^a e_{Ls}) \end{array} \right. \quad (3.902)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R e_L \bar{u}_R u_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{pr}] (\bar{e}_{Rp} e_{Ls}) (e_{Ru} C u_{Rva}) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \\ \mathcal{Y}[\overline{pr}] (\bar{e}_{Rp} C \bar{e}_{Rr}) (e_{Ru} C u_{Rva}) (\bar{u}_{Rt}^a e_{Ls}) \end{array} \right. \quad (3.903)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L \bar{\nu}_L \bar{u}_R u_R}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{u}_{Rs}^a \nu_{Lt}) \\ (e_{Lr} C \nu_{Lt}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.904)$$

$$\mathcal{O}_{d_R \bar{e}_R e_L \bar{e}_L \nu_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (\bar{e}_{Lv} d_{Rua}) (\bar{u}_{Rs}^a \nu_{Lt}) \\ (e_{Lr} C \nu_{Lt}) (\bar{e}_{Lv} d_{Rua}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.905)$$

$$\mathcal{O}_{d_R \bar{e}_R^2 e_R \nu_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{pr}] (\bar{e}_{Rr} \nu_{Lt}) (d_{Rua} C e_{Rv}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \\ \mathcal{Y}[\overline{pr}] (\bar{e}_{Rp} C \bar{e}_{Rr}) (d_{Rua} C e_{Rv}) (\bar{u}_{Rs}^a \nu_{Lt}) \end{array} \right. \quad (3.906)$$

$$\mathcal{O}_{d_R \bar{e}_R \nu_L^2 \bar{\nu}_L \bar{u}_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{st}] (\bar{e}_{Rp} \nu_{Ls}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{u}_{Rr}^a \nu_{Lt}) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \end{array} \right. \quad (3.907)$$

$$\mathcal{O}_{\bar{d}_R d_L^3 d_L^2}^{(1\sim 8)}(0,0) \left| \begin{array}{l} \mathcal{Y}[\overline{\frac{r}{t} s}, \overline{uv}] (d_{Lsc} C d_{Lta}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \\ \mathcal{Y}[\overline{\frac{r}{t} s}, \overline{uv}] (d_{Lsa} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y}[\overline{rs t}, \overline{uv}] (d_{Lsc} C d_{Lta}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \\ \mathcal{Y}[\overline{\frac{r}{t} s}, \overline{uv}] (d_{Lsc} C d_{Lta}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \\ \mathcal{Y}[\overline{rs t}, \overline{\frac{u}{v}}] (d_{Lsc} C d_{Lta}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y}[\overline{\frac{r}{t} s}, \overline{\frac{u}{v}}] (d_{Lsc} C d_{Lta}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \\ \mathcal{Y}[\overline{\frac{r}{t} s}, \overline{\frac{u}{v}}] (d_{Lsa} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^d) \\ \mathcal{Y}[\overline{\frac{r}{t} s}, \overline{\frac{u}{v}}] (d_{Lsc} C d_{Lta}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \end{array} \right. \quad (3.908)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R d_L e_L \bar{e}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (\bar{e}_{Lv} d_{Rub}) (d_{Lsa} C e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{e}_{Lv} d_{Rub}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b e_{Lt}) \\ \mathcal{Y} \left[\frac{p}{\bar{r}} \right] (\bar{e}_{Lv} d_{Rub}) (d_{Lsa} C e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{\bar{r}} \right] (\bar{e}_{Lv} d_{Rub}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b e_{Lt}) \end{array} \right. \quad (3.920)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R d_L \bar{e}_R e_R}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (\bar{e}_{Rt} d_{Lsa}) (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b C \bar{e}_{Rt}) \\ \mathcal{Y} \left[\frac{p}{\bar{r}} \right] (\bar{e}_{Rt} d_{Lsa}) (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{\bar{r}} \right] (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b C \bar{e}_{Rt}) \end{array} \right. \quad (3.921)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R d_L \nu_L \bar{\nu}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (\bar{\nu}_{Lv} d_{Rub}) (d_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{\nu}_{Lv} d_{Rub}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\frac{p}{\bar{r}} \right] (\bar{\nu}_{Lv} d_{Rub}) (d_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{\bar{r}} \right] (\bar{\nu}_{Lv} d_{Rub}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \nu_{Lt}) \end{array} \right. \quad (3.922)$$

$$\mathcal{O}_{\bar{d}_R d_L e_L^2 \bar{e}_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t}, \frac{u}{v} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (d_{Lra} C e_{Lt}) (\bar{d}_{Rp}^a e_{Ls}) \\ \mathcal{Y} \left[\frac{s}{\bar{t}}, \frac{u}{\bar{v}} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Lu} C \bar{e}_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.923)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_L u_R \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rs} e_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Lv}^b u_{Rua}) \\ (\bar{e}_{Rs} e_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Lv}^c u_{Ruc}) \\ (d_{Lrb} C e_{Lt}) (\bar{u}_{Lv}^b u_{Rua}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ (d_{Lra} C e_{Lt}) (\bar{u}_{Lv}^c u_{Ruc}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.924)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{d}_L \bar{e}_R e_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rs} e_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lv}^b d_{Rua}) \\ (\bar{e}_{Rs} e_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{d}_{Lv}^c d_{Ruc}) \\ (d_{Lrb} C e_{Lt}) (\bar{d}_{Lv}^b d_{Rua}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ (d_{Lra} C e_{Lt}) (\bar{d}_{Lv}^c d_{Ruc}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.925)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_R e_L \bar{e}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a d_{Lra}) \\ (\bar{e}_{Lv} e_{Ru}) (d_{Lra} C e_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.926)$$

$$\mathcal{O}_{\bar{d}_R d_L e_L \bar{e}_L \nu_L \bar{\nu}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (e_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) \\ (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Ls}) \end{array} \right. \quad (3.927)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R^2 e_R^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t}, \frac{u}{v} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rt} d_{Lra}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ \mathcal{Y} \left[\frac{s}{\bar{t}}, \frac{u}{\bar{v}} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rs} C \bar{e}_{Rt}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.928)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{e}_R \nu_L \bar{u}_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} (\bar{e}_{Rs} \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Lv}^b d_{Rua}) \\ (\bar{e}_{Rs} \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Lv}^c d_{Ruc}) \\ (d_{Lrb} C \nu_{Lt}) (\bar{u}_{Lv}^b d_{Rua}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ (d_{Lra} C \nu_{Lt}) (\bar{u}_{Lv}^c d_{Ruc}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.929)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_R \nu_L \bar{\nu}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (\bar{e}_R s \nu_{Lt}) (\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a d_{Lra}) \\ (\bar{\nu}_{Lv} e_{Ru}) (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.930)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L^2 \bar{\nu}_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.931)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_L^2 \bar{e}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (\bar{e}_{Rr} e_{Lt}) (d_{Lpa} C e_{Ls}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \end{array} \right. \quad (3.932)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R^2 e_R e_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{d}_{Lu}^a e_{Rv}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{d}_{Lu}^a e_{Rv}) \end{array} \right. \quad (3.933)$$

$$\mathcal{O}_{d_L \bar{e}_R e_L \bar{e}_L \nu_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (e_{Ls} C \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C e_{Ls}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \end{array} \right. \quad (3.934)$$

$$\mathcal{O}_{d_L \bar{d}_L \bar{e}_R e_L \nu_L \bar{\nu}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (e_{Ls} C \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{d}_{Lu}^a C \bar{\nu}_{Lv}) \\ (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C e_{Ls}) (\bar{d}_{Lu}^a C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.935)$$

$$\mathcal{O}_{d_L \bar{e}_R^2 e_R \nu_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] (\bar{e}_{Rs} \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a e_{Ru}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] (\bar{e}_{Rs} \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a e_{Ru}) \end{array} \right. \quad (3.936)$$

$$\mathcal{O}_{d_L \bar{e}_R \nu_L^2 \bar{\nu}_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C \nu_{Ls}) (\bar{u}_{Lv}^a C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.937)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R^2 \bar{e}_R e_L}^{(1\sim 4)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (d_{Rua} C d_{Rvb}) (\bar{d}_{Rr}^b e_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (d_{Rua} C d_{Rvb}) (\bar{d}_{Rr}^b e_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (\bar{e}_{Rs} e_{Lt}) (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (\bar{e}_{Rs} e_{Lt}) (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.938)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R e_L^2 \bar{\nu}_L u_R}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (\bar{e}_{Rr} e_{Lt}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{d}_{Rp}^a e_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (e_{Ls} C e_{Lt}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \end{array} \right. \quad (3.939)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_L^2 \bar{e}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (\bar{e}_{Rr} e_{Lt}) (\bar{e}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a e_{Ls}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \end{array} \right. \quad (3.940)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R^2 e_R e_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] (\bar{e}_{Rs} e_{Lt}) (d_{Rua} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] (\bar{e}_{Rs} e_{Lt}) (d_{Rua} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \end{array} \right. \quad (3.941)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_L \nu_L \bar{\nu}_L}^{(1,2)}(0,0) \left| \begin{array}{l} (e_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ (\bar{e}_{Rr} \nu_{Lt}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a e_{Ls}) \end{array} \right. \quad (3.942)$$

$$\mathcal{O}_{\bar{e}_R e_L^3 \bar{e}_L^2}^{(1,2)}(0,0) \left| \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{t} \end{array}, \begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Lu} C \bar{e}_{Lv}) (\bar{e}_{Rp} e_{Lr}) \right. \quad (3.943)$$

$$\mathcal{O}_{\bar{e}_R^2 e_L^2 u_R \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array}, \begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} e_{Lt}) (\bar{u}_{Lv}^a u_{Rua}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array}, \begin{array}{c} \boxed{s} \\ \boxed{t} \end{array} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{u}_{Lv}^a u_{Rua}) \end{array} \right. \quad (3.944)$$

$$\mathcal{O}_{d_R \bar{d}_L e_R^2 e_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} e_{Lt}) (\bar{d}_{Lv}^a d_{Rua}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{d}_{Lv}^a d_{Rua}) \end{array} \right. \quad (3.945)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R e_L^2 \bar{e}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} e_{Lt}) (\bar{e}_{Lv} e_{Ru}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{e}_{Lv} e_{Ru}) \end{array} \right. \quad (3.946)$$

$$\mathcal{O}_{\bar{e}_R e_L^2 \bar{e}_L \nu_L \bar{\nu}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.947)$$

$$\mathcal{O}_{\bar{e}_R^3 e_R e_L}(0,0) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{e}_{Rs} e_{Lt}) \right. \quad (3.948)$$

$$\mathcal{O}_{d_R \bar{e}_R^2 e_L \nu_L \bar{u}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} \nu_{Lt}) (\bar{u}_{Lv}^a d_{Rua}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rp} C \bar{e}_{Rr}) (e_{Ls} C \nu_{Lt}) (\bar{u}_{Lv}^a d_{Rua}) \end{array} \right. \quad (3.949)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R e_L \nu_L \bar{\nu}_L}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} \nu_{Lt}) (\bar{\nu}_{Lv} e_{Ru}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{\nu}_{Lv} e_{Ru}) (e_{Ls} C \nu_{Lt}) \end{array} \right. \quad (3.950)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L^2 \bar{\nu}_L^2}^{(1,2)}(0,0) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rp} \nu_{Ls}) (e_{Lr} C \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rp} e_{Lr}) \end{array} \right. \quad (3.951)$$

$$(\Delta B, \Delta L) = (0, \pm 2)$$

$$\mathcal{O}_{\bar{\nu}_L^2 \bar{u}_R^2 u_L^2}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (u_{Lsa} C u_{Ltb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (u_{Lsa} C u_{Ltb}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b u_{Ltb}) \end{array} \right. \quad (3.952)$$

$$\mathcal{O}_{\bar{d}_L e_R \nu_L \bar{u}_R u_L^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Lu}^b e_{Rv}) (\bar{u}_{Rp}^a u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Rp}^a u_{Lra}) (\bar{d}_{Lu}^c e_{Rv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Lu}^b e_{Rv}) (\bar{u}_{Rp}^a u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Rp}^a u_{Lra}) (\bar{d}_{Lu}^c e_{Rv}) \end{array} \right. \quad (3.953)$$

$$\mathcal{O}_{\bar{d}_R^2 e_R^2 u_L^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (u_{Lsa} C u_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{d}_{Rr}^b u_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (u_{Lsa} C u_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{d}_{Rr}^b u_{Ltb}) \end{array} \right. \quad (3.954)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L e_R e_L u_L^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (u_{Lsb} C u_{Lta}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lu}^b e_{Rv}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (e_{Lr} C u_{Lta}) (\bar{d}_{Lu}^b e_{Rv}) (\bar{d}_{Rp}^a u_{Lsb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (u_{Lsb} C u_{Lta}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lu}^b e_{Rv}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (e_{Lr} C u_{Lta}) (\bar{d}_{Lu}^b e_{Rv}) (\bar{d}_{Rp}^a u_{Lsb}) \end{array} \right. \quad (3.955)$$

$$\mathcal{O}_{\bar{d}_R e_R \nu_L u_L^2 \bar{u}_L}^{(1\sim 4)}(0, 2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (u_{Lsa} C \nu_{Lt}) \left(\bar{u}_{Lv}^b e_{Ru} \right) \left(\bar{d}_{Rp}^a u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lra} \right) \left(\bar{u}_{Lv}^c e_{Ru} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (u_{Lsa} C \nu_{Lt}) \left(\bar{u}_{Lv}^b e_{Ru} \right) \left(\bar{d}_{Rp}^a u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lra} \right) \left(\bar{u}_{Lv}^c e_{Ru} \right) \end{cases} \quad (3.956)$$

$$\mathcal{O}_{\bar{d}_L^2 e_L^2 u_L^2}^{(1\sim 4)}(0, 2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix}, \begin{smallmatrix} u & v \end{smallmatrix} \right] (e_{Lp} C u_{Lsa}) (e_{Lr} C u_{Ltb}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix}, \begin{smallmatrix} s & t \\ u & v \end{smallmatrix} \right] (e_{Lp} C u_{Lsa}) (e_{Lr} C u_{Ltb}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u & v \end{smallmatrix} \right] (e_{Lp} C e_{Lr}) (u_{Lsa} C u_{Ltb}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} s & t \\ u & v \end{smallmatrix} \right] (e_{Lp} C e_{Lr}) (u_{Lsa} C u_{Ltb}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \end{cases} \quad (3.957)$$

$$\mathcal{O}_{\bar{d}_L e_L \nu_L u_L^2 \bar{u}_L}^{(1\sim 4)}(0, 2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^a \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^a \right) \end{cases} \quad (3.958)$$

$$\mathcal{O}_{\nu_L^2 u_L^2 \bar{u}_L^2}^{(1\sim 4)}(0, 2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix}, \begin{smallmatrix} u & v \end{smallmatrix} \right] (u_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u & v \end{smallmatrix} \right] (u_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} s & t \\ u & v \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (u_{Lpa} C u_{Lrb}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p & s \\ r & t \end{smallmatrix}, \begin{smallmatrix} s & t \\ u & v \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (u_{Lpa} C u_{Lrb}) \left(\bar{u}_{Lu}^a C \bar{u}_{Lv}^b \right) \end{cases} \quad (3.959)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_L \bar{\nu}_L \bar{u}_R^2 u_L}^{(1\sim 4)}(0, -2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{u}_{Rr}^b d_{Lpa} \right) \left(\bar{u}_{Rs}^a u_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{u}_{Rr}^a d_{Lpa} \right) \left(\bar{u}_{Rs}^c u_{Ltc} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{u}_{Rr}^b d_{Lpa} \right) \left(\bar{u}_{Rs}^a u_{Ltb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{u}_{Rr}^a d_{Lpa} \right) \left(\bar{u}_{Rs}^c u_{Ltc} \right) \end{cases} \quad (3.960)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \bar{\nu}_L \bar{u}_R^2 u_L}^{(1\sim 4)}(0, -2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{\nu}_{Lv} d_{Rub}) \left(\bar{u}_{Rs}^b u_{Lta} \right) \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{\nu}_{Lv} d_{Rua}) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{\nu}_{Lv} d_{Rub}) \left(\bar{u}_{Rs}^b u_{Lta} \right) \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \end{smallmatrix} \right] (\bar{\nu}_{Lv} d_{Rua}) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \left(\bar{e}_{Rp} C \bar{u}_{Rr}^a \right) \end{cases} \quad (3.961)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{\nu}_L^2 \bar{u}_R u_L}^{(1\sim 4)}(0, -2) \begin{cases} \mathcal{Y} \left[\begin{smallmatrix} u & v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} u & v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rs}^c u_{Ltc} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} u & v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \left(d_{Lrb} C u_{Lta} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ \mathcal{Y} \left[\begin{smallmatrix} u & v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \left(d_{Lra} C u_{Ltc} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{cases} \quad (3.962)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R \bar{\nu}_L \bar{u}_R u_L \bar{u}_L}^{(1\sim 4)}(0, -2) \begin{cases} (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rs}^b u_{Ltb} \right) \left(\bar{u}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ (\bar{e}_{Rr} d_{Lpa}) \left(\bar{u}_{Rs}^a u_{Ltc} \right) \left(\bar{u}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ (\bar{e}_{Rr} u_{Ltb}) \left(\bar{u}_{Rs}^b d_{Lpa} \right) \left(\bar{u}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ (\bar{e}_{Rr} u_{Ltc}) \left(\bar{u}_{Rs}^a d_{Lpa} \right) \left(\bar{u}_{Lu}^c C \bar{\nu}_{Lv} \right) \end{cases} \quad (3.963)$$

$$\mathcal{O}_{\bar{d}_R e_R \nu_L \bar{u}_R u_R u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} (u_{Lsa} C \nu_{Lt}) (e_{Ru} C u_{Rvb}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ (e_{Ru} C u_{Rva}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ (e_{Ru} C u_{Rvb}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \\ (e_{Ru} C u_{Rva}) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a u_{Lsb} \right) \end{array} \right. \quad (3.964)$$

$$\mathcal{O}_{\bar{e}_R e_L \bar{\nu}_L^2 \bar{u}_R u_L}^{(1,2)}(0, -2) \left| \begin{array}{l} \mathcal{Y}[\overline{uv}] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a u_{Lta}) \\ \mathcal{Y}[\overline{uv}] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (e_{Lr} C u_{Lta}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \end{array} \right. \quad (3.965)$$

$$\mathcal{O}_{\bar{d}_L e_L \nu_L \bar{u}_R u_R u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} (u_{Lsb} C \nu_{Lt}) (\bar{u}_{Rr}^a e_{Lp}) \left(\bar{d}_{Lu}^b u_{Rva} \right) \\ (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rr}^a e_{Lp}) \left(\bar{d}_{Lu}^c u_{Rvc} \right) \\ (e_{Lp} C u_{Lsb}) (\bar{u}_{Rr}^a \nu_{Lt}) \left(\bar{d}_{Lu}^b u_{Rva} \right) \\ (e_{Lp} C u_{Lsa}) (\bar{u}_{Rr}^a \nu_{Lt}) \left(\bar{d}_{Lu}^c u_{Rvc} \right) \end{array} \right. \quad (3.966)$$

$$\mathcal{O}_{\nu_L^2 \bar{u}_R u_R u_L \bar{u}_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\overline{s}t] (u_{Lrb} C \nu_{Lt}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \left(\bar{u}_{Lv}^b u_{Rua} \right) \\ \mathcal{Y}[\overline{s}t] (u_{Lra} C \nu_{Lt}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \left(\bar{u}_{Lv}^c u_{Ruc} \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) \left(\bar{u}_{Rp}^a u_{Lrb} \right) \left(\bar{u}_{Lv}^b u_{Rua} \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) \left(\bar{u}_{Rp}^a u_{Lra} \right) \left(\bar{u}_{Lv}^c u_{Ruc} \right) \end{array} \right. \quad (3.967)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \nu_L^2 \bar{u}_R u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\overline{s}t] (u_{Lrb} C \nu_{Lt}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \left(\bar{d}_{Lv}^b d_{Rua} \right) \\ \mathcal{Y}[\overline{s}t] (u_{Lra} C \nu_{Lt}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \left(\bar{d}_{Lv}^c d_{Ruc} \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) \left(\bar{d}_{Lv}^b d_{Rua} \right) \left(\bar{u}_{Rp}^a u_{Lrb} \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) \left(\bar{u}_{Rp}^a u_{Lra} \right) \left(\bar{d}_{Lv}^c d_{Ruc} \right) \end{array} \right. \quad (3.968)$$

$$\mathcal{O}_{e_R \bar{e}_L \nu_L^2 \bar{u}_R u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\overline{s}t] (\bar{e}_{Lv} e_{Ru}) (u_{Lra} C \nu_{Lt}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lv} e_{Ru}) \left(\bar{u}_{Rp}^a u_{Lra} \right) \end{array} \right. \quad (3.969)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{d}_L e_R \nu_L u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Lu}^b e_{Rv} \right) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{d}_{Lu}^c e_{Rv} \right) \\ (d_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{d}_{Lu}^b e_{Rv} \right) \\ (d_{Lra} C \nu_{Lt}) \left(\bar{d}_{Lu}^c e_{Rv} \right) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \end{array} \right. \quad (3.970)$$

$$\mathcal{O}_{\bar{d}_L \bar{d}_L^2 e_L \nu_L u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\overline{uv}] (d_{Lpa} C e_{Lr}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \\ \mathcal{Y}[\overline{uv}] (e_{Lr} C \nu_{Lt}) (d_{Lpa} C u_{Lsb}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \\ \mathcal{Y}[\overline{uv}] (d_{Lpa} C e_{Lr}) (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \\ \mathcal{Y}[\overline{uv}] (e_{Lr} C \nu_{Lt}) (d_{Lpa} C u_{Lsb}) \left(\bar{d}_{Lu}^a C \bar{d}_{Lv}^b \right) \end{array} \right. \quad (3.971)$$

$$\mathcal{O}_{\bar{d}_L \bar{d}_L \nu_L^2 u_L \bar{u}_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\overline{s}t] (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y}[\overline{s}t] (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^a \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) \left(\bar{d}_{Lu}^a C \bar{u}_{Lv}^b \right) \\ \mathcal{Y}[\overline{st}] (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) \left(\bar{d}_{Lu}^b C \bar{u}_{Lv}^a \right) \end{array} \right. \quad (3.972)$$

$$\mathcal{O}_{\bar{d}_R^2 e_R e_L u_R u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (e_{Ls} C u_{Lta}) (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b u_{Lta}) \\ \mathcal{Y} \left[\frac{p}{r} \right] (e_{Ls} C u_{Lta}) (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b u_{Lta}) \end{array} \right. \quad (3.973)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R e_R \nu_L u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (u_{Lsa} C \nu_{Lt}) (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{d}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\frac{p}{r} \right] (u_{Lsa} C \nu_{Lt}) (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (d_{Rub} C e_{Rv}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{d}_{Rr}^b \nu_{Lt}) \end{array} \right. \quad (3.974)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L e_L^2 u_R u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] (e_{Ls} C u_{Ltb}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lu}^b u_{Rva}) \\ \mathcal{Y} \left[\frac{r}{s} \right] (e_{Ls} C u_{Lta}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lu}^c u_{Rvc}) \\ \mathcal{Y} \left[\frac{r}{s} \right] (e_{Ls} C u_{Ltb}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lu}^b u_{Rva}) \\ \mathcal{Y} \left[\frac{r}{s} \right] (e_{Ls} C u_{Lta}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lu}^c u_{Rvc}) \end{array} \right. \quad (3.975)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L u_R u_L \bar{u}_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} (u_{Lsb} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{u}_{Lv}^b u_{Rua}) \\ (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{u}_{Lv}^c u_{Ruc}) \\ (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsb}) (\bar{u}_{Lv}^b u_{Rua}) \\ (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{u}_{Lv}^c u_{Ruc}) \end{array} \right. \quad (3.976)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{d}_L e_L \nu_L u_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} (u_{Lsb} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lv}^b d_{Rua}) \\ (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{d}_{Lv}^c d_{Ruc}) \\ (e_{Lr} C \nu_{Lt}) (\bar{d}_{Lv}^b d_{Rua}) (\bar{d}_{Rp}^a u_{Lsb}) \\ (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsa}) (\bar{d}_{Lv}^c d_{Ruc}) \end{array} \right. \quad (3.977)$$

$$\mathcal{O}_{\bar{d}_R e_R e_L \bar{e}_L \nu_L u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} (\bar{e}_{Lv} e_{Ru}) (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Lr}) \\ (\bar{e}_{Lv} e_{Ru}) (e_{Lr} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsa}) \end{array} \right. \quad (3.978)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R e_R^2 \nu_L u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{u}{v} \right] (e_{Ru} C e_{Rv}) (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ \mathcal{Y} \left[\frac{u}{v} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rr} \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lsa}) \end{array} \right. \quad (3.979)$$

$$\mathcal{O}_{\bar{d}_R d_R \nu_L^2 u_L \bar{u}_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (u_{Lrb} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Lv}^b d_{Rua}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (u_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Lv}^c d_{Ruc}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lrb}) (\bar{u}_{Lv}^b d_{Rua}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a u_{Lra}) (\bar{u}_{Lv}^c d_{Ruc}) \end{array} \right. \quad (3.980)$$

$$\mathcal{O}_{\bar{d}_R e_R \nu_L^2 \bar{\nu}_L u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (\bar{\nu}_{Lv} e_{Ru}) (u_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a u_{Lra}) \end{array} \right. \quad (3.981)$$

$$\mathcal{O}_{\bar{d}_L e_L^2 \bar{e}_L \nu_L u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (e_{Lr} C \nu_{Lt}) (e_{Lp} C u_{Lsa}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \\ \mathcal{Y} \left[\frac{p}{r} \right] (e_{Lp} C e_{Lr}) (u_{Lsa} C \nu_{Lt}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \end{array} \right. \quad (3.982)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R e_R e_L \nu_L u_L}^{(1,2)}(0, 2) \left| \begin{array}{l} (\bar{e}_{Rp} e_{Lr}) (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Lu}^a e_{Rv} \right) \\ (e_{Lr} C \nu_{Lt}) (\bar{e}_{Rp} u_{Lsa}) \left(\bar{d}_{Lu}^a e_{Rv} \right) \end{array} \right. \quad (3.983)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L^2 u_L \bar{u}_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (e_{Lp} C \nu_{Ls}) (u_{Lra} C \nu_{Lt}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (e_{Lp} C u_{Lra}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \end{array} \right. \quad (3.984)$$

$$\mathcal{O}_{\bar{d}_L e_L \nu_L^2 \bar{\nu}_L \bar{u}_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (e_{Lp} C \nu_{Ls}) (u_{Lra} C \nu_{Lt}) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (e_{Lp} C u_{Lra}) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \end{array} \right. \quad (3.985)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L^2 u_L \bar{u}_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Rp} \nu_{Ls}) (u_{Lra} C \nu_{Lt}) (\bar{u}_{Lv}^a e_{Ru}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} u_{Lra}) (\bar{u}_{Lv}^a e_{Ru}) \end{array} \right. \quad (3.986)$$

$$\mathcal{O}_{\nu_L^3 \bar{\nu}_L u_L \bar{u}_L}(0, 2) \left| \mathcal{Y} \left[\begin{array}{c} r \\ t \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (u_{Lpa} C \nu_{Lr}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \right. \quad (3.987)$$

$$\mathcal{O}_{d_L^2 \bar{e}_L^2 \bar{u}_R^2}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (d_{Lpa} C d_{Lrb}) \left(\bar{u}_{Rs}^a C \bar{u}_{Rt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (\bar{u}_{Rs}^a d_{Lpa}) \left(\bar{u}_{Rt}^b d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (d_{Lpa} C d_{Lrb}) \left(\bar{u}_{Rs}^a C \bar{u}_{Rt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (\bar{u}_{Rs}^a d_{Lpa}) \left(\bar{u}_{Rt}^b d_{Lrb} \right) \end{array} \right. \quad (3.988)$$

$$\mathcal{O}_{d_L \bar{e}_R \bar{\nu}_L \bar{u}_R^2 u_R}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{\nu}_{Lv} u_{Rub}) \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^a \right) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{\nu}_{Lv} u_{Rub}) \left(\bar{u}_{Rs}^b d_{Lpa} \right) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{\nu}_{Lv} u_{Rub}) \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^a \right) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{\nu}_{Lv} u_{Rub}) \left(\bar{u}_{Rs}^b d_{Lpa} \right) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \end{array} \right. \quad (3.989)$$

$$\mathcal{O}_{d_R d_L \bar{e}_R \bar{e}_L \bar{u}_R^2}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{e}_{Lv} d_{Rub}) \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^a \right) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Lv} d_{Rub}) \left(\bar{u}_{Rs}^b d_{Lpa} \right) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{e}_{Lv} d_{Rub}) \left(\bar{u}_{Rs}^b C \bar{u}_{Rt}^a \right) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] (\bar{e}_{Lv} d_{Rub}) \left(\bar{u}_{Rs}^b d_{Lpa} \right) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \end{array} \right. \quad (3.990)$$

$$\mathcal{O}_{d_R^2 \bar{e}_R^2 \bar{u}_R^2}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (d_{Rua} C d_{Rvb}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (d_{Rua} C d_{Rvb}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\bar{e}_{Rp} C \bar{e}_{Rr}) (d_{Rua} C d_{Rvb}) \left(\bar{u}_{Rs}^a C \bar{u}_{Rt}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\bar{e}_{Rp} C \bar{e}_{Rr}) (d_{Rua} C d_{Rvb}) \left(\bar{u}_{Rs}^a C \bar{u}_{Rt}^b \right) \end{array} \right. \quad (3.991)$$

$$\mathcal{O}_{\nu_L^2 \bar{u}_R^2 u_R^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (u_{Rua} C u_{Rvb}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (u_{Rua} C u_{Rvb}) \left(\bar{u}_{Rp}^a \nu_{Ls} \right) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (u_{Rua} C u_{Rvb}) \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array}, \begin{array}{c} s \\ t \end{array}, \begin{array}{c} u \\ v \end{array} \right] (\nu_{Ls} C \nu_{Lt}) (u_{Rua} C u_{Rvb}) \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.992)$$

$$\mathcal{O}_{\bar{d}_R d_L^2 \bar{e}_L \bar{\nu}_L \bar{u}_R}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rt}^b d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rt}^c d_{Lsc} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{u}_{Rt}^b d_{Lsa} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \left(\bar{u}_{Rt}^c d_{Lsc} \right) \end{array} \right. \quad (3.993)$$

$$\mathcal{O}_{\bar{d}_L^2 \bar{e}_R \bar{e}_L \bar{u}_R \bar{u}_L}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (d_{Lpa} C d_{Lrb}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) (\bar{e}_{Lu} C \bar{u}_{Lv}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rs} d_{Lpa}) (\bar{u}_{Rt}^a d_{Lrb}) (\bar{e}_{Lu} C \bar{u}_{Lv}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (d_{Lpa} C d_{Lrb}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) (\bar{e}_{Lu} C \bar{u}_{Lv}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rs} d_{Lpa}) (\bar{u}_{Rt}^a d_{Lrb}) (\bar{e}_{Lu} C \bar{u}_{Lv}^b) \end{array} \right. \quad (3.994)$$

$$\mathcal{O}_{\bar{d}_L^2 \bar{d}_L \bar{e}_R \bar{\nu}_L \bar{u}_R}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (d_{Lpa} C d_{Lrb}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) (\bar{d}_{Lu}^b C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rs} d_{Lpa}) (\bar{u}_{Rt}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (d_{Lpa} C d_{Lrb}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) (\bar{d}_{Lu}^b C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (\bar{e}_{Rs} d_{Lpa}) (\bar{u}_{Rt}^a d_{Lrb}) (\bar{d}_{Lu}^b C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.995)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{e}_R \bar{\nu}_L \bar{u}_R}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} (\bar{\nu}_{Lv} d_{Rua}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) (\bar{e}_{Rs} C \bar{u}_{Rt}^b) \\ (\bar{\nu}_{Lv} d_{Ruc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) (\bar{e}_{Rs} C \bar{u}_{Rt}^c) \\ (\bar{\nu}_{Lv} d_{Rua}) \left(\bar{u}_{Rt}^b d_{Lrb} \right) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ (\bar{\nu}_{Lv} d_{Ruc}) (\bar{u}_{Rt}^c d_{Lra}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.996)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R e_L \bar{e}_L \bar{\nu}_L \bar{u}_R}^{(1,2)}(0, -2) \left| \begin{array}{l} (\bar{e}_{Rr} d_{Lpa}) (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (\bar{u}_{Rt}^a e_{Ls}) \\ (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C e_{Ls}) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \end{array} \right. \quad (3.997)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R^2 \bar{u}_R \bar{u}_L}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a d_{Rub}) (\bar{e}_{Rs} C \bar{u}_{Rt}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^c d_{Ruc}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a d_{Rub}) (\bar{e}_{Rs} C \bar{u}_{Rt}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^c d_{Ruc}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) \end{array} \right. \quad (3.998)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R^2 e_R \bar{\nu}_L \bar{u}_R}^{(1,2)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{\nu}_{Lv} e_{Ru}) (\bar{e}_{Rr} d_{Lpa}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{\nu}_{Lv} e_{Ru}) (\bar{e}_{Rr} d_{Lpa}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) \end{array} \right. \quad (3.999)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R \nu_L \bar{\nu}_L^2 \bar{u}_R}^{(1,2)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Rs}^a \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rr} \nu_{Lt}) (\bar{u}_{Rs}^a d_{Lpa}) \end{array} \right. \quad (3.1000)$$

$$\mathcal{O}_{\bar{d}_L \bar{d}_L \nu_L^2 \bar{u}_R u_R}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (d_{Lpa} C \nu_{Ls}) (\bar{u}_{Rr}^b \nu_{Lt}) (\bar{d}_{Lu}^a u_{Rvb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (d_{Lpa} C \nu_{Ls}) (\bar{u}_{Rr}^a \nu_{Lt}) (\bar{d}_{Lu}^c u_{Rvc}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{u}_{Rr}^b d_{Lpa}) (\bar{d}_{Lu}^a u_{Rvb}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{u}_{Rr}^a d_{Lpa}) (\bar{d}_{Lu}^c u_{Rvc}) \end{array} \right. \quad (3.1001)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L \bar{u}_R u_R^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\overline{uv}](u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{u}_{Rs}^b \nu_{Lt}) \\ \mathcal{Y}[\overline{uv}](e_{Lr} C \nu_{Lt}) (u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \\ \mathcal{Y}[\frac{u}{v}](u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a e_{Lr}) (\bar{u}_{Rs}^b \nu_{Lt}) \\ \mathcal{Y}[\frac{u}{v}](e_{Lr} C \nu_{Lt}) (u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \end{array} \right. \quad (3.1002)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_R \nu_L^2 \bar{u}_R u_R}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\frac{s}{t}](\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Rr}^b \nu_{Lt}) (d_{Rua} C u_{Rvb}) \\ \mathcal{Y}[\frac{s}{t}](\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Rr}^b \nu_{Lt}) (d_{Rub} C u_{Rva}) \\ \mathcal{Y}[\frac{s}{t}](\nu_{Ls} C \nu_{Lt}) (d_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \\ \mathcal{Y}[\frac{s}{t}](\nu_{Ls} C \nu_{Lt}) (d_{Rub} C u_{Rva}) (\bar{d}_{Rp}^a C \bar{u}_{Rr}^b) \end{array} \right. \quad (3.1003)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R^2 e_L \bar{\nu}_L \bar{u}_R}^{(1,2)}(0, -2) \left| \begin{array}{l} \mathcal{Y}[\frac{p}{r}](\bar{e}_{Rp} e_{Ls}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) \\ \mathcal{Y}[\frac{p}{r}](\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{u}_{Rt}^a e_{Ls}) \end{array} \right. \quad (3.1004)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L^2 \bar{u}_R u_R}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\frac{s}{t}](e_{Lp} C \nu_{Ls}) (\bar{e}_{Lu} u_{Rva}) (\bar{u}_{Rr}^a \nu_{Lt}) \\ \mathcal{Y}[\frac{s}{t}](\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} u_{Rva}) (\bar{u}_{Rr}^a e_{Lp}) \end{array} \right. \quad (3.1005)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L^2 \bar{u}_R u_R}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\frac{s}{t}](\bar{e}_{Rp} \nu_{Ls}) (e_{Ru} C u_{Rva}) (\bar{u}_{Rr}^a \nu_{Lt}) \\ \mathcal{Y}[\frac{s}{t}](\nu_{Ls} C \nu_{Lt}) (e_{Ru} C u_{Rva}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) \end{array} \right. \quad (3.1006)$$

$$\mathcal{O}_{\nu_L^3 \bar{\nu}_L \bar{u}_R u_R}(0, 2) \left| \mathcal{Y}[\frac{r}{t}](\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{u}_{Rp}^a \nu_{Lr}) \right. \quad (3.1007)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_L \nu_L^3 \bar{u}_R}(0, 2) \left| \mathcal{Y}[\frac{r}{t}](\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lv} d_{Rua}) (\bar{u}_{Rp}^a \nu_{Lr}) \right. \quad (3.1008)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L^2 \bar{\nu}_L^2}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lsa} C d_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b d_{Ltb}) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lsa} C d_{Ltb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b d_{Ltb}) \end{array} \right. \quad (3.1009)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L^2 \bar{e}_R \bar{\nu}_L \bar{u}_L}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y}[\frac{r}{s}](\bar{e}_{Rt} d_{Lsa}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Lu}^b C \bar{\nu}_{Lv}) \\ \mathcal{Y}[\frac{r}{s}](\bar{e}_{Rt} d_{Lsc}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \\ \mathcal{Y}[\frac{r}{s}](\bar{e}_{Rt} d_{Lsa}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Lu}^b C \bar{\nu}_{Lv}) \\ \mathcal{Y}[\frac{r}{s}](\bar{e}_{Rt} d_{Lsc}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.1010)$$

$$\mathcal{O}_{\bar{d}_L^2 \bar{e}_R^2 \bar{u}_L^2}^{(1\sim 4)}(0, -2) \left| \begin{array}{l} \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{e}_{Rs} d_{Lpa}) (\bar{e}_{Rt} d_{Lrb}) (\bar{u}_{Lu}^a C \bar{u}_{Lv}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{e}_{Rs} d_{Lpa}) (\bar{e}_{Rt} d_{Lrb}) (\bar{u}_{Lu}^a C \bar{u}_{Lv}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{e}_{Rs} C \bar{e}_{Rt}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lu}^a C \bar{u}_{Lv}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\bar{e}_{Rs} C \bar{e}_{Rt}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lu}^a C \bar{u}_{Lv}^b) \end{array} \right. \quad (3.1011)$$

$$\mathcal{O}_{\bar{d}_L^2 \bar{d}_L^2 \nu_L^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \nu_{Lt}) (\bar{d}_{Lu}^a C \bar{d}_{Lv}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \nu_{Lt}) (\bar{d}_{Lu}^a C \bar{d}_{Lv}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C d_{Lrb}) (\bar{d}_{Lu}^a C \bar{d}_{Lv}^b) \\ \mathcal{Y}[\frac{p}{r}, \frac{s}{t}, \overline{uv}](\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C d_{Lrb}) (\bar{d}_{Lu}^a C \bar{d}_{Lv}^b) \end{array} \right. \quad (3.1012)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L e_R \nu_L u_R}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (d_{Lsa} C \nu_{Lt}) (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (d_{Lsa} C \nu_{Lt}) (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] (e_{Ru} C u_{Rvb}) (\bar{d}_{Rp}^a d_{Lsa}) (\bar{d}_{Rr}^b \nu_{Lt}) \end{array} \right. \quad (3.1013)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{e}_R e_L \bar{\nu}_L^2}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rs} e_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) \\ \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lra} C e_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \end{array} \right. \quad (3.1014)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{d}_L e_L \nu_L u_R}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} (e_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lu}^b u_{Rva}) \\ (e_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{d}_{Lu}^c u_{Rvc}) \\ (d_{Lrb} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Lu}^b u_{Rva}) \\ (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Lu}^c u_{Rvc}) \end{array} \right. \quad (3.1015)$$

$$\mathcal{O}_{\bar{d}_R d_L \nu_L^2 u_R \bar{u}_L}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (d_{Lrb} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Lv}^b u_{Rua}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Lv}^c u_{Ruc}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{u}_{Lv}^b u_{Rua}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{u}_{Lv}^c u_{Ruc}) \end{array} \right. \quad (3.1016)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L \bar{d}_L \nu_L^2}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (d_{Lrb} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{d}_{Lv}^b d_{Rua}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{d}_{Lv}^c d_{Ruc}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) (\bar{d}_{Lv}^b d_{Rua}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (\bar{d}_{Lv}^c d_{Ruc}) \end{array} \right. \quad (3.1017)$$

$$\mathcal{O}_{\bar{d}_R d_L e_R \bar{e}_L \nu_L^2}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Lv} e_{Ru}) (d_{Lra} C \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lv} e_{Ru}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.1018)$$

$$\mathcal{O}_{d_L \bar{e}_R^2 e_L \bar{\nu}_L \bar{u}_L}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{u}_{Lv}^a C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.1019)$$

$$\mathcal{O}_{d_L d_L e_L \bar{e}_L \nu_L^2}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (e_{Lr} C \nu_{Lt}) (d_{Lpa} C \nu_{Ls}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C e_{Lr}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \end{array} \right. \quad (3.1020)$$

$$\mathcal{O}_{d_L d_L \bar{e}_R e_R \nu_L^2}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C \nu_{Ls}) (\bar{d}_{Lu}^a e_{Rv}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (\bar{d}_{Lu}^a e_{Rv}) \end{array} \right. \quad (3.1021)$$

$$\mathcal{O}_{d_L \bar{e}_L \nu_L^3 \bar{u}_L}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} r \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C \nu_{Lr}) (\bar{e}_{Lv} C \bar{u}_{Lv}^a) \right. \quad (3.1022)$$

$$\mathcal{O}_{d_L \bar{d}_L \nu_L^3 \bar{\nu}_L}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} r \\ t \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C \nu_{Lr}) (\bar{d}_{Lv}^a C \bar{\nu}_{Lv}) \right. \quad (3.1023)$$

$$\mathcal{O}_{\bar{d}_R^2 e_L^2 u_R^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b e_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b e_{Lt}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ls} C e_{Lt}) (u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] (e_{Ls} C e_{Lt}) (u_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.1024)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R e_L \nu_L u_R}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] (e_{Ls} C \nu_{Lt}) (d_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) (d_{Rua} C u_{Rvb}) \\ \mathcal{Y} \left[\frac{p}{r} \right] (e_{Ls} C \nu_{Lt}) (d_{Rua} C u_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r} \right] (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) (d_{Rua} C u_{Rvb}) \end{array} \right. \quad (3.1025)$$

$$\mathcal{O}_{\bar{d}_R^2 d_R^2 \nu_L^2}^{(1\sim 4)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (\nu_{Ls} C \nu_{Lt}) (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (\nu_{Ls} C \nu_{Lt}) (d_{Rua} C d_{Rvb}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.1026)$$

$$\mathcal{O}_{\bar{d}_R e_L^2 \bar{e}_L \nu_L u_R}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] (e_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} u_{Rva}) (\bar{d}_{Rp}^a e_{Lr}) \\ \mathcal{Y} \left[\frac{r}{s} \right] (e_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} u_{Rva}) (\bar{d}_{Rp}^a e_{Lr}) \end{array} \right. \quad (3.1027)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R e_R e_L \nu_L u_R}^{(1,2)}(0, 2) \left| \begin{array}{l} (e_{Ls} C \nu_{Lt}) (e_{Ru} C u_{Rva}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \\ (\bar{e}_{Rr} \nu_{Lt}) (e_{Ru} C u_{Rva}) (\bar{d}_{Rp}^a e_{Ls}) \end{array} \right. \quad (3.1028)$$

$$\mathcal{O}_{\bar{d}_R e_L \nu_L^2 \bar{\nu}_L u_R}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (e_{Lr} C \nu_{Lt}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} u_{Rua}) (\bar{d}_{Rp}^a e_{Lr}) \end{array} \right. \quad (3.1029)$$

$$\mathcal{O}_{\bar{d}_R d_R e_L \bar{e}_L \nu_L^2}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (e_{Lr} C \nu_{Lt}) (\bar{e}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a e_{Lr}) \end{array} \right. \quad (3.1030)$$

$$\mathcal{O}_{\bar{d}_R d_R \bar{e}_R e_R \nu_L^2}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (\bar{e}_{Rr} \nu_{Lt}) (d_{Rua} C e_{Rv}) (\bar{d}_{Rp}^a \nu_{Ls}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (d_{Rua} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) \end{array} \right. \quad (3.1031)$$

$$\mathcal{O}_{\bar{d}_R d_R \nu_L^3 \bar{\nu}_L}^{(1,2)}(0, 2) \left| \mathcal{Y} \left[\frac{r}{s} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} d_{Rua}) (\bar{d}_{Rp}^a \nu_{Lr}) \right. \quad (3.1032)$$

$$\mathcal{O}_{\bar{e}_R^2 e_L^2 \bar{\nu}_L^2}^{(1,2)}(0, -2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} e_{Lt}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (e_{Ls} C e_{Lt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.1033)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R e_L^2 \nu_L u_R}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C \nu_{Lt}) (\bar{d}_{Lu}^a u_{Rva}) \\ \mathcal{Y} \left[\frac{r}{s} \right] (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C \nu_{Lt}) (\bar{d}_{Lu}^a u_{Rva}) \end{array} \right. \quad (3.1034)$$

$$\mathcal{O}_{e_L^2 \bar{e}_L^2 \nu_L^2}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (\bar{e}_{Lu} C \bar{e}_{Lv}) (e_{Lp} C \nu_{Ls}) (e_{Lr} C \nu_{Lt}) \\ \mathcal{Y} \left[\frac{p}{r}, \frac{s}{t}, \frac{u}{v} \right] (e_{Lp} C e_{Lr}) (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} C \bar{e}_{Lv}) \end{array} \right. \quad (3.1035)$$

$$\mathcal{O}_{\bar{e}_R e_L \nu_L^2 u_R \bar{u}_L}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (\bar{e}_{Rp} \nu_{Ls}) (e_{Lr} C \nu_{Lt}) (\bar{u}_{Lv}^a u_{Rua}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Lv}^a u_{Rua}) \end{array} \right. \quad (3.1036)$$

$$\mathcal{O}_{d_R d_L \bar{e}_R e_L \nu_L^2}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (\bar{e}_{Rp} \nu_{Ls}) (e_{Lr} C \nu_{Lt}) (\bar{d}_{Lv}^a d_{Rua}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} e_{Lr}) (\bar{d}_{Lv}^a d_{Rua}) \end{array} \right. \quad (3.1037)$$

$$\mathcal{O}_{\bar{e}_R e_R e_L \bar{e}_L \nu_L^2}^{(1,2)}(0, 2) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] (\bar{e}_{Lv} e_{Ru}) (\bar{e}_{Rp} \nu_{Ls}) (e_{Lr} C \nu_{Lt}) \\ \mathcal{Y} \left[\frac{s}{t} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} e_{Lr}) (\bar{e}_{Lv} e_{Ru}) \end{array} \right. \quad (3.1038)$$

$$\mathcal{O}_{e_L \bar{e}_L \nu_L^3 \bar{\nu}_L}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (e_{Lp} C \nu_{Lr}) (\bar{e}_{Lu} C \bar{\nu}_{Lv}) \right. \quad (3.1039)$$

$$\mathcal{O}_{\bar{e}_R^2 e_R^2 \nu_L^2}^{(1,2)}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} p & s & \overline{uv} \\ r & t & \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (\bar{e}_{Rp} \nu_{Ls}) (\bar{e}_{Rr} \nu_{Lt}) \right. \quad (3.1040)$$

$$\left. \mathcal{Y} \left[\begin{smallmatrix} p & r & \overline{st} & \overline{uv} \\ \end{smallmatrix} \right] (e_{Ru} C e_{Rv}) (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} C \bar{e}_{Rr}) \right.$$

$$\mathcal{O}_{d_R \bar{e}_R \nu_L^3 \bar{u}_L}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} \nu_{Lr}) (\bar{u}_{Lv}^a d_{Rua}) \right. \quad (3.1041)$$

$$\mathcal{O}_{\bar{e}_R e_R \nu_L^3 \bar{\nu}_L}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} \nu_{Lr}) (\bar{\nu}_{Lv} e_{Ru}) \right. \quad (3.1042)$$

$$\mathcal{O}_{\nu_L^4 \bar{\nu}_L^2}(0, 2) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r & \overline{st} & \overline{uv} \\ \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \right. \quad (3.1043)$$

$$(\Delta B, \Delta L) = (0, \pm 4)$$

$$\mathcal{O}_{\bar{d}_L e_R \nu_L^3 u_L}(0, 4) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (u_{Lpa} C \nu_{Lr}) (\bar{d}_{Lu}^a e_{Rv}) \right. \quad (3.1044)$$

$$\mathcal{O}_{\bar{d}_R e_R \nu_L^3 u_R}(0, 4) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (e_{Ru} C u_{Rva}) (\bar{d}_{Rp}^a \nu_{Lr}) \right. \quad (3.1045)$$

$$\mathcal{O}_{\bar{d}_L e_L \nu_L^3 u_R}(0, 4) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] (\nu_{Ls} C \nu_{Lt}) (e_{Lp} C \nu_{Lr}) (\bar{d}_{Lu}^a u_{Rva}) \right. \quad (3.1046)$$

$$\mathcal{O}_{\nu_L^4 u_R \bar{u}_L}(0, 4) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r & \overline{st} \\ s & t & \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (\nu_{Ls} C \nu_{Lt}) (\bar{u}_{Lv}^a u_{Rua}) \right. \quad (3.1047)$$

$$\mathcal{O}_{d_R \bar{d}_L \nu_L^4}(0, 4) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r & \overline{st} \\ s & t & \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Lv}^a d_{Rua}) \right. \quad (3.1048)$$

$$\mathcal{O}_{e_R \bar{e}_L \nu_L^4}(0, 4) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r & \overline{st} \\ s & t & \end{smallmatrix} \right] (\nu_{Lp} C \nu_{Lr}) (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lv} e_{Ru}) \right. \quad (3.1049)$$

$$(\Delta B, \Delta L) = (\pm 1, \pm 1)$$

$$\mathcal{O}_{d_R e_R \bar{u}_R u_L^3}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r & s & t \\ t & \end{smallmatrix} \right] \epsilon^{bde} (u_{Lsa} C u_{Ltd}) (d_{Rue} C e_{Rv}) (\bar{u}_{Rp}^a u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsc} C u_{Ltd}) (d_{Rue} C e_{Rv}) (\bar{u}_{Rp}^a u_{Lra}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{bcd} (d_{Rua} C e_{Rv}) (u_{Lsc} C u_{Ltd}) (\bar{u}_{Rp}^a u_{Lrb}) \end{array} \right. \quad (3.1050)$$

$$\mathcal{O}_{d_L e_R u_L^3 \bar{u}_L}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r & s & t \\ t & \end{smallmatrix} \right] \epsilon^{abd} (u_{Lsc} C u_{Ltd}) (\bar{u}_{Lv}^c e_{Ru}) (d_{Lpa} C u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{bcd} (u_{Lsc} C u_{Ltd}) (\bar{u}_{Lv}^a e_{Ru}) (d_{Lpa} C u_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{abd} (u_{Lsc} C u_{Ltd}) (\bar{u}_{Lv}^c e_{Ru}) (d_{Lpa} C u_{Lrb}) \end{array} \right. \quad (3.1051)$$

$$\mathcal{O}_{d_R e_L u_L^3 \bar{u}_L}^{(1\sim 3)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r & s & t \\ t & \end{smallmatrix} \right] \epsilon^{abd} (e_{Lp} C u_{Lra}) (u_{Lsb} C u_{Ltc}) (\bar{u}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{bcd} (e_{Lp} C u_{Lra}) (u_{Lsb} C u_{Ltc}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{abd} (e_{Lp} C u_{Lra}) (u_{Lsb} C u_{Ltc}) (\bar{u}_{Lv}^c d_{Rud}) \end{array} \right. \quad (3.1052)$$

$$\mathcal{O}_{e_R e_L \bar{\nu}_L u_L^3}(1, 1) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & \end{smallmatrix} \right] \epsilon^{abc} (\bar{\nu}_{Lv} e_{Ru}) (e_{Lp} C u_{Lra}) (u_{Lsb} C u_{Ltc}) \right. \quad (3.1053)$$

$$\mathcal{O}_{d_L e_R \bar{u}_R u_R u_L^2}^{(1\sim 6)}(1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsc} C u_{Ltd}) (e_{Ru} C u_{Rve}) (\bar{u}_{Rr}^a d_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{ace} (u_{Lsc} C u_{Ltb}) (e_{Ru} C u_{Rve}) (\bar{u}_{Rr}^b d_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{ace} (e_{Ru} C u_{Rve}) (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ t & \end{smallmatrix} \right] \epsilon^{ace} (u_{Lsc} C u_{Ltb}) (e_{Ru} C u_{Rve}) (\bar{u}_{Rr}^b d_{Lpa}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ t & \end{smallmatrix} \right] \epsilon^{cde} (e_{Ru} C u_{Rve}) (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^a u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} s & t \\ t & \end{smallmatrix} \right] \epsilon^{ace} (e_{Ru} C u_{Rve}) (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) \end{array} \right. \quad (3.1054)$$

$$\mathcal{O}_{d_R e_L \bar{u}_R u_R u_L^2}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsa} C u_{Ltc}) (\bar{u}_{Rr}^a e_{Lp}) (d_{Rud} C u_{Rve}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} (u_{Lsb} C u_{Ltc}) (\bar{u}_{Rr}^a e_{Lp}) (d_{Rud} C u_{Rva}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (e_{Lp} C u_{Lsa}) (d_{Rud} C u_{Rve}) (\bar{u}_{Rr}^a u_{Ltc}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsa} C u_{Ltc}) (\bar{u}_{Rr}^a e_{Lp}) (d_{Rud} C u_{Rve}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (e_{Lp} C u_{Lsa}) (d_{Rud} C u_{Rve}) (\bar{u}_{Rr}^a u_{Ltc}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} (e_{Lp} C u_{Lsb}) (d_{Rud} C u_{Rva}) (\bar{u}_{Rr}^a u_{Ltc}) \end{array} \right. \quad (3.1055)$$

$$\mathcal{O}_{d_R^2 \nu_L \bar{u}_R u_L^2}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsc} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{u}_{Rp}^a u_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{bde} (u_{Lsa} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{u}_{Rp}^a u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{bcd} (d_{Rud} C d_{Rva}) (u_{Lsc} C \nu_{Lt}) \left(\bar{u}_{Rp}^a u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsc} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{u}_{Rp}^a u_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{bde} (u_{Lsa} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{u}_{Rp}^a u_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{bcd} (d_{Rud} C d_{Rva}) (u_{Lsc} C \nu_{Lt}) \left(\bar{u}_{Rp}^a u_{Lrb} \right) \end{array} \right. \quad (3.1056)$$

$$\mathcal{O}_{d_L^2 \bar{d}_L e_R u_L^2}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^c e_{Rv} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} \left(\bar{d}_{Lu}^a e_{Rv} \right) (d_{Lpa} C u_{Lsc}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^a e_{Rv} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abd} \left(\bar{d}_{Lu}^c e_{Rv} \right) (d_{Lpa} C u_{Lsc}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} \left(\bar{d}_{Lu}^a e_{Rv} \right) (d_{Lpa} C u_{Lsc}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^a e_{Rv} \right) \end{array} \right. \quad (3.1057)$$

$$\mathcal{O}_{d_R d_R d_L e_R u_L^2}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (u_{Lsc} C u_{Ltd}) (d_{Rue} C e_{Rv}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bde} (u_{Lsa} C u_{Ltd}) (d_{Rue} C e_{Rv}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bde} (d_{Rue} C e_{Rv}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bde} (u_{Lsa} C u_{Ltd}) (d_{Rue} C e_{Rv}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{cde} (d_{Rue} C e_{Rv}) (d_{Lra} C u_{Ltd}) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bde} (d_{Rue} C e_{Rv}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) (d_{Lrb} C u_{Ltd}) \end{array} \right. \quad (3.1058)$$

$$\mathcal{O}_{d_L e_L u_R u_L^2 \bar{u}_L}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) (\bar{u}_{Lv}^a u_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abd} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) (\bar{u}_{Lv}^c u_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abd} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) (\bar{u}_{Lv}^c u_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abd} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) (\bar{u}_{Lv}^c u_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{bcd} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) (\bar{u}_{Lv}^a u_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abd} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) (\bar{u}_{Lv}^c u_{Rud}) \end{array} \right. \quad (3.1059)$$

$$\mathcal{O}_{d_R d_L \bar{d}_L e_L u_L^2}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{bcd} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) (\bar{d}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abd} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) (\bar{d}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abd} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) (\bar{d}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abd} (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) (\bar{d}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{bcd} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) (\bar{d}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abd} (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) (\bar{d}_{Lv}^c d_{Rud}) \end{array} \right. \quad (3.1060)$$

$$\mathcal{O}_{d_L e_R e_L \bar{e}_L u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{e}_{Lv} e_{Ru}) (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{e}_{Lv} e_{Ru}) (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) \end{array} \right. \quad (3.1061)$$

$$\mathcal{O}_{d_L \bar{e}_R e_R^2 u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{abc} (e_{Ru} C e_{Rv}) (\bar{e}_{Rr} u_{Ltc}) (d_{Lpa} C u_{Lsb}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{abc} (e_{Ru} C e_{Rv}) (\bar{e}_{Rr} d_{Lpa}) (u_{Lsb} C u_{Ltc}) \end{array} \right. \quad (3.1062)$$

$$\mathcal{O}_{d_R d_L \nu_L u_L^2 \bar{u}_L}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{bcd} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abd} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) (\bar{u}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abc} (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Lv}^d d_{Rud}) (d_{Lpa} C u_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{bcd} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abd} (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) (\bar{u}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abc} (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Lv}^d d_{Rud}) (d_{Lpa} C u_{Lrb}) \end{array} \right. \quad (3.1063)$$

$$\mathcal{O}_{d_L e_R \nu_L \bar{\nu}_L u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lv} e_{Ru}) (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lv} e_{Ru}) (u_{Lsc} C \nu_{Lt}) (d_{Lpa} C u_{Lrb}) \end{array} \right. \quad (3.1064)$$

$$\mathcal{O}_{\bar{d}_R d_R^2 e_L u_L^2}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{cde} (u_{Lsa} C u_{Ltc}) (d_{Rud} C d_{Rve}) (\bar{d}_{Rp}^a e_{Lr}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{cde} (e_{Lr} C u_{Ltc}) (d_{Rud} C d_{Rve}) (\bar{d}_{Rp}^a u_{Lsa}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{bcd} (d_{Rud} C d_{Rva}) (e_{Lr} C u_{Ltc}) (\bar{d}_{Rp}^a u_{Lsb}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{cde} (u_{Lsa} C u_{Ltc}) (d_{Rud} C d_{Rve}) (\bar{d}_{Rp}^a e_{Lr}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{cde} (e_{Lr} C u_{Ltc}) (d_{Rud} C d_{Rve}) (\bar{d}_{Rp}^a u_{Lsa}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right], \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon^{bcd} (d_{Rud} C d_{Rva}) (u_{Lsb} C u_{Ltc}) (\bar{d}_{Rp}^a e_{Lr}) \end{array} \right. \quad (3.1065)$$

$$\mathcal{O}_{e_L^2 \bar{\nu}_L u_R u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right], \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lv} u_{Ruc}) (e_{Lp} C u_{Lsa}) (e_{Lr} C u_{Ltb}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right], \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (e_{Lp} C e_{Lr}) (\bar{\nu}_{Lv} u_{Ruc}) (u_{Lsa} C u_{Ltb}) \end{array} \right. \quad (3.1066)$$

$$\mathcal{O}_{d_R e_L^2 \bar{e}_L u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right], \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{e}_{Lv} d_{Ruc}) (e_{Lp} C u_{Lsa}) (e_{Lr} C u_{Ltb}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \end{array} \right], \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (e_{Lp} C e_{Lr}) (\bar{e}_{Lv} d_{Ruc}) (u_{Lsa} C u_{Ltb}) \end{array} \right. \quad (3.1067)$$

$$\mathcal{O}_{d_R \bar{e}_R e_R e_L u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{e}_{Rp} u_{Lsa}) (e_{Lr} C u_{Ltb}) (d_{Ruc} C e_{Rv}) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon^{abc} (\bar{e}_{Rp} e_{Lr}) (u_{Lsa} C u_{Ltb}) (d_{Ruc} C e_{Rv}) \end{array} \right. \quad (3.1068)$$

$$\mathcal{O}_{d_R e_L \nu_L \bar{\nu}_L u_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lv} d_{Ruc}) (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lv} d_{Ruc}) (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) \end{array} \right. \quad (3.1069)$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^2 \bar{\nu}_L \bar{u}_R u_L \bar{u}_L}^{(1\sim 6)}(-1, -1) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{ace} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Ltb}) (\bar{u}_{Lu}^e C \bar{\nu}_{Lv}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abe} (\bar{u}_{Rs}^c u_{Ltc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lu}^e C \bar{\nu}_{Lv}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{ace} \left(\bar{d}_{Rr}^b u_{Ltb} \right) (\bar{u}_{Lu}^e C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{ace} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Ltb}) (\bar{u}_{Lu}^e C \bar{\nu}_{Lv}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{ace} \left(\bar{d}_{Rr}^b u_{Ltb} \right) (\bar{u}_{Lu}^e C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abe} \left(\bar{d}_{Rr}^b u_{Ltc} \right) (\bar{u}_{Lu}^e C \bar{\nu}_{Lv}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right)
 \end{aligned} \right. \quad (3.1076)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R \bar{e}_R \bar{u}_R u_L \bar{u}_L^2}^{(1\sim 6)}(-1, -1) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abe} \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) (\bar{u}_{Rs}^b u_{Ltc}) (\bar{u}_{Lu}^c C \bar{u}_{Lv}^e) \\
 & \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abe} (\bar{e}_{Rr} u_{Ltc}) (\bar{u}_{Lu}^c C \bar{u}_{Lv}^e) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{bde} (\bar{u}_{Rs}^b u_{Lta}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) (\bar{u}_{Lu}^d C \bar{u}_{Lv}^e) \\
 & \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{ade} (\bar{u}_{Rs}^b u_{Ltb}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) (\bar{u}_{Lu}^d C \bar{u}_{Lv}^e) \\
 & \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{bde} (\bar{e}_{Rr} u_{Lta}) (\bar{u}_{Lu}^d C \bar{u}_{Lv}^e) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\
 & \mathcal{Y} \left[\begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{ade} (\bar{e}_{Rr} u_{Ltb}) (\bar{u}_{Lu}^d C \bar{u}_{Lv}^e) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right)
 \end{aligned} \right. \quad (3.1077)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R \bar{d}_L^2 e_R u_R u_L}^{(1\sim 6)}(1, 1) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{cde} (e_{Ru} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lra}) (d_{Lsc} C u_{Ltd}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bde} (e_{Ru} C u_{Rve}) (d_{Lsa} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bcd} (e_{Ru} C u_{Rva}) (d_{Lsc} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{cde} (e_{Ru} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lra}) (d_{Lsc} C u_{Ltd}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bde} (e_{Ru} C u_{Rve}) (d_{Lsa} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bcd} (e_{Ru} C u_{Rva}) (d_{Lsc} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb})
 \end{aligned} \right. \quad (3.1078)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_L^2 \bar{d}_L e_L u_R u_L}^{(1\sim 6)}(1, 1) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bce} (d_{Lpa} C d_{Lrb}) (e_{Ls} C u_{Ltc}) (\bar{d}_{Lu}^a u_{Rve}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abe} (d_{Lpa} C d_{Lrb}) (e_{Ls} C u_{Ltc}) (\bar{d}_{Lu}^c u_{Rve}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bce} (d_{Lpa} C e_{Ls}) (d_{Lrb} C u_{Ltc}) (\bar{d}_{Lu}^a u_{Rve}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bce} (d_{Lpa} C d_{Lrb}) (e_{Ls} C u_{Ltc}) (\bar{d}_{Lu}^a u_{Rve}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bce} (d_{Lpa} C e_{Ls}) (d_{Lrb} C u_{Ltc}) (\bar{d}_{Lu}^a u_{Rve}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abe} (d_{Lpa} C e_{Ls}) (d_{Lrb} C u_{Ltc}) (\bar{d}_{Lu}^c u_{Rve})
 \end{aligned} \right. \quad (3.1079)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_L^2 \nu_L u_R u_L \bar{u}_L}^{(1\sim 6)}(1, 1) & \left| \begin{aligned}
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Lv}^a u_{Rud}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Lv}^c u_{Rud}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) (\bar{u}_{Lv}^a u_{Rud}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Lv}^a u_{Rud}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) (\bar{u}_{Lv}^a u_{Rud}) \\
 & \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abd} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) (\bar{u}_{Lv}^c u_{Rud})
 \end{aligned} \right. \quad (3.1080)
 \end{aligned}$$

$$\mathcal{O}_{d_R d_L^2 \bar{d}_L \nu_L u_L}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Lv}^a d_{Rud} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{abd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Lv}^c d_{Rud} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{bcd} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \left(\bar{d}_{Lv}^a d_{Rud} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Lv}^a d_{Rud} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{bcd} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \left(\bar{d}_{Lv}^a d_{Rud} \right) \\ \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{abd} (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \left(\bar{d}_{Lv}^c d_{Rud} \right) \end{array} \right. \quad (3.1081)$$

$$\mathcal{O}_{d_L^2 e_R \bar{e}_L \nu_L u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{abc} (\bar{e}_{Lv} e_{Ru}) (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \\ \mathcal{Y} \left[\frac{p}{r} \right] \epsilon^{abc} (\bar{e}_{Lv} e_{Ru}) (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \end{array} \right. \quad (3.1082)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L e_L u_R u_L}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \epsilon^{cde} (e_{Ls} C u_{Ltc}) \left(\bar{d}_{Rp}^a d_{Lra} \right) (d_{Rud} C u_{Rve}) \\ \epsilon^{bde} (e_{Ls} C u_{Lta}) (d_{Rud} C u_{Rve}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \epsilon^{bcd} (e_{Ls} C u_{Ltc}) (d_{Rud} C u_{Rva}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \epsilon^{cde} \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Lra} C u_{Ltc}) (d_{Rud} C u_{Rve}) \\ \epsilon^{bde} \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Lrb} C u_{Lta}) (d_{Rud} C u_{Rve}) \\ \epsilon^{bcd} \left(\bar{d}_{Rp}^a e_{Ls} \right) (d_{Rud} C u_{Rva}) (d_{Lrb} C u_{Ltc}) \end{array} \right. \quad (3.1083)$$

$$\mathcal{O}_{\bar{d}_R d_R^2 \bar{d}_L \nu_L u_L}^{(1\sim 6)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{u}{v} \right] \epsilon^{bcd} (d_{Rud} C d_{Rva}) (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] \epsilon^{bcd} (d_{Rud} C d_{Rva}) (d_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] \epsilon^{cde} (u_{Lsc} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] \epsilon^{bde} (u_{Lsa} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] \epsilon^{cde} (d_{Lra} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \\ \mathcal{Y} \left[\frac{u}{v} \right] \epsilon^{bde} (d_{Lrb} C \nu_{Lt}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a u_{Lsa} \right) \end{array} \right. \quad (3.1084)$$

$$\mathcal{O}_{d_L e_L^2 \bar{e}_L u_R u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] \epsilon^{abc} (\bar{e}_{Lu} u_{Rvc}) (d_{Lpa} C e_{Lr}) (e_{Ls} C u_{Ltb}) \\ \mathcal{Y} \left[\frac{r}{s} \right] \epsilon^{abc} (\bar{e}_{Lu} u_{Rvc}) (d_{Lpa} C e_{Lr}) (e_{Ls} C u_{Ltb}) \end{array} \right. \quad (3.1085)$$

$$\mathcal{O}_{d_L \bar{e}_R e_R e_L u_R u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \epsilon^{abc} (\bar{e}_{Rr} d_{Lpa}) (e_{Ls} C u_{Ltb}) (e_{Ru} C u_{Rvc}) \\ \epsilon^{abc} (\bar{e}_{Rr} u_{Ltb}) (d_{Lpa} C e_{Ls}) (e_{Ru} C u_{Rvc}) \end{array} \right. \quad (3.1086)$$

$$\mathcal{O}_{d_L e_L \nu_L \bar{\nu}_L u_R u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \epsilon^{abc} (\bar{\nu}_{Lv} u_{Ruc}) (d_{Lpa} C e_{Lr}) (u_{Lsb} C \nu_{Lt}) \\ \epsilon^{abc} (e_{Lr} C \nu_{Lt}) (\bar{\nu}_{Lv} u_{Ruc}) (d_{Lpa} C u_{Lsb}) \end{array} \right. \quad (3.1087)$$

$$\mathcal{O}_{d_R d_L e_L \bar{e}_L \nu_L u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \epsilon^{abc} (\bar{e}_{Lv} d_{Ruc}) (d_{Lpa} C e_{Lr}) (u_{Lsb} C \nu_{Lt}) \\ \epsilon^{abc} (e_{Lr} C \nu_{Lt}) (\bar{e}_{Lv} d_{Ruc}) (d_{Lpa} C u_{Lsb}) \end{array} \right. \quad (3.1088)$$

$$\mathcal{O}_{d_R d_L \bar{e}_R e_R \nu_L u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \epsilon^{abc} (\bar{e}_{Rr} d_{Lpa}) (u_{Lsb} C \nu_{Lt}) (d_{Ruc} C e_{Rv}) \\ \epsilon^{abc} (\bar{e}_{Rr} \nu_{Lt}) (d_{Ruc} C e_{Rv}) (d_{Lpa} C u_{Lsb}) \end{array} \right. \quad (3.1089)$$

$$\mathcal{O}_{d_R d_L \nu_L^2 \bar{\nu}_L u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{s}{t} \right] \epsilon^{abc} (\bar{\nu}_{Lv} d_{Ruc}) (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) \\ \mathcal{Y} \left[\frac{s}{t} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} d_{Ruc}) (d_{Lpa} C u_{Lrb}) \end{array} \right. \quad (3.1090)$$

$$\mathcal{O}_{d_R \bar{e}_R e_L^2 u_R u_L}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\frac{r}{s} \right] \epsilon^{abc} (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C u_{Lta}) (d_{Rub} C u_{Rvc}) \\ \mathcal{Y} \left[\frac{r}{s} \right] \epsilon^{abc} (\bar{e}_{Rp} e_{Lr}) (e_{Ls} C u_{Lta}) (d_{Rub} C u_{Rvc}) \end{array} \right. \quad (3.1091)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L \bar{\nu}_L^2 \bar{u}_R}^{(1,2)}(-1, -1) \left| \begin{array}{l} \mathcal{Y}[\overline{[p|r]}, \overline{[u|v]}] \epsilon_{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^c) \\ \mathcal{Y}[\overline{[p|]}, \overline{[u|v]}] \epsilon_{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{u}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.1117)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R e_L \bar{e}_L \bar{u}_R \bar{u}_L}^{(1,2)}(-1, -1) \left| \begin{array}{l} \epsilon_{abc} (\bar{u}_{Rt}^b e_{Ls}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \\ \epsilon_{abc} (\bar{d}_{Rp}^a e_{Ls}) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \end{array} \right. \quad (3.1118)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{e}_R e_L \bar{\nu}_L \bar{u}_R}^{(1,2)}(-1, -1) \left| \begin{array}{l} \epsilon_{abc} (\bar{u}_{Rt}^b e_{Ls}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) (\bar{d}_{Lu}^c C \bar{\nu}_{Lv}) \\ \epsilon_{abc} (\bar{d}_{Rp}^a e_{Ls}) \left(\bar{e}_{Rr} C \bar{u}_{Rt}^b \right) (\bar{d}_{Lu}^c C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.1119)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R^2 e_R \bar{u}_R \bar{u}_L}^{(1,2)}(-1, -1) \left| \begin{array}{l} \mathcal{Y}[\overline{[p|]}, \overline{[s|]}] \epsilon_{abc} (\bar{u}_{Lv}^c e_{Ru}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{e}_{Rs} C \bar{u}_{Rt}^b) \\ \mathcal{Y}[\overline{[r|s]}] \epsilon_{abc} (\bar{u}_{Lv}^c e_{Ru}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{e}_{Rs} C \bar{u}_{Rt}^b) \end{array} \right. \quad (3.1120)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \nu_L \bar{\nu}_L \bar{u}_R \bar{u}_L}^{(1,2)}(-1, -1) \left| \begin{array}{l} \epsilon_{abc} (\bar{u}_{Rs}^b \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \\ \epsilon_{abc} (\bar{e}_{Rr} \nu_{Lt}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \end{array} \right. \quad (3.1121)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_R^2 e_L \bar{u}_R \bar{u}_L}^{(1,2)}(-1, -1) \left| \begin{array}{l} \mathcal{Y}[\overline{[p|]}, \overline{[r|]}] \epsilon_{abc} (\bar{e}_{Rp} e_{Ls}) (\bar{e}_{Rr} C \bar{u}_{Rt}^a) (\bar{d}_{Lu}^b C \bar{u}_{Lv}^c) \\ \mathcal{Y}[\overline{[p|r]}] \epsilon_{abc} (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{u}_{Rt}^a e_{Ls}) (\bar{d}_{Lu}^b C \bar{u}_{Lv}^c) \end{array} \right. \quad (3.1122)$$

$$\mathcal{O}_{\bar{e}_R^2 \nu_L \bar{u}_R \bar{u}_L^2}^{(1,2)}(-1, -1) \left| \begin{array}{l} \mathcal{Y}[\overline{[p|]}, \overline{[u|]}, \overline{[v|]}] \epsilon_{abc} (\bar{e}_{Rr} \nu_{Lt}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (\bar{u}_{Lu}^b C \bar{u}_{Lv}^c) \\ \mathcal{Y}[\overline{[p|r]}, \overline{[u|]}, \overline{[v|]}] \epsilon_{abc} (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{u}_{Rs}^a \nu_{Lt}) (\bar{u}_{Lu}^b C \bar{u}_{Lv}^c) \end{array} \right. \quad (3.1123)$$

$$\mathcal{O}_{d_L^3 \bar{d}_L \nu_L u_R}^{(1\sim 4)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{[p|r]}, \overline{[s|]}] \epsilon^{bce} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C \nu_{Lt}) (\bar{d}_{Lu}^a u_{Rve}) \\ \mathcal{Y}[\overline{[p|]}, \overline{[r|]}, \overline{[s|]}] \epsilon^{bce} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C \nu_{Lt}) (\bar{d}_{Lu}^a u_{Rve}) \\ \mathcal{Y}[\overline{[p|]}, \overline{[r|]}, \overline{[s|]}] \epsilon^{abe} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C \nu_{Lt}) (\bar{d}_{Lu}^c u_{Rve}) \\ \mathcal{Y}[\overline{[p|]}, \overline{[r|]}, \overline{[s|]}] \epsilon^{bce} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C \nu_{Lt}) (\bar{d}_{Lu}^a u_{Rve}) \end{array} \right. \quad (3.1124)$$

$$\mathcal{O}_{\bar{d}_R d_R^2 e_L u_R^2}^{(1\sim 6)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{[r|]}, \overline{[s|]}, \overline{[u|]}, \overline{[v|]}] \epsilon^{cde} (d_{Lsc} C e_{Lt}) (u_{Rud} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lra}) \\ \mathcal{Y}[\overline{[r|]}, \overline{[s|]}, \overline{[u|]}, \overline{[v|]}] \epsilon^{bde} (d_{Lsa} C e_{Lt}) (u_{Rud} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y}[\overline{[r|s]}, \overline{[u|v]}] \epsilon^{bcd} (u_{Rud} C u_{Rva}) (d_{Lsc} C e_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y}[\overline{[r|]}, \overline{[s|]}, \overline{[u|]}, \overline{[v|]}] \epsilon^{cde} (d_{Lsc} C e_{Lt}) (u_{Rud} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lra}) \\ \mathcal{Y}[\overline{[r|]}, \overline{[s|]}, \overline{[u|]}, \overline{[v|]}] \epsilon^{bde} (d_{Lsa} C e_{Lt}) (u_{Rud} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y}[\overline{[r|]}, \overline{[s|]}, \overline{[u|v]}] \epsilon^{bcd} (u_{Rud} C u_{Rva}) (d_{Lsc} C e_{Lt}) (\bar{d}_{Rp}^a d_{Lrb}) \end{array} \right. \quad (3.1125)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L^2 \nu_L u_R}^{(1\sim 6)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{[r|]}, \overline{[s|]}] \epsilon^{cde} (d_{Lsc} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (d_{Rud} C u_{Rve}) \\ \mathcal{Y}[\overline{[r|]}, \overline{[s|]}] \epsilon^{bde} (d_{Lsa} C \nu_{Lt}) (d_{Rud} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y}[\overline{[r|]}, \overline{[s|]}] \epsilon^{bcd} (d_{Lsc} C \nu_{Lt}) (d_{Rud} C u_{Rva}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y}[\overline{[r|s]}] \epsilon^{cde} (d_{Lsc} C \nu_{Lt}) (\bar{d}_{Rp}^a d_{Lra}) (d_{Rud} C u_{Rve}) \\ \mathcal{Y}[\overline{[r|s]}] \epsilon^{bde} (d_{Lsa} C \nu_{Lt}) (d_{Rud} C u_{Rve}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y}[\overline{[r|s]}] \epsilon^{bcd} (d_{Lsc} C \nu_{Lt}) (d_{Rud} C u_{Rva}) (\bar{d}_{Rp}^a d_{Lrb}) \end{array} \right. \quad (3.1126)$$

$$\mathcal{O}_{d_L^2 e_L \bar{e}_L \nu_L u_R}^{(1,2)}(1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{[p|r]}] \epsilon^{abc} (\bar{e}_{Lu} u_{Rvc}) (d_{Lpa} C e_{Ls}) (d_{Lrb} C \nu_{Lt}) \\ \mathcal{Y}[\overline{[p|]}, \overline{[r|]}] \epsilon^{abc} (e_{Ls} C \nu_{Lt}) (\bar{e}_{Lu} u_{Rvc}) (d_{Lpa} C d_{Lrb}) \end{array} \right. \quad (3.1127)$$

$$\mathcal{O}_{d_L^2 \bar{e}_R e_R \nu_L u_R}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C \nu_{Lt}) (e_{Ru} C u_{Rvc}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} \nu_{Lt}) (d_{Lpa} C d_{Lrb}) (e_{Ru} C u_{Rvc}) \end{array} \right. \quad (3.1128)$$

$$\mathcal{O}_{d_L^2 \nu_L^2 \bar{\nu}_L u_R}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{s} \\ & t \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lv} u_{Ruc}) (d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array}, \begin{array}{c} \overline{s} \\ t \end{array} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{\nu}_{Lv} u_{Ruc}) (d_{Lpa} C d_{Lrb}) \end{array} \right. \quad (3.1129)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_L \nu_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{s} \\ & t \end{array} \right] \epsilon^{abc} (\bar{e}_{Lv} d_{Ruc}) (d_{Lpa} C \nu_{Ls}) (d_{Lrb} C \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array}, \begin{array}{c} \overline{s} \\ t \end{array} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lv} d_{Ruc}) (d_{Lpa} C d_{Lrb}) \end{array} \right. \quad (3.1130)$$

$$\mathcal{O}_{d_R^3 d_L \bar{\nu}_L \bar{u}_L}^{(1\sim 4)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \ s \end{array} \right] \epsilon_{ace} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Ltb} \right) \left(\bar{u}_{Lu}^e C \bar{\nu}_{Lv} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \\ s \end{array} \right] \epsilon_{ace} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Ltb} \right) \left(\bar{u}_{Lu}^e C \bar{\nu}_{Lv} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \\ s \end{array} \right] \epsilon_{bce} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Lta} \right) \left(\bar{u}_{Lu}^e C \bar{\nu}_{Lv} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array}, \begin{array}{c} \overline{s} \\ t \end{array} \right] \epsilon_{ace} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Ltb} \right) \left(\bar{u}_{Lu}^e C \bar{\nu}_{Lv} \right) \end{array} \right. \quad (3.1131)$$

$$\mathcal{O}_{d_R^3 d_L \bar{e}_R \bar{u}_L^2}^{(1\sim 6)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{u} \\ & v \end{array} \right] \epsilon_{bde} (\bar{e}_{Rt} d_{Lsa}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{u} \\ & v \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b C \bar{e}_{Rt} \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r, & \overline{u} \\ s & v \end{array} \right] \epsilon_{abe} \left(\bar{d}_{Rp}^a d_{Lsc} \right) \left(\bar{d}_{Rr}^b C \bar{e}_{Rt} \right) \left(\bar{u}_{Lu}^c C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{u} \\ & v \end{array} \right] \epsilon_{bde} (\bar{e}_{Rt} d_{Lsa}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{u} \\ & v \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b C \bar{e}_{Rt} \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{p} \ r, & \overline{u} \\ s & v \end{array} \right] \epsilon_{abe} (\bar{e}_{Rt} d_{Lsc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^c C \bar{u}_{Lv}^e \right) \end{array} \right. \quad (3.1132)$$

$$\mathcal{O}_{d_L \bar{e}_R e_L^2 u_R^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{s} \ t, & \overline{u} \\ & v \end{array} \right] \epsilon^{abc} (\bar{e}_{Rr} e_{Lt}) (d_{Lpa} C e_{Ls}) (u_{Rub} C u_{Rvc}) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{s} \ t, & \overline{u} \\ s & v \end{array} \right] \epsilon^{abc} (e_{Ls} C e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (u_{Rub} C u_{Rvc}) \end{array} \right. \quad (3.1133)$$

$$\mathcal{O}_{d_R d_L \bar{e}_R e_L \nu_L u_R}^{(1,2)}(1,1) \left| \begin{array}{l} \epsilon^{abc} (e_{Ls} C \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (d_{Rub} C u_{Rvc}) \\ \epsilon^{abc} (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C e_{Ls}) (d_{Rub} C u_{Rvc}) \end{array} \right. \quad (3.1134)$$

$$\mathcal{O}_{d_R^2 d_L \bar{e}_R \nu_L^2}^{(1,2)}(1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{s} \ t, & \overline{u} \\ & v \end{array} \right] \epsilon^{abc} (\bar{e}_{Rr} \nu_{Lt}) (d_{Lpa} C \nu_{Ls}) (d_{Rub} C d_{Rvc}) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{s} \ t, & \overline{u} \\ s & v \end{array} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (d_{Rub} C d_{Rvc}) \end{array} \right. \quad (3.1135)$$

$$\mathcal{O}_{\bar{d}_R^3 e_L \bar{\nu}_L^2}(-1,-1) \left| \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \\ s \end{array}, \begin{array}{c} \overline{u} \\ v \end{array} \right] \epsilon_{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) \left(\bar{d}_{Rs}^c e_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \right. \quad (3.1136)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{e}_R e_L \bar{\nu}_L \bar{u}_L}^{(1,2)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \overline{p} \ r \end{array} \right] \epsilon_{abc} \left(\bar{d}_{Rr}^b e_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rs} \right) \left(\bar{u}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ \mathcal{Y} \left[\begin{array}{c} \overline{p} \\ r \end{array} \right] \epsilon_{abc} (\bar{e}_{Rs} e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^c C \bar{\nu}_{Lv} \right) \end{array} \right. \quad (3.1137)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R^2 e_L \bar{u}_L^2}^{(1,2)}(-1,-1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{cc} \overline{r} \ s, & \overline{u} \\ & v \end{array} \right] \epsilon_{abc} (\bar{e}_{Rs} e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \left(\bar{u}_{Lu}^b C \bar{u}_{Lv}^c \right) \\ \mathcal{Y} \left[\begin{array}{cc} \overline{r} \ s, & \overline{u} \\ r & v \end{array} \right] \epsilon_{abc} (\bar{e}_{Rs} e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \left(\bar{u}_{Lu}^b C \bar{u}_{Lv}^c \right) \end{array} \right. \quad (3.1138)$$

$$(\Delta B, \Delta L) = (\pm 1, \mp 1)$$

$$\mathcal{O}_{d_R d_L \bar{\nu}_L \bar{u}_R u_L^2}^{(1\sim 6)}(1, -1) \left[\begin{array}{l} \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{cde} (\bar{\nu}_{Lv} d_{Rue}) (u_{Lsc} C u_{Ltd}) (\bar{u}_{Rr}^a d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{ace} (\bar{\nu}_{Lv} d_{Rue}) (u_{Lsc} C u_{Ltb}) (\bar{u}_{Rr}^b d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{ace} (\bar{\nu}_{Lv} d_{Rue}) (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) \\ \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{ace} (\bar{\nu}_{Lv} d_{Rue}) (u_{Lsc} C u_{Ltb}) (\bar{u}_{Rr}^b d_{Lpa}) \\ \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{cde} (\bar{\nu}_{Lv} d_{Rue}) (d_{Lpa} C u_{Lsc}) (\bar{u}_{Rr}^a u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{ace} (\bar{\nu}_{Lv} d_{Rue}) (\bar{u}_{Rr}^b u_{Ltb}) (d_{Lpa} C u_{Lsc}) \end{array} \right] \quad (3.1139)$$

$$\mathcal{O}_{d_L^2 \bar{\nu}_L u_L^2 \bar{u}_L}(1, -1) \left[\begin{array}{l} \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{abd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C u_{Ltd}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{bcd} (d_{Lpa} C u_{Lsc}) (d_{Lrb} C u_{Ltd}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C u_{Ltd}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{abd} (d_{Lpa} C u_{Lsc}) (d_{Lrb} C u_{Ltd}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{bcd} (d_{Lpa} C u_{Lsc}) (d_{Lrb} C u_{Ltd}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [s] \\ [t] \end{array} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (u_{Lsc} C u_{Ltd}) (\bar{u}_{Lu}^a C \bar{\nu}_{Lv}) \end{array} \right] \quad (3.1140)$$

$$\mathcal{O}_{d_L e_L \bar{\nu}_L^2 u_L^2}(1, -1) \left[\begin{array}{l} \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (e_{Lr} C u_{Ltc}) (d_{Lpa} C u_{Lsb}) \\ \mathcal{Y} \left[\begin{array}{c} [s] \\ [t] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon^{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C e_{Lr}) (u_{Lsb} C u_{Ltc}) \end{array} \right] \quad (3.1141)$$

$$\mathcal{O}_{d_L^2 \nu_L \bar{u}_R^2 u_L}(-1, 1) \left[\begin{array}{l} \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon_{bde} (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{d}_{Lu}^d C \bar{d}_{Lv}^e) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon_{bde} (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \nu_{Lt}) (\bar{d}_{Lu}^d C \bar{d}_{Lv}^e) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon_{abd} (\bar{u}_{Rp}^b \nu_{Lt}) (\bar{u}_{Rp}^a u_{Lsc}) (\bar{d}_{Lu}^d C \bar{d}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon_{bde} (u_{Lsa} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{d}_{Lu}^d C \bar{d}_{Lv}^e) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon_{bde} (\bar{u}_{Rp}^a u_{Lsa}) (\bar{u}_{Rr}^b \nu_{Lt}) (\bar{d}_{Lu}^d C \bar{d}_{Lv}^e) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array}, \begin{array}{c} [u] \\ [v] \end{array} \right] \epsilon_{abd} (u_{Lsc} C \nu_{Lt}) (\bar{u}_{Rp}^a C \bar{u}_{Rr}^b) (\bar{d}_{Lu}^d C \bar{d}_{Lv}^c) \end{array} \right] \quad (3.1142)$$

$$\mathcal{O}_{d_L^2 \bar{\nu}_L \bar{u}_R u_R u_L}(1, -1) \left[\begin{array}{l} \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{abe} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^c u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{\nu}_{Lv} u_{Rue}) (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{\nu}_{Lv} u_{Rue}) (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{abe} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lrb} C u_{Ltc}) (\bar{u}_{Rs}^c d_{Lpa}) \end{array} \right] \quad (3.1143)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_L \bar{u}_R u_L}(1, -1) \left[\begin{array}{l} \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{e}_{Lv} d_{Rue}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{abe} (\bar{e}_{Lv} d_{Rue}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^c u_{Ltc}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{e}_{Lv} d_{Rue}) (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{e}_{Lv} d_{Rue}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rs}^a u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{bde} (\bar{e}_{Lv} d_{Rue}) (\bar{u}_{Rs}^a d_{Lpa}) (d_{Lrb} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{array}{c} [p] \\ [r] \end{array} \right] \epsilon^{abe} (\bar{e}_{Lv} d_{Rue}) (d_{Lrb} C u_{Ltc}) (\bar{u}_{Rs}^c d_{Lpa}) \end{array} \right] \quad (3.1144)$$

$$\begin{aligned}
 \mathcal{O}_{d_R^2 \bar{d}_L \bar{e}_R \bar{u}_R u_L}^{(1\sim 6)}(1, -1) & \left| \begin{aligned} & \mathcal{Y}[\overline{uv}] \epsilon^{ace} (\bar{e}_{Rr} d_{Lpa}) (d_{Rub} C d_{Rve}) (\bar{u}_{Rs}^b u_{Ltc}) \\ & \mathcal{Y}[\overline{uv}] \epsilon^{ace} (\bar{e}_{Rr} u_{Ltc}) (d_{Rub} C d_{Rve}) (\bar{u}_{Rs}^b d_{Lpa}) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon^{cde} (\bar{e}_{Rr} d_{Lpa}) (d_{Rud} C d_{Rve}) (\bar{u}_{Rs}^a u_{Ltc}) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon^{ace} (\bar{e}_{Rr} d_{Lpa}) (d_{Rub} C d_{Rve}) (\bar{u}_{Rs}^b u_{Ltc}) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon^{cde} (\bar{e}_{Rr} u_{Ltc}) (d_{Rud} C d_{Rve}) (\bar{u}_{Rs}^a d_{Lpa}) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon^{ace} (\bar{e}_{Rr} u_{Ltc}) (d_{Rub} C d_{Rve}) (\bar{u}_{Rs}^b d_{Lpa}) \end{aligned} \right. \quad (3.1145)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^2 \bar{d}_L e_R \bar{u}_R u_L}^{(1\sim 6)}(-1, 1) & \left| \begin{aligned} & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon_{ace} \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Ltb}) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon_{abc} \left(\bar{d}_{Lu}^d e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Ltd}) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon_{ace} \left(\bar{d}_{Rr}^b u_{Ltb} \right) \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon_{ace} \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Rs}^c u_{Ltb}) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon_{ace} \left(\bar{d}_{Rr}^b u_{Ltb} \right) \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon_{abc} \left(\bar{d}_{Lu}^d e_{Rv} \right) \left(\bar{d}_{Rr}^b u_{Ltd} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{aligned} \right. \quad (3.1146)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^2 \bar{d}_L^2 e_L \bar{u}_R u_L}^{(1\sim 6)}(-1, 1) & \left| \begin{aligned} & \mathcal{Y}[\overline{uv}] \epsilon_{abd} \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Ltc} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^c \right) \\ & \mathcal{Y}[\overline{uv}] \epsilon_{abd} \left(e_{Lr} C u_{Ltc} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^c \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon_{bde} \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Lta} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon_{abd} \left(\bar{d}_{Rp}^a e_{Lr} \right) \left(\bar{u}_{Rs}^b u_{Ltc} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^c \right) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon_{bde} \left(e_{Lr} C u_{Lta} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \\ & \mathcal{Y}[\overline{u} \begin{smallmatrix} \overline{u} \\ \overline{v} \end{smallmatrix}] \epsilon_{abd} \left(e_{Lr} C u_{Ltc} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^c \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \end{aligned} \right. \quad (3.1147)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{\bar{d}_R^2 \bar{d}_L \nu_L \bar{u}_R u_L \bar{u}_L}^{(1\sim 6)}(-1, 1) & \left| \begin{aligned} & \epsilon_{bde} (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ & \epsilon_{ade} (u_{Lsb} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ & \epsilon_{abe} (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^e \right) \\ & \epsilon_{bde} \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ & \epsilon_{ade} \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a u_{Lsb} \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ & \epsilon_{abe} \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^e \right) \end{aligned} \right. \quad (3.1148)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{d_L^3 \bar{e}_L u_L \bar{u}_L}^{(1\sim 4)}(1, -1) & \left| \begin{aligned} & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{abd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) (\bar{e}_{Lu} C \bar{u}_{Lv}^a) \end{aligned} \right. \quad (3.1149)
 \end{aligned}$$

$$\begin{aligned}
 \mathcal{O}_{d_L^3 \bar{d}_L \bar{\nu}_L u_L}^{(1\sim 4)}(1, -1) & \left| \begin{aligned} & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{abd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ & \mathcal{Y}[\overline{p} \begin{smallmatrix} \overline{r} \\ \overline{s} \end{smallmatrix}] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C u_{Ltd}) \left(\bar{d}_{Lu}^a C \bar{\nu}_{Lv} \right) \end{aligned} \right. \quad (3.1150)
 \end{aligned}$$

$$\mathcal{O}_{\bar{d}_R d_R d_L^2 \bar{\nu}_L u_L}^{(1\sim 6)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{cde} (\bar{\nu}_{Lv} d_{Rue}) (\bar{d}_{Rp}^a d_{Lra}) (d_{Lsc} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bde} (\bar{\nu}_{Lv} d_{Rue}) (d_{Lsa} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bcd} (\bar{\nu}_{Lv} d_{Rua}) (d_{Lsc} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{cde} (\bar{\nu}_{Lv} d_{Rue}) (\bar{d}_{Rp}^a d_{Lra}) (d_{Lsc} C u_{Ltd}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bde} (\bar{\nu}_{Lv} d_{Rue}) (d_{Lsa} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{bcd} (\bar{\nu}_{Lv} d_{Rua}) (d_{Lsc} C u_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \end{array} \right. \quad (3.1151)$$

$$\mathcal{O}_{d_L^2 e_L \bar{e}_L \bar{\nu}_L u_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C e_{Ls}) (d_{Lrb} C u_{Ltc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C d_{Lrb}) (e_{Ls} C u_{Ltc}) \end{array} \right. \quad (3.1152)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_R u_L \bar{u}_L}^{(1\sim 6)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (\bar{e}_{Rs} u_{Ltc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abd} (\bar{e}_{Rs} u_{Ltc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (\bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C u_{Ltc}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (\bar{e}_{Rs} u_{Ltc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{bcd} (\bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C u_{Ltc}) (\bar{u}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abd} (\bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C u_{Ltc}) (\bar{u}_{Lv}^c d_{Rud}) \end{array} \right. \quad (3.1153)$$

$$\mathcal{O}_{d_L^2 \bar{e}_R e_R \bar{\nu}_L u_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (\bar{\nu}_{Lv} e_{Ru}) (\bar{e}_{Rs} d_{Lpa}) (d_{Lrb} C u_{Ltc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon^{abc} (\bar{\nu}_{Lv} e_{Ru}) (\bar{e}_{Rs} u_{Ltc}) (d_{Lpa} C d_{Lrb}) \end{array} \right. \quad (3.1154)$$

$$\mathcal{O}_{d_L^2 \nu_L \bar{\nu}_L^2 u_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lrb} C \nu_{Lt}) (d_{Lpa} C u_{Lsc}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C d_{Lrb}) (u_{Lsc} C \nu_{Lt}) \end{array} \right. \quad (3.1155)$$

$$\mathcal{O}_{d_R d_L \bar{e}_R e_L \bar{\nu}_L u_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \epsilon^{abc} (\bar{e}_{Rr} d_{Lpa}) (\bar{\nu}_{Lv} d_{Ruc}) (e_{Ls} C u_{Ltb}) \\ \epsilon^{abc} (\bar{e}_{Rr} u_{Ltb}) (\bar{\nu}_{Lv} d_{Ruc}) (d_{Lpa} C e_{Ls}) \end{array} \right. \quad (3.1156)$$

$$\mathcal{O}_{\bar{d}_R^3 e_R u_L \bar{u}_L}^{(1\sim 4)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] \epsilon_{ace} (\bar{u}_{Lv}^e e_{Ru}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c u_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ s \end{smallmatrix}, \begin{smallmatrix} r \end{smallmatrix} \right] \epsilon_{ace} (\bar{u}_{Lv}^e e_{Ru}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c u_{Ltb}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ s \end{smallmatrix}, \begin{smallmatrix} r \end{smallmatrix} \right] \epsilon_{bce} (\bar{u}_{Lv}^e e_{Ru}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c u_{Lta}) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \\ s \end{smallmatrix} \right] \epsilon_{ace} (\bar{u}_{Lv}^e e_{Ru}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c u_{Ltb}) \end{array} \right. \quad (3.1157)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L e_L u_L \bar{u}_L}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{bde} (e_{Ls} C u_{Lta}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^e) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abe} (e_{Ls} C u_{Ltc}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lu}^c C \bar{u}_{Lv}^e) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{bde} (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b u_{Lta}) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^e) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{bde} (e_{Ls} C u_{Lta}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^e) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{bde} (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b u_{Lta}) (\bar{d}_{Lu}^d C \bar{u}_{Lv}^e) \\ \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix} \right] \epsilon_{abe} (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b u_{Ltc}) (\bar{d}_{Lu}^c C \bar{u}_{Lv}^e) \end{array} \right. \quad (3.1158)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L u_L \bar{u}_L^2}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{bde} (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{abe} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a u_{Lsc} \right) \left(\bar{u}_{Lu}^c C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{bde} (u_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a u_{Lsa} \right) \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{u}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{abe} (u_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{u}_{Lu}^c C \bar{u}_{Lv}^e \right) \end{array} \right. \quad (3.1159)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \nu_L \bar{u}_R^2 u_R}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{acd} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d u_{Rvb} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{abc} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d u_{Rvd} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{bcd} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d u_{Rva} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{acd} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d u_{Rvb} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{abc} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d u_{Rvd} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{bcd} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d u_{Rva} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.1160)$$

$$\mathcal{O}_{\bar{d}_L \bar{e}_L \nu_L^2 \bar{u}_R^2}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \\ \boxed{t} \end{array} \right] \epsilon_{abc} (\bar{u}_{Rp}^a \nu_{Ls}) \left(\bar{u}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lu}^c C \bar{e}_{Lv} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \\ \boxed{t} \end{array} \right] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) \left(\bar{u}_{Rp}^a C \bar{u}_{Rr}^b \right) \left(\bar{d}_{Lu}^c C \bar{e}_{Lv} \right) \end{array} \right. \quad (3.1161)$$

$$\mathcal{O}_{d_L^3 \bar{e}_L \bar{u}_R u_R}^{(1\sim 4)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \end{array} \right] \epsilon^{bce} (\bar{e}_{Lu} u_{Rve}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rt}^a d_{Lsc}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \end{array} \right] \epsilon^{bce} (\bar{e}_{Lu} u_{Rve}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rt}^a d_{Lsc}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \end{array} \right] \epsilon^{abe} (\bar{e}_{Lu} u_{Rve}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rt}^c d_{Lsc}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \end{array} \right] \epsilon^{bce} (\bar{e}_{Lu} u_{Rve}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Rt}^a d_{Lsc}) \end{array} \right. \quad (3.1162)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_R \bar{u}_R u_R}^{(1\sim 6)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{bde} (d_{Lpa} C d_{Lrb}) (d_{Rud} C u_{Rve}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{abe} (d_{Lpa} C d_{Lrb}) (d_{Ruc} C u_{Rve}) (\bar{e}_{Rs} C \bar{u}_{Rt}^c) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{bde} (\bar{e}_{Rs} d_{Lpa}) (d_{Rud} C u_{Rve}) (\bar{u}_{Rt}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{bde} (d_{Lpa} C d_{Lrb}) (d_{Rud} C u_{Rve}) (\bar{e}_{Rs} C \bar{u}_{Rt}^a) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{bde} (\bar{e}_{Rs} d_{Lpa}) (d_{Rud} C u_{Rve}) (\bar{u}_{Rt}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{abe} (\bar{e}_{Rs} d_{Lpa}) (d_{Ruc} C u_{Rve}) (\bar{u}_{Rt}^c d_{Lrb}) \end{array} \right. \quad (3.1163)$$

$$\mathcal{O}_{\bar{d}_R d_L \bar{d}_L^2 \nu_L \bar{u}_R}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{ace} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{ace} (d_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Lu}^b C \bar{d}_{Lv}^e \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{ace} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \left(\bar{d}_{Lu}^b C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{cde} \left(\bar{d}_{Rp}^a d_{Lra} \right) (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{ace} (d_{Lrb} C \nu_{Lt}) \left(\bar{d}_{Lu}^b C \bar{d}_{Lv}^e \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon_{cde} (d_{Lra} C \nu_{Lt}) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.1164)$$

$$\mathcal{O}_{\bar{d}_R^3 e_R \bar{u}_R u_R}^{(1\sim 4)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p|rs}] \epsilon_{bcd} (e_{Ru} C u_{Rva}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \\ \mathcal{Y}[\overline{p|s}] \epsilon_{bcd} (e_{Ru} C u_{Rva}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \\ \mathcal{Y}[\overline{p|s}] \epsilon_{abd} (e_{Ru} C u_{Rvc}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \\ \mathcal{Y}[\overline{p|s}] \epsilon_{bcd} (e_{Ru} C u_{Rva}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \end{array} \right. \quad (3.1165)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L e_L \bar{u}_R u_R}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p|}] \epsilon_{acd} (\bar{u}_{Rt}^c e_{Ls}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^d u_{Rvb} \right) \\ \mathcal{Y}[\overline{p|}] \epsilon_{abc} (\bar{u}_{Rt}^c e_{Ls}) \left(\bar{d}_{Lu}^d u_{Rvd} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y}[\overline{p|}] \epsilon_{acd} \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{d}_{Lu}^d u_{Rvb} \right) \left(\bar{d}_{Rr}^b C \bar{u}_{Rt}^c \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{acd} (\bar{u}_{Rt}^c e_{Ls}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^d u_{Rvb} \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{acd} \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{d}_{Lu}^d u_{Rvb} \right) \left(\bar{d}_{Rr}^b C \bar{u}_{Rt}^c \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{abc} \left(\bar{d}_{Rp}^a e_{Ls} \right) \left(\bar{d}_{Lu}^d u_{Rvd} \right) \left(\bar{d}_{Rr}^b C \bar{u}_{Rt}^c \right) \end{array} \right. \quad (3.1166)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L \bar{u}_R u_R \bar{u}_L}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p|}] \epsilon_{ace} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^e u_{Rub}) \\ \mathcal{Y}[\overline{p|}] \epsilon_{abe} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^e u_{Ruc}) \\ \mathcal{Y}[\overline{p|}] \epsilon_{ace} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) (\bar{u}_{Lv}^e u_{Rub}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{ace} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) (\bar{u}_{Lv}^e u_{Rub}) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{ace} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) (\bar{u}_{Lv}^e u_{Rub}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{abe} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) (\bar{u}_{Lv}^e u_{Ruc}) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.1167)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L \nu_L \bar{u}_R}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p|}] \epsilon_{ace} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lv}^e d_{Rub} \right) \\ \mathcal{Y}[\overline{p|}] \epsilon_{abc} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Lv}^d d_{Rud} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \\ \mathcal{Y}[\overline{p|}] \epsilon_{ace} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lv}^e d_{Rub} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{ace} (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lv}^e d_{Rub} \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{ace} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lv}^e d_{Rub} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y}[\overline{p|r}] \epsilon_{abc} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lv}^d d_{Rud} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \end{array} \right. \quad (3.1168)$$

$$\mathcal{O}_{\bar{d}_R^2 e_R \bar{e}_L \nu_L \bar{u}_R}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{p|r}] \epsilon_{abc} (\bar{e}_{Lv} e_{Ru}) \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^c \right) \\ \mathcal{Y}[\overline{p|}] \epsilon_{abc} (\bar{e}_{Lv} e_{Ru}) (\bar{u}_{Rs}^c \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \end{array} \right. \quad (3.1169)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L e_L \bar{e}_L \nu_L \bar{u}_R}^{(1,2)}(-1, 1) \left| \begin{array}{l} \epsilon_{abc} \left(\bar{d}_{Rp}^a e_{Lr} \right) (\bar{u}_{Rs}^b \nu_{Lt}) \left(\bar{d}_{Lu}^c C \bar{e}_{Lv} \right) \\ \epsilon_{abc} (e_{Lr} C \nu_{Lt}) \left(\bar{d}_{Lu}^c C \bar{e}_{Lv} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \end{array} \right. \quad (3.1170)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{e}_R e_R \nu_L \bar{u}_R}^{(1,2)}(-1, 1) \left| \begin{array}{l} \epsilon_{abc} (\bar{u}_{Rs}^b \nu_{Lt}) \left(\bar{d}_{Lu}^c e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{e}_{Rr} \right) \\ \epsilon_{abc} (\bar{e}_{Rr} \nu_{Lt}) \left(\bar{d}_{Lu}^c e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rs}^b \right) \end{array} \right. \quad (3.1171)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_L \nu_L^2 \bar{u}_R \bar{u}_L}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{s|t}] \epsilon_{abc} \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (\bar{u}_{Rr}^b \nu_{Lt}) (\bar{e}_{Lu}^c C \bar{u}_{Lv}^c) \\ \mathcal{Y}[\overline{s|t}] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Lu}^c C \bar{u}_{Lv}^c) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.1172)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \nu_L^2 \bar{\nu}_L \bar{u}_R}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y}[\overline{s|t}] \epsilon_{abc} \left(\bar{d}_{Rp}^a \nu_{Ls} \right) (\bar{u}_{Rr}^b \nu_{Lt}) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \\ \mathcal{Y}[\overline{s|t}] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) \left(\bar{d}_{Lu}^c C \bar{\nu}_{Lv} \right) \left(\bar{d}_{Rp}^a C \bar{u}_{Rr}^b \right) \end{array} \right. \quad (3.1173)$$

$$\mathcal{O}_{\bar{d}_L^2 \bar{e}_R e_L \nu_L \bar{u}_R}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon_{abc} (\bar{e}_{Rp} e_{Lr}) (\bar{u}_{Rs}^a \nu_{Lt}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c} u \\ v \end{array} \right] \epsilon_{abc} (e_{Lr} C \nu_{Lt}) (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \end{array} \right. \quad (3.1174)$$

$$\mathcal{O}_{\bar{d}_L^2 \bar{e}_R \nu_L^2 \bar{u}_R \bar{u}_L}^{(1,2)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon_{abc} (\bar{e}_{Rp} \nu_{Ls}) (\bar{u}_{Rr}^a \nu_{Lt}) (\bar{d}_{Lu}^b C \bar{u}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c} s \\ t \end{array} \right] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) (\bar{d}_{Lu}^b C \bar{u}_{Lv}^c) \end{array} \right. \quad (3.1175)$$

$$\mathcal{O}_{d_L^4 \bar{d}_L \bar{e}_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \ r \ s \\ t \end{array} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \ t \end{array} \right] \epsilon^{bcd} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Lu}^a C \bar{e}_{Lv}) \end{array} \right. \quad (3.1176)$$

$$\mathcal{O}_{\bar{d}_R d_L^3 \bar{\nu}_L u_R}^{(1 \sim 4)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \ s \ t \\ t \end{array} \right] \epsilon^{bde} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lsa} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} r \ s \\ t \end{array} \right] \epsilon^{cde} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lra}) \\ \mathcal{Y} \left[\begin{array}{c} r \ s \\ t \end{array} \right] \epsilon^{bcd} (\bar{\nu}_{Lv} u_{Rua}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \ t \end{array} \right] \epsilon^{cde} (\bar{\nu}_{Lv} u_{Rue}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.1177)$$

$$\mathcal{O}_{\bar{d}_R d_R d_L^3 \bar{e}_L}^{(1 \sim 4)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} r \ s \ t \\ t \end{array} \right] \epsilon^{bde} (\bar{e}_{Lv} d_{Rue}) (d_{Lsa} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} r \ s \\ t \end{array} \right] \epsilon^{cde} (\bar{e}_{Lv} d_{Rue}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lra}) \\ \mathcal{Y} \left[\begin{array}{c} r \ s \\ t \end{array} \right] \epsilon^{bcd} (\bar{e}_{Lv} d_{Rua}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lrb}) \\ \mathcal{Y} \left[\begin{array}{c} r \\ s \ t \end{array} \right] \epsilon^{cde} (\bar{e}_{Lv} d_{Rue}) (d_{Lsc} C d_{Ltd}) (\bar{d}_{Rp}^a d_{Lra}) \end{array} \right. \quad (3.1178)$$

$$\mathcal{O}_{d_L^3 e_L \bar{e}_L^2}^{(1,2)}(1, -1) \left| \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right], \left[\begin{array}{c} u \ v \end{array} \right] \right. \epsilon^{abc} (\bar{e}_{Lu} C \bar{e}_{Lv}) (d_{Lpa} C d_{Lrb}) (d_{Lsc} C e_{Lt}) \quad (3.1179)$$

$$\mathcal{O}_{d_L^3 \bar{e}_R u_R \bar{u}_L}^{(1 \sim 4)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \ r \ s \\ s \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^a u_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^a u_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right] \epsilon^{abd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^c u_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \ s \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{u}_{Lv}^a u_{Rud}) \end{array} \right. \quad (3.1180)$$

$$\mathcal{O}_{\bar{d}_R d_L^3 \bar{d}_L \bar{e}_R}^{(1 \sim 4)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} p \ r \ s \\ s \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{d}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{d}_{Lv}^a d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right] \epsilon^{abd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{d}_{Lv}^c d_{Rud}) \\ \mathcal{Y} \left[\begin{array}{c} p \\ r \ s \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) (\bar{d}_{Lv}^a d_{Rud}) \end{array} \right. \quad (3.1181)$$

$$\mathcal{O}_{d_L^3 \bar{e}_R e_R \bar{e}_L}^{(1,2)}(1, -1) \left| \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right] \right. \epsilon^{abc} (\bar{e}_{Lv} e_{Ru}) (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) \quad (3.1182)$$

$$\mathcal{O}_{d_L^3 \bar{e}_L \nu_L \bar{\nu}_L}^{(1,2)}(1, -1) \left| \mathcal{Y} \left[\begin{array}{c} p \ r \\ s \end{array} \right] \right. \epsilon^{abc} (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (d_{Lpa} C d_{Lrb}) (d_{Lsc} C \nu_{Lt}) \quad (3.1183)$$

$$\mathcal{O}_{\bar{d}_R d_R^2 d_L^2 \bar{e}_R}^{(1\sim 6)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon^{cde} (\bar{e}_{Rt} d_{Lsc}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon^{bde} (\bar{e}_{Rt} d_{Lsa}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r}, \boxed{u} \\ \boxed{s}, \boxed{v} \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Rud} C d_{Rva}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r}, \boxed{u} \\ \boxed{s}, \boxed{v} \end{array} \right] \epsilon^{cde} (\bar{e}_{Rt} d_{Lsc}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a d_{Lra} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r}, \boxed{u} \\ \boxed{s}, \boxed{v} \end{array} \right] \epsilon^{bde} (\bar{e}_{Rt} d_{Lsa}) (d_{Rud} C d_{Rve}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s}, \boxed{u}, \boxed{v} \end{array} \right] \epsilon^{bcd} (\bar{e}_{Rt} d_{Lsc}) (d_{Rud} C d_{Rva}) \left(\bar{d}_{Rp}^a d_{Lrb} \right) \end{array} \right| \quad (3.1184)$$

$$\mathcal{O}_{d_L^2 \bar{e}_R e_L \bar{\nu}_L u_R}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} d_{Lpa}) (\bar{\nu}_{Lv} u_{Ruc}) (d_{Lrb} C e_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} e_{Lt}) (\bar{\nu}_{Lv} u_{Ruc}) (d_{Lpa} C d_{Lrb}) \end{array} \right| \quad (3.1185)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_R e_L \bar{e}_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} d_{Lpa}) (\bar{e}_{Lv} d_{Ruc}) (d_{Lrb} C e_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Lv} d_{Ruc}) (d_{Lpa} C d_{Lrb}) \end{array} \right| \quad (3.1186)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_R^2 e_R}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r}, \boxed{s} \\ \boxed{t} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} d_{Lpa}) (\bar{e}_{Rt} d_{Lrb}) (d_{Ruc} C e_{Rv}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s}, \boxed{t} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} C \bar{e}_{Rt}) (d_{Lpa} C d_{Lrb}) (d_{Ruc} C e_{Rv}) \end{array} \right| \quad (3.1187)$$

$$\mathcal{O}_{d_R d_L^2 \bar{e}_R \nu_L \bar{\nu}_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} d_{Lpa}) (\bar{\nu}_{Lv} d_{Ruc}) (d_{Lrb} C \nu_{Lt}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} \nu_{Lt}) (\bar{\nu}_{Lv} d_{Ruc}) (d_{Lpa} C d_{Lrb}) \end{array} \right| \quad (3.1188)$$

$$\mathcal{O}_{\bar{d}_R^3 d_L \bar{d}_L e_R}^{(1\sim 4)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r}, \boxed{s} \end{array} \right] \epsilon_{ace} \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Ltb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{ace} \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Ltb} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{r} \\ \boxed{s} \end{array} \right] \epsilon_{bce} \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Lta} \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{s} \end{array} \right] \epsilon_{ace} \left(\bar{d}_{Lu}^e e_{Rv} \right) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c d_{Ltb} \right) \end{array} \right| \quad (3.1189)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L \bar{d}_L^2 e_L}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{bde} (d_{Lsa} C e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b e_{Lt} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u}, \boxed{v} \end{array} \right] \epsilon_{abe} \left(\bar{d}_{Rr}^b e_{Lt} \right) \left(\bar{d}_{Rp}^a d_{Lsc} \right) \left(\bar{d}_{Lu}^c C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{bde} (d_{Lsa} C e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b e_{Lt} \right) \left(\bar{d}_{Lu}^d C \bar{d}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r}, \boxed{u}, \boxed{v} \end{array} \right] \epsilon_{abe} (d_{Lsc} C e_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^c C \bar{d}_{Lv}^e \right) \end{array} \right| \quad (3.1190)$$

$$\mathcal{O}_{\bar{d}_R^2 d_L \bar{d}_L \nu_L \bar{u}_L}^{(1\sim 6)}(-1, 1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon_{bde} (d_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon_{abe} (d_{Lsc} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p} \\ \boxed{r} \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{bde} (d_{Lsa} C \nu_{Lt}) \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{bde} \left(\bar{d}_{Rp}^a d_{Lsa} \right) \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Lu}^d C \bar{u}_{Lv}^e \right) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{p}, \boxed{u} \\ \boxed{r}, \boxed{v} \end{array} \right] \epsilon_{abe} \left(\bar{d}_{Rr}^b \nu_{Lt} \right) \left(\bar{d}_{Rp}^a d_{Lsc} \right) \left(\bar{d}_{Lu}^c C \bar{u}_{Lv}^e \right) \end{array} \right| \quad (3.1191)$$

$$\mathcal{O}_{d_R^2 d_L \bar{e}_R^2 e_L}^{(1,2)}(1, -1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c} \boxed{r} \\ \boxed{s}, \boxed{u} \\ \boxed{v} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (d_{Rub} C d_{Rvc}) \\ \mathcal{Y} \left[\begin{array}{c} \boxed{r}, \boxed{u} \\ \boxed{s}, \boxed{v} \end{array} \right] \epsilon^{abc} (\bar{e}_{Rs} e_{Lt}) (\bar{e}_{Rr} d_{Lpa}) (d_{Rub} C d_{Rvc}) \end{array} \right| \quad (3.1192)$$

$$\mathcal{O}_{\bar{d}_R^4 d_R e_R}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r|s \\ \hline t \end{array} \right] \epsilon_{bcd} (d_{Ru} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c C \bar{d}_{Rt}^d) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{bcd} (d_{Ru} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c C \bar{d}_{Rt}^d) \end{array} \right. \quad (3.1193)$$

$$\mathcal{O}_{\bar{d}_R^3 e_L u_R \bar{u}_L}^{(1\sim 4)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r|s \\ \hline t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e u_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e u_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{bce} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e u_{Rua}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e u_{Rub}) \end{array} \right. \quad (3.1194)$$

$$\mathcal{O}_{\bar{d}_R^3 d_R \bar{d}_L e_L}^{(1\sim 4)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r|s \\ \hline t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lv}^e d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lv}^e d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{bce} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lv}^e d_{Rua}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lv}^e d_{Rub}) \end{array} \right. \quad (3.1195)$$

$$\mathcal{O}_{\bar{d}_R^3 e_R e_L \bar{e}_L}(-1,1) \left| \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s \end{array} \right] \epsilon_{abc} (\bar{e}_{Lv} e_{Ru}) (\bar{d}_{Rs}^c e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \right. \quad (3.1196)$$

$$\mathcal{O}_{\bar{d}_R^3 \bar{e}_R e_R^2}(-1,1) \left| \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s \end{array} \right], \left[\begin{array}{c|c} u & v \\ \hline \end{array} \right] \epsilon_{abc} (e_{Ru} C e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Rs}^c C \bar{e}_{Rt}) \right. \quad (3.1197)$$

$$\mathcal{O}_{\bar{d}_R^3 d_R \nu_L \bar{u}_L}^{(1\sim 4)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r|s \\ \hline t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e d_{Rub}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{bce} (\bar{d}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e d_{Rua}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s|t \end{array} \right] \epsilon_{ace} (\bar{d}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lv}^e d_{Rub}) \end{array} \right. \quad (3.1198)$$

$$\mathcal{O}_{\bar{d}_R^3 e_R \nu_L \bar{\nu}_L}(-1,1) \left| \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s \end{array} \right] \epsilon_{abc} (\bar{\nu}_{Lv} e_{Ru}) (\bar{d}_{Rs}^c \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \right. \quad (3.1199)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L e_L^2 \bar{e}_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r, \left[\begin{array}{c|c} s & t \\ \hline \end{array} \right] \\ \hline \end{array} \right] \epsilon_{abc} (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b e_{Lt}) (\bar{d}_{Lu}^c C \bar{e}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \\ \hline s, \left[\begin{array}{c|c} s & t \\ \hline \end{array} \right] \end{array} \right] \epsilon_{abc} (e_{Ls} C e_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lu}^c C \bar{e}_{Lv}) \end{array} \right. \quad (3.1200)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L \bar{e}_R e_R e_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (\bar{d}_{Rr}^b e_{Lt}) (\bar{d}_{Lu}^c e_{Rv}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (\bar{e}_{Rs} e_{Lt}) (\bar{d}_{Lu}^c e_{Rv}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.1201)$$

$$\mathcal{O}_{\bar{d}_R^2 e_L \bar{e}_L \nu_L \bar{u}_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (e_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{e}_{Lu} C \bar{u}_{Lv}^c) \end{array} \right. \quad (3.1202)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{d}_L e_L \nu_L \bar{\nu}_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{d}_{Lu}^c C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (e_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{d}_{Lu}^c C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.1203)$$

$$\mathcal{O}_{\bar{d}_R^2 \bar{e}_R e_R \nu_L \bar{u}_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{u}_{Lv}^c e_{Ru}) (\bar{d}_{Rp}^a C \bar{e}_{Rs}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r \end{array} \right] \epsilon_{abc} (\bar{e}_{Rs} \nu_{Lt}) (\bar{u}_{Lv}^c e_{Ru}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) \end{array} \right. \quad (3.1204)$$

$$\mathcal{O}_{\bar{d}_R^2 \nu_L^2 \bar{\nu}_L \bar{u}_L}^{(1,2)}(-1,1) \left| \begin{array}{l} \mathcal{Y} \left[\begin{array}{c|c} p & r, \left[\begin{array}{c|c} s & t \\ \hline \end{array} \right] \\ \hline \end{array} \right] \epsilon_{abc} (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{d}_{Rr}^b \nu_{Lt}) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \\ \mathcal{Y} \left[\begin{array}{c|c} p & r, \left[\begin{array}{c|c} s & t \\ \hline \end{array} \right] \end{array} \right] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{d}_{Rr}^b) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \end{array} \right. \quad (3.1205)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L^2 \bar{e}_R e_L^2}^{(1,2)}(-1, 1) \left| \mathcal{Y} \left[\begin{smallmatrix} s & u \\ t & v \end{smallmatrix} \right] \epsilon_{abc} (\bar{e}_{Rr} e_{Lt}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abc} (e_{Ls} C e_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \right. \quad (3.1206)$$

$$\mathcal{O}_{\bar{d}_R \bar{d}_L \bar{e}_R e_L \nu_L \bar{u}_L}^{(1,2)}(-1, 1) \left| \epsilon_{abc} (e_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{d}_{Lu}^b C \bar{u}_{Lv}^c) \right. \\ \left. \epsilon_{abc} (\bar{e}_{Rr} \nu_{Lt}) (\bar{d}_{Rp}^a e_{Ls}) (\bar{d}_{Lu}^b C \bar{u}_{Lv}^c) \right. \quad (3.1207)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \nu_L^2 \bar{u}_L^2}^{(1,2)}(-1, 1) \left| \mathcal{Y} \left[\begin{smallmatrix} s & u \\ t & v \end{smallmatrix} \right] \epsilon_{abc} (\bar{e}_{Rr} \nu_{Lt}) (\bar{d}_{Rp}^a \nu_{Ls}) (\bar{u}_{Lu}^b C \bar{u}_{Lv}^c) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{u}_{Lu}^b C \bar{u}_{Lv}^c) \right. \quad (3.1208)$$

$$(\Delta B, \Delta L) = (\pm 1, \pm 3)$$

$$\mathcal{O}_{e_R^2 \nu_L u_L^3}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (e_{Ru} C e_{Rv}) (u_{Lpa} C u_{Lrb}) (u_{Lsc} C \nu_{Lt}) \right. \quad (3.1209)$$

$$\mathcal{O}_{e_R e_L \nu_L u_R u_L^2}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & v \end{smallmatrix} \right] \epsilon^{abc} (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) (e_{Ru} C u_{Rvc}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} r \\ s \end{smallmatrix} \right] \epsilon^{abc} (e_{Lp} C u_{Lra}) (u_{Lsb} C \nu_{Lt}) (e_{Ru} C u_{Rvc}) \right. \quad (3.1210)$$

$$\mathcal{O}_{d_R e_R \nu_L^2 u_L^2}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (u_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) (d_{Ruc} C e_{Rv}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s & t \\ s & t \end{smallmatrix} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (u_{Lpa} C u_{Lrb}) (d_{Ruc} C e_{Rv}) \right. \quad (3.1211)$$

$$\mathcal{O}_{d_L e_R \nu_L^2 u_R u_L}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} (d_{Lpa} C \nu_{Ls}) (u_{Lrb} C \nu_{Lt}) (e_{Ru} C u_{Rvc}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (e_{Ru} C u_{Rvc}) (d_{Lpa} C u_{Lrb}) \right. \quad (3.1212)$$

$$\mathcal{O}_{e_L^2 \nu_L u_R^2 u_L}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (e_{Lr} C \nu_{Lt}) (e_{Lp} C u_{Lsa}) (u_{Rub} C u_{Rvc}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (e_{Lp} C e_{Lr}) (u_{Lsa} C \nu_{Lt}) (u_{Rub} C u_{Rvc}) \right. \quad (3.1213)$$

$$\mathcal{O}_{d_R e_L \nu_L^2 u_R u_L}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix} \right] \epsilon^{abc} (e_{Lp} C \nu_{Ls}) (u_{Lra} C \nu_{Lt}) (d_{Rub} C u_{Rvc}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} s & t \end{smallmatrix} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (e_{Lp} C u_{Lra}) (d_{Rub} C u_{Rvc}) \right. \quad (3.1214)$$

$$\mathcal{O}_{d_R^2 \nu_L^3 u_L}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & v \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (u_{Lpa} C \nu_{Lr}) (d_{Rub} C d_{Rvc}) \right. \quad (3.1215)$$

$$\mathcal{O}_{\bar{e}_R \bar{e}_L \bar{\nu}_L \bar{u}_R^3}^{(1,2)}(-1, -3) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & v \end{smallmatrix} \right] \epsilon_{abc} (\bar{e}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rp} C \bar{u}_{Rr}^a) (\bar{u}_{Rs}^b C \bar{u}_{Rt}^c) \right. \quad (3.1216)$$

$$\mathcal{O}_{\bar{d}_R \bar{e}_R \bar{\nu}_L^2 \bar{u}_R^2}^{(1,2)}(-1, -3) \left| \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rr} C \bar{u}_{Rt}^c) (\bar{d}_{Rp}^a C \bar{u}_{Rs}^b) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{d}_{Rp}^a C \bar{e}_{Rr}) (\bar{u}_{Rs}^b C \bar{u}_{Rt}^c) \right. \quad (3.1217)$$

$$\mathcal{O}_{\bar{e}_R^2 \bar{\nu}_L \bar{u}_R^2 \bar{u}_L}^{(1,2)}(-1, -3) \left| \mathcal{Y} \left[\begin{smallmatrix} p \\ r \end{smallmatrix}, \begin{smallmatrix} s & t \\ s & t \end{smallmatrix} \right] \epsilon_{abc} (\bar{e}_{Rp} C \bar{u}_{Rs}^a) (\bar{e}_{Rr} C \bar{u}_{Rt}^b) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abc} (\bar{e}_{Rp} C \bar{e}_{Rr}) (\bar{u}_{Rs}^a C \bar{u}_{Rt}^b) (\bar{u}_{Lu}^c C \bar{\nu}_{Lv}) \right. \quad (3.1218)$$

$$\mathcal{O}_{d_L e_L \nu_L^2 u_R^2}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} s \\ t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (e_{Lr} C \nu_{Lt}) (d_{Lpa} C \nu_{Ls}) (u_{Rub} C u_{Rvc}) \right. \\ \left. \mathcal{Y} \left[\begin{smallmatrix} s & t \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C e_{Lr}) (u_{Rub} C u_{Rvc}) \right. \quad (3.1219)$$

$$\mathcal{O}_{d_R d_L \nu_L^3 u_R}^{(1,2)}(1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & v \end{smallmatrix} \right] \epsilon^{abc} (\nu_{Ls} C \nu_{Lt}) (d_{Lpa} C \nu_{Lr}) (d_{Rub} C u_{Rvc}) \right. \quad (3.1220)$$

$$(\Delta B, \Delta L) = (\pm 1, \mp 3)$$

$$\mathcal{O}_{\bar{d}_L^2 \nu_L^3 \bar{u}_R}^{(1,2)}(-1, 3) \left| \mathcal{Y} \left[\begin{smallmatrix} r & s \\ t & v \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon_{abc} (\nu_{Ls} C \nu_{Lt}) (\bar{u}_{Rp}^a \nu_{Lr}) (\bar{d}_{Lu}^b C \bar{d}_{Lv}^c) \right. \quad (3.1221)$$

$$\mathcal{O}_{d_L^2 \bar{e}_R \bar{\nu}_L^2}^{(1,2)}(1, -3) \left| \mathcal{Y} \left[\begin{smallmatrix} p & r \\ s & t \end{smallmatrix}, \begin{smallmatrix} u \\ v \end{smallmatrix} \right] \epsilon^{abc} (\bar{\nu}_{Lu} C \bar{\nu}_{Lv}) (\bar{e}_{Rt} d_{Lsc}) (d_{Lpa} C d_{Lrb}) \right. \quad (3.1222)$$

$$\mathcal{O}_{\bar{d}_R^3 \bar{d}_L \bar{u}_R \bar{u}_L}^{(1\sim 7)}(-2, 0) \left[\begin{array}{l} \mathcal{Y}[\overline{p r s}] \epsilon_{aef} \epsilon_{bcd} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r s}] \epsilon_{acf} \epsilon_{bde} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}] \epsilon_{aef} \epsilon_{bcd} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}] \epsilon_{acf} \epsilon_{bde} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}] \epsilon_{abd} \epsilon_{cef} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}] \epsilon_{aef} \epsilon_{bcd} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}] \epsilon_{acf} \epsilon_{bde} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{u}_{Rt}^d \right) \left(\bar{d}_{Lu}^e C \bar{u}_{Lv}^f \right) \end{array} \right] \quad (3.1229)$$

$$\mathcal{O}_{d_L^4 u_R^2}^{(1\sim 4)}(2, 0) \left[\begin{array}{l} \mathcal{Y}[\overline{p r s t}, \overline{u v}] \epsilon^{ace} \epsilon^{bdf} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C d_{Ltd}) (u_{Rue} C u_{Rvf}) \\ \mathcal{Y}[\overline{p r}, \overline{u v}] \epsilon^{ace} \epsilon^{bdf} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C d_{Ltd}) (u_{Rue} C u_{Rvf}) \\ \mathcal{Y}[\overline{p r s}, \overline{u v}] \epsilon^{ace} \epsilon^{bdf} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C d_{Ltd}) (u_{Rue} C u_{Rvf}) \\ \mathcal{Y}[\overline{p r}, \overline{u v}] \epsilon^{ace} \epsilon^{bdf} (d_{Lpa} C d_{Lrb}) (d_{Lsc} C d_{Ltd}) (u_{Rue} C u_{Rvf}) \end{array} \right] \quad (3.1230)$$

$$\mathcal{O}_{\bar{d}_R^4 \bar{u}_L^2}^{(1\sim 4)}(-2, 0) \left[\begin{array}{l} \mathcal{Y}[\overline{p r s t}, \overline{u v}] \epsilon_{ace} \epsilon_{bdf} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{d}_{Rt}^d \right) \left(\bar{u}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}, \overline{u v}] \epsilon_{ace} \epsilon_{bdf} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{d}_{Rt}^d \right) \left(\bar{u}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r s}, \overline{u v}] \epsilon_{ace} \epsilon_{bdf} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{d}_{Rt}^d \right) \left(\bar{u}_{Lu}^e C \bar{u}_{Lv}^f \right) \\ \mathcal{Y}[\overline{p r}, \overline{u v}] \epsilon_{ace} \epsilon_{bdf} \left(\bar{d}_{Rp}^a C \bar{d}_{Rr}^b \right) \left(\bar{d}_{Rs}^c C \bar{d}_{Rt}^d \right) \left(\bar{u}_{Lu}^e C \bar{u}_{Lv}^f \right) \end{array} \right] \quad (3.1231)$$

4 Conclusion

In this paper, we proved the validity of the on-shell method of operator enumeration [1, 2] for effective field theories including massive fermions. While the intuition is that fermion masses do not alter the possible form of operators, we also give a rigorous proof from the amplitude perspective. Hence we could apply the method to obtain the full operator basis at dimension 5 through 9 for LEFT, the effective field theory below the weak scale in the Standard Model where all fermions are massive. The completeness and independence of the basis are guaranteed by the method without subjective judgements.

At mass dimension 5, 6, 7, 8, 9, we conclude that there are 10, 118, 150, 756, 3686 independent operators respectively for one generation of fermions, and 76, 5875, 5118, 35058, 704584 flavor specified independent operators for three generation of fermions. The results of dimension 5 to 7 are consistent with previous existing results, with flavor symmetry specified. The total number of operators, as well as the number of operators with various lepton number violation $|\Delta L|$, are summarized for each dimension in table 2 and table 3. In tables 4, 5, 6, 7, 8, we list the number of types (operators) for each baryon-number and lepton-number violation pattern with different kinds of flavors involved at different scales, ranging from the MeV scale to the bottom quark mass scale.

The low energy effective field theory has profound guiding significance, and a complete operator basis of it at high dimensions provides various phenomenological applications, especially for the exotic processes with baryon or lepton number violations. With the complete set of operator basis, it would be very interesting to see how these higher dimen-

Dim-5 operators				
$(\Delta B, \Delta L)$ \diagdown (n_u, n_d, n_e, n_ν)	(2,3,3,3)	(2,2,3,3)	(1,2,2,3)	(1,1,1,3)
(0,0)	10 (70)	10 (50)	10 (28)	10 (10)
(0, ± 2)	2 (6)	2 (6)	2 (6)	2 (6)

Table 4. The number of types (operators) of each baryon-number and lepton-number violation pattern with various flavors involved at dimension 5. n_u , n_d , n_e and n_ν represent active number of up-type quarks, down-type quarks, charged leptons and neutrinos respectively. For $n_u = 2$ and $n_u = 1$, the corresponding active up-type quarks are (c, u) and (u) respectively, For $n_d = 3, 2, 1$, active down-type quarks are (b, s, d) , (s, d) and (d) respectively, $n_e = 3, 2, 1$ corresponds active charged letpons (τ, μ, e) , (μ, e) and (e) . The number of active neutrino are always set to 3. The only type of $(0, \pm 2)$ at dimension 5 is $F_L \nu_L^2$, so the numbers of operators with different flavor numbers stay the same.

Dim-6 operators				
$(\Delta B, \Delta L)$ \diagdown (n_u, n_d, n_e, n_ν)	(2,3,3,3)	(2,2,3,3)	(1,2,2,3)	(1,1,1,3)
(0,0)	56 (3631)	56 (2171)	56 (754)	56 (183)
(0, ± 2)	20 (1200)	20 (870)	20 (390)	20 (120)
(0, ± 4)	2 (12)	2 (12)	2 (12)	2 (12)
($\pm 1, \pm 1$)	18 (576)	18 (324)	14 (86)	12 (20)
($\pm 1, \mp 1$)	14 (456)	14 (156)	14 (86)	4 (12)

Table 5. The number of types (operators) of each baryon-number and lepton-number violation pattern with various flavor numbers at dimension 6. n_u , n_d , n_e and n_ν represent active number of up-type quarks, down-type quarks, charged leptons and neutrinos respectively. For $n_u = 2$ and $n_u = 1$, the corresponding active up-type quarks are (c, u) and (u) respectively, For $n_d = 3, 2, 1$, active down-type quarks are (b, s, d) , (s, d) and (d) respectively, $n_e = 3, 2, 1$ corresponds active charged letpons (τ, μ, e) , (μ, e) and (e) .

sional operators are applied to various exotic processes and how the Wilson coefficients are constrained from current experimental data.

Acknowledgments

We thank Christopher Murphy point out an arithmetic error in counting numbers of the $F_L^2 F_R^2$ operators, although we list all the explicit operators (3.176)–(3.180) correctly which has been written in a systematical way. H.L.L. Z.R. and J.H.Y. were supported by the National Science Foundation of China (NSFC) under Grants No. 11875003 and No. 12022514.

Dim-7 operators				
$(\Delta B, \Delta L)$ \diagdown (n_u, n_d, n_e, n_ν)	(2,3,3,3)	(2,2,3,3)	(1,2,2,3)	(1,1,1,3)
(0,0)	82 (3168)	82 (1894)	82 (698)	78 (166)
(0, ± 2)	30 (750)	30 (546)	30 (258)	30 (114)
($\pm 1, \pm 1$)	18 (612)	18 (360)	18 (108)	18 (30)
($\pm 1, \mp 1$)	14 (588)	14 (240)	14 (140)	14 (26)

Table 6. The number of types (operators) of each baryon-number and lepton-number violation pattern with various flavor numbers at dimension 7. n_u , n_d , n_e and n_ν represent active number of up-type quarks, down-type quarks, charged leptons and neutrinos respectively. For $n_u = 2$ and $n_u = 1$, the corresponding active up-type quarks are (c, u) and (u) respectively, For $n_d = 3, 2, 1$, active down-type quarks are (b, s, d) , (s, d) and (d) respectively, $n_e = 3, 2, 1$ corresponds active charged letpons (τ, μ, e) , (μ, e) and (e) .

Dim-8 operators				
$(\Delta B, \Delta L)$ \diagdown (n_u, n_d, n_e, n_ν)	(2,3,3,3)	(2,2,3,3)	(1,2,2,3)	(1,1,1,3)
(0,0)	281 (21144)	281 (11872)	277 (4140)	267 (954)
(0, ± 2)	78 (5442)	78 (3810)	78 (1668)	78 (516)
(0, ± 4)	4 (48)	4 (48)	4 (48)	4 (48)
($\pm 1, \pm 1$)	78 (4536)	78 (2592)	74 (720)	72 (180)
($\pm 1, \mp 1$)	58 (3888)	58 (1440)	58 (816)	48 (132)

Table 7. The number of types (operators) of each baryon-number and lepton-number violation pattern with various flavor numbers at dimension 8. n_u , n_d , n_e and n_ν represent active number of up-type quarks, down-type quarks, charged leptons and neutrinos respectively. For $n_u = 2$ and $n_u = 1$, the corresponding active up-type quarks are (c, u) and (u) respectively, For $n_d = 3, 2, 1$, active down-type quarks are (b, s, d) , (s, d) and (d) respectively, $n_e = 3, 2, 1$ corresponds active charged letpons (τ, μ, e) , (μ, e) and (e) .

M.L.X. is supported by the National Natural Science Foundation of China (NSFC) under grant No.2019M650856 and the 2019 International Postdoctoral Exchange Fellowship Program. JHY was also supported by the National Science Foundation of China (NSFC) under Grants No. 11947302.

Dim-9 operators				
$(\Delta B, \Delta L)$ \diagdown (n_u, n_d, n_e, n_ν)	(2,3,3,3)	(2,2,3,3)	(1,2,2,3)	(1,1,1,3)
(0, 0)	640 (318062)	640 (144230)	640 (33046)	634 (4546)
(0, ± 2)	334 (143808)	334 (75996)	334 (19964)	334 (3718)
(0, ± 4)	20 (2136)	20 (1494)	20 (598)	20 (172)
(0, ± 6)	2 (2)	2 (2)	2 (2)	2 (2)
($\pm 1, \pm 1$)	290 (121590)	290 (52344)	280 (9646)	266 (1294)
($\pm 1, \mp 1$)	230 (106494)	230 (33816)	228 (10330)	194 (1010)
($\pm 1, \pm 3$)	30 (4746)	30 (3360)	22 (498)	16 (118)
($\pm 1, \mp 3$)	14 (2730)	14 (840)	14 (510)	8 (46)
($\pm 2, 0$)	16 (5016)	16 (1064)	16 (288)	16 (28)

Table 8. The number of types (operators) of each baryon-number and lepton-number violation pattern with various flavor numbers at dimension 9. n_u , n_d , n_e and n_ν represent active number of up-type quarks, down-type quarks, charged leptons and neutrinos respectively. For $n_u = 2$ and $n_u = 1$, the corresponding active up-type quarks are (c, u) and (u) respectively, For $n_d = 3, 2, 1$, active down-type quarks are (b, s, d) , (s, d) and (d) respectively, $n_e = 3, 2, 1$ corresponds active charged leptons (τ, μ, e) , (μ, e) and (e) .

Open Access. This article is distributed under the terms of the Creative Commons Attribution License ([CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/)), which permits any use, distribution and reproduction in any medium, provided the original author(s) and source are credited.

References

- [1] H.-L. Li, Z. Ren, J. Shu, M.-L. Xiao, J.-H. Yu and Y.-H. Zheng, *Complete Set of Dimension-8 Operators in the Standard Model Effective Field Theory*, [arXiv:2005.00008](https://arxiv.org/abs/2005.00008) [[INSPIRE](#)].
- [2] H.-L. Li, Z. Ren, M.-L. Xiao, J.-H. Yu and Y.-H. Zheng, *Complete Set of Dimension-9 Operators in the Standard Model Effective Field Theory*, [arXiv:2007.07899](https://arxiv.org/abs/2007.07899) [[INSPIRE](#)].
- [3] W. Buchmüller and D. Wyler, *Effective Lagrangian Analysis of New Interactions and Flavor Conservation*, *Nucl. Phys. B* **268** (1986) 621 [[INSPIRE](#)].
- [4] B. Grzadkowski, M. Iskrzynski, M. Misiak and J. Rosiek, *Dimension-Six Terms in the Standard Model Lagrangian*, *JHEP* **10** (2010) 085 [[arXiv:1008.4884](https://arxiv.org/abs/1008.4884)] [[INSPIRE](#)].
- [5] L. Lehman, *Extending the Standard Model Effective Field Theory with the Complete Set of Dimension-7 Operators*, *Phys. Rev. D* **90** (2014) 125023 [[arXiv:1410.4193](https://arxiv.org/abs/1410.4193)] [[INSPIRE](#)].
- [6] C.W. Murphy, *Dimension-8 operators in the Standard Model Effective Field Theory*, *JHEP* **10** (2020) 174 [[arXiv:2005.00059](https://arxiv.org/abs/2005.00059)] [[INSPIRE](#)].

- [7] Y. Liao and X.-D. Ma, *An explicit construction of the dimension-9 operator basis in the standard model effective field theory*, *JHEP* **11** (2020) 152 [[arXiv:2007.08125](#)] [[INSPIRE](#)].
- [8] J.F. Donoghue, E. Golowich and B.R. Holstein, *Dynamics of the standard model*, vol. 2, Cambridge University Press (2014) [[DOI](#)] [[INSPIRE](#)].
- [9] S. Ando et al., *Neutron beta decay in effective field theory*, *Phys. Lett. B* **595** (2004) 250 [[nucl-th/0402100](#)] [[INSPIRE](#)].
- [10] A. Falkowski, M. González-Alonso and O. Naviliat-Cuncic, *Comprehensive analysis of beta decays within and beyond the Standard Model*, *JHEP* **04** (2021) 126 [[arXiv:2010.13797](#)] [[INSPIRE](#)].
- [11] A. Crivellin, S. Davidson, G.M. Pruna and A. Signer, *Renormalisation-group improved analysis of $\mu \rightarrow e$ processes in a systematic effective-field-theory approach*, *JHEP* **05** (2017) 117 [[arXiv:1702.03020](#)] [[INSPIRE](#)].
- [12] J. Aebischer, M. Fael, C. Greub and J. Virto, *B physics Beyond the Standard Model at One Loop: Complete Renormalization Group Evolution below the Electroweak Scale*, *JHEP* **09** (2017) 158 [[arXiv:1704.06639](#)] [[INSPIRE](#)].
- [13] M. González-Alonso and J. Martin Camalich, *Global Effective-Field-Theory analysis of New-Physics effects in (semi)leptonic kaon decays*, *JHEP* **12** (2016) 052 [[arXiv:1605.07114](#)] [[INSPIRE](#)].
- [14] G. Prezeau, M. Ramsey-Musolf and P. Vogel, *Neutrinoless double beta decay and effective field theory*, *Phys. Rev. D* **68** (2003) 034016 [[hep-ph/0303205](#)] [[INSPIRE](#)].
- [15] V. Cirigliano, W. Dekens, J. de Vries, M.L. Graesser and E. Mereghetti, *A neutrinoless double beta decay master formula from effective field theory*, *JHEP* **12** (2018) 097 [[arXiv:1806.02780](#)] [[INSPIRE](#)].
- [16] R.N. Mohapatra and R.E. Marshak, *Local B-L Symmetry of Electroweak Interactions, Majorana Neutrinos and Neutron Oscillations*, *Phys. Rev. Lett.* **44** (1980) 1316 [Erratum *ibid.* **44** (1980) 1643] [[INSPIRE](#)].
- [17] S. Rao and R. Shrock, *$n \leftrightarrow \bar{n}$ Transition Operators and Their Matrix Elements in the MIT Bag Model*, *Phys. Lett. B* **116** (1982) 238 [[INSPIRE](#)].
- [18] R.N. Mohapatra, *Neutron-Anti-Neutron Oscillation: Theory and Phenomenology*, *J. Phys. G* **36** (2009) 104006 [[arXiv:0902.0834](#)] [[INSPIRE](#)].
- [19] D.G. Phillips II et al., *Neutron-Antineutron Oscillations: Theoretical Status and Experimental Prospects*, *Phys. Rept.* **612** (2016) 1 [[arXiv:1410.1100](#)] [[INSPIRE](#)].
- [20] F. Wilczek and A. Zee, *Operator Analysis of Nucleon Decay*, *Phys. Rev. Lett.* **43** (1979) 1571 [[INSPIRE](#)].
- [21] L.F. Abbott and M.B. Wise, *The Effective Hamiltonian for Nucleon Decay*, *Phys. Rev. D* **22** (1980) 2208 [[INSPIRE](#)].
- [22] S. Girmohanta and R. Shrock, *Improved Upper Limits on Baryon-Number Violating Dinucleon Decays to Dileptons*, *Phys. Lett. B* **803** (2020) 135296 [[arXiv:1910.08356](#)] [[INSPIRE](#)].
- [23] J. Engel, M.J. Ramsey-Musolf and U. van Kolck, *Electric Dipole Moments of Nucleons, Nuclei, and Atoms: The Standard Model and Beyond*, *Prog. Part. Nucl. Phys.* **71** (2013) 21 [[arXiv:1303.2371](#)] [[INSPIRE](#)].

- [24] D. Chang, T.W. Kephart, W.-Y. Keung and T.C. Yuan, *An Effective field theory for the neutron electric dipole moment*, *Nucl. Phys. B* **384** (1992) 147 [[INSPIRE](#)].
- [25] J. Heeck and V. Takhistov, *Inclusive Nucleon Decay Searches as a Frontier of Baryon Number Violation*, *Phys. Rev. D* **101** (2020) 015005 [[arXiv:1910.07647](#)] [[INSPIRE](#)].
- [26] E.E. Jenkins, A.V. Manohar and P. Stoffer, *Low-Energy Effective Field Theory below the Electroweak Scale: Operators and Matching*, *JHEP* **03** (2018) 016 [[arXiv:1709.04486](#)] [[INSPIRE](#)].
- [27] E.E. Jenkins, A.V. Manohar and P. Stoffer, *Low-Energy Effective Field Theory below the Electroweak Scale: Anomalous Dimensions*, *JHEP* **01** (2018) 084 [[arXiv:1711.05270](#)] [[INSPIRE](#)].
- [28] Y. Liao, X.-D. Ma and Q.-Y. Wang, *Extending low energy effective field theory with a complete set of dimension-7 operators*, *JHEP* **08** (2020) 162 [[arXiv:2005.08013](#)] [[INSPIRE](#)].
- [29] T. Ma, J. Shu and M.-L. Xiao, *Standard Model Effective Field Theory from On-shell Amplitudes*, [arXiv:1902.06752](#) [[INSPIRE](#)].
- [30] E. Conde and A. Marzolla, *Lorentz Constraints on Massive Three-Point Amplitudes*, *JHEP* **09** (2016) 041 [[arXiv:1601.08113](#)] [[INSPIRE](#)].
- [31] N. Arkani-Hamed, T.-C. Huang and Y.-t. Huang, *Scattering Amplitudes For All Masses and Spins*, [arXiv:1709.04891](#) [[INSPIRE](#)].
- [32] B. Henning and T. Melia, *Constructing effective field theories via their harmonics*, *Phys. Rev. D* **100** (2019) 016015 [[arXiv:1902.06754](#)] [[INSPIRE](#)].
- [33] G. Durieux, T. Kitahara, C.S. Machado, Y. Shadmi and Y. Weiss, *Constructing massive on-shell contact terms*, *JHEP* **12** (2020) 175 [[arXiv:2008.09652](#)] [[INSPIRE](#)].