

Appendix A

List of the Basic Notation

Algebraic Structures

$\mathbb{K}\langle S \rangle$	51
$\prod_{i \in \mathcal{I}} V_i$	53
$\bigoplus_{i \in \mathcal{I}} V_i$	53
$[U, V]$	59
$\text{Lie}\{U\}$	59
$M_n(X), M(X)$	63
$\prod_{n \in \mathbb{N}}$	63
$\text{Mo}(X)$	65
M_{alg}	67
$\text{Lib}(X)$	69
$\text{Libas}(X)$	69
$\text{Lib}_n(X)$	69
$\text{Libas}_n(X)$	70
$U \otimes V$	73
$\mathcal{T}_k(V)$	75
$\mathcal{T}(V)$	75
$U_k(V)$	76
$\mathcal{T}_+(V)$	76
$\mathcal{T}_{i,j}(V)$	81
$\mathcal{T}(V) \otimes \mathcal{T}(V)$	82
$K_k(V)$	82
$W_k(V)$	82
$(\mathcal{T} \otimes \mathcal{T})_+(V)$	82
K	84
$\mathcal{L}(V)$	85
$\mathcal{L}_n(V)$	85
$\text{Lie}(X)$	90
\mathfrak{a}	90

$\mathcal{L}(\mathbb{K}\langle X \rangle)$	91
\tilde{X}	98
Ω_k	101
\hat{A}	101
$\hat{\Omega}_k$	101
Ω_k^A	103
U_k	104
W_k	104
$\mathcal{T}(V)$	104
$\widehat{\mathcal{T} \otimes \mathcal{T}}(V)$	104
\hat{U}_k	104
\widehat{W}_k	104
$\mathbb{K}\langle x_1, \dots, x_n \rangle$	106
$\mathbb{K}[x], \mathbb{K}[[x]]$	107
$\mathcal{I}(\mathfrak{g}), \mathcal{J}$	108
$\mathcal{U}(\mathfrak{g}), \mathcal{U}$	108
\mathbb{K}	117
\hat{A}_+	117
$\overline{\mathcal{L}(V)}$	125
$\Gamma(V)$	142
$A[t]$	200
$A_k[t]$	200
$A[[t]]$	201
H	258
H_N	268
\mathcal{H}	209
A_1	273
A^n	275
$(A, *, \ \cdot\)$	292
$(\mathfrak{g}, [\cdot, \cdot]_{\mathfrak{g}}, \ \cdot\)$	292
$\mathfrak{n}_n, \mathfrak{n}_{n+1}$	320
$c_{i,j}^k$	332
$\mathfrak{N}_r(X)$	469
$\mathfrak{R}_r, \mathfrak{R}_{r+1}$	469
$\mathfrak{f}_{m,r}$	477
$\mathbb{K}[[t]]_+$	481
E, L	488
$\text{Sym}(V)$	501
$\mathcal{H}(V)$	501
$\mathcal{H}_n(V)$	503
$\text{Sym}_n(V)$	503
$\mathcal{S}_n(V)$	509
$\mathcal{S}(V)$	511

Operations

$[\cdot, \cdot]_{*'} [\cdot, \cdot]_A$	61
$w.w'$	63
$*$	67
\otimes	73
$u \cdot v$	75
\bullet	81, 81
\otimes	83
$[\cdot, \cdot]_{\otimes}$	85
π	90
$[\cdot, \cdot]$	90
$d(x, y)$	94
ν	94
$\tilde{\delta}$	98
\sim	98
$[\cdot]_{\sim}$	98
$+, \tilde{*}$	99
$\hat{*}$	101
$t \cdot t', t \bullet t'$	105
$t \hat{\cdot} t', t \hat{\bullet} t'$	105
$\hat{\bullet}$	123
$\eta_N(u, v)$	131
$\mathbf{F}_j^A(u, v)$	179
$(k_1, a_1) \star (k_2, a_2)$	274
$D_{(h,k)}^g(a, b)$	278
$\eta_N^g(a, b)$	279
$Z_j^g(a, b)$	279
\diamond_n	320
$\Xi_n(a, b)$	339
$[\cdot, \cdot]_r$	470
\circ	481
$*$	501

Maps

χ	51
F_{Σ}	54
$\ell(w)$	63, 65
φ	91
$\Phi_{a,b}$	107
$\Phi_{a,b,c}$	107

π	108
μ	108
j	111
\preccurlyeq	111
Exp	119
Log	119
$\text{Exp} \curvearrowright, \text{Log} \curvearrowright$	122
$\text{Exp}_{\otimes}, \text{Log}_{\otimes}$	122
$\text{Exp} \curvearrowright, \text{Log} \curvearrowright$	122
$\text{Exp}_{\bullet}, \text{Log}_{\bullet}$	122
η_N	131
δ	133
$\hat{\delta}$	136
P	145
ϱ	147
P^*	148
ad	150
\hat{P}	154
$D^*_{(h,k)}$	156
$D_{(h,k)}$	157
\mathbf{F}^A_j	179
\mathbf{F}^*_j	179
$\mathbf{F}^{\mathcal{T}(V)}_j$	179
\mathbf{e}^z, \log	181
\mathbf{F}	181
\exp, \log	202
∂_t	203, 487
ev_a	204
$(\text{ad } u)^{\circ h}$	205
L_a, R_b	205
f_E	209
$S(\partial/\partial y)$	240
g	254
D	254
\hat{g}, \hat{D}	255
\hat{d}	255
$\hat{\theta}$	256
π_N	268
$\mathcal{R}_N, \mathcal{R}_{N+1}$	273
$\mathcal{R}^*_{N'}, \mathcal{R}^*_{N+1}$	275, 310
$D^{\mathfrak{g}}_{(h,k)}$	278
$\eta^{\mathfrak{g}}_N$	279
$Z^{\mathfrak{g}}_j$	279
$\ \cdot\ _{\mathcal{E}}$	280

$F(z)$	302
$\mathcal{R}_N^{\mathfrak{g}}, \mathcal{R}_{N+1}^{\mathfrak{g}}$	311
Ξ_n	339
f, δ, θ, g	466
$\Lambda(f)$	486
ϕ	501
S_n	507
R_σ	507
Q_n	508
S, Q	511

Notation for the CBHD Theorem

$[u^{h_1}v^{k_1} \dots u^{h_n}v^{k_n}]_{\mathfrak{g}}$	125
$[u^{h_1}v^{k_1} \dots u^{h_n}v^{k_n}]_{\otimes}$	125
$Z_j(u, v)$	126
\blacklozenge	126
$ h , h!$	127
\mathcal{N}_n	127
c_n	127
$\mathbf{c}(h, k)$	127
\diamond	128
$Z(u, v)$	183
K_j	223, 228
B_n	224, 494
$H(x, y)$	234
H_j^x	234
$Z_j^{\mathfrak{g}}(u, v), Z_j^*(u, v)$	228, 279
$D_{(h,k)}^{\mathfrak{g}}(a, b)$	278
$\eta_N^{\mathfrak{g}}(a, b)$	279
D, Q	285, 296
\mathcal{Q}	288
D_δ	297
\widehat{D}_ρ	301
\widehat{D}	302
γ_n	303
\bar{Q}	312
\diamond_n	320
\mathbf{D}, \mathbf{Q}	337
\mathbf{E}	339
$\mathbf{E}_1, \mathbf{E}_2$	339
\mathbf{E}_0	341

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Index

- ♦ operation, 126
- ◇ operation, 128

- Abel's Lemma, 356
- algebra, 56
 - associative, 56
 - Banach, 292
 - derivation (of an), 57
 - filtered, 58
 - free (non-associative), 69
 - generators, 57
 - graded, 58
 - Hopf, 168
 - Lie, 56
 - morphism, 57
 - normed, 292
 - of a magma, 68
 - quotient, 58
 - tensor, 75
 - topological, 94
 - UA, 56
 - unital associative, 56
- analytic function (on a Banach space), 347
- associative algebra, 56
- associativity
 - Banach-Lie algebra, 313

- Banach algebra, 292
- Banach-Lie algebra, 293
- basis
 - of $\mathcal{T}(V) \otimes \mathcal{T}(V)$, 83
 - of the symmetric algebra, 512
 - of the symmetric tensor space, 513
 - of the tensor algebra, 77
 - of the tensor product, 74

- Bernoulli numbers, 223, 494
- bialgebra, 165
- bracket, 56
 - nested, 59

- Campbell, Baker, Hausdorff Theorem, 141
- Campbell, Baker, Hausdorff, Dynkin Theorem, 125
- CBHD Theorem, 125
 - commutative case, 121
 - for formal power series, 181
- coalgebra, 163
- commutator, 56, 61
 - nested, 59
- commutator-algebra, 61
- convention, 62, 83, 85, 104, 117, 125, 292

- derivation, 57
 - (with respect to a morphism), 231
- derivative
 - formal power series, 486
 - polynomial, 203
- Dynkin's Theorem, 151
- Dynkin, Specht, Wever Lemma, 145

- elementary tensor, 73
- evaluation map, 204
- exponential, 119
- external direct sum, 53

- filtered
 - algebra, 58
- filtration, 58

- formal power series
 - on a graded algebra, 101
 - in one indeterminate, 480
 - of an endomorphism, 209
 - substitution, 481
- free
 - (non-associative) algebra, 69
 - Lie algebra generated by a vector space, 85
 - Lie algebra related to a set, 88
 - magma, 63
 - monoid, 66
 - nilpotent Lie algebra generated by a set, 469
 - UA algebra, 69
 - vector space, 51
- free (non-associative) algebra, 69
- free Lie algebra generated by a vector space, 85
- free Lie algebra related to a set, 88
- free magma, 63
- free monoid, 66
- free nilpotent Lie algebra generated by a set, 469
 - stratification, 475
- free UA algebra, 69
- free vector space, 51
 - universal property (of the), 52
- Friedrichs's Theorem, 133, 137
- generators
 - algebra, 57
 - Lie algebra, 57
 - magma, 57
 - monoid, 57
- Goldberg presentation, 360
- graded algebra, 58
 - metric (related to a), 97
- grading, 58
- grouplike element, 167
- Hausdorff group, 143
- Hopf algebra, 168
- isometric completion, 98
 - of a UA algebra, 99
- Jacobi identity, 56
- LA morphism, 57
- left-nested, 59
- Lie algebra, 56
 - Banach, 293
 - commutator, 61
 - free, related to a set, 88
 - generated by a vector space, 85
 - generators, 57
 - morphism, 57
 - normed, 292
 - related to an associative algebra, 61
- Lie bracket, 56
- Lie subalgebra generated by a set, 59
- logarithm, 119
- magma, 56
 - free, 63
 - generators, 57
 - ideal, 89
 - morphism, 57
 - unital, 56
- Magnus group, 118
- metric
 - related to a graded algebra, 97
- monoid, 56
 - free, 66
 - generators, 57
 - morphism, 57
- morphism
 - algebra, 57
 - LA, 57
 - Lie algebra, 57
 - magma, 57
 - monoid, 57
 - UAA, 57
 - unital associative algebra, 57
- nilpotency, 324, 474
- norm
 - compatible, 292, 293
- normally convergent (series of functions), 278
- normed algebra, 292
- normed Lie algebra, 292
- operation
 - \diamond , 126
 - \diamond , 128
- operator $S(\partial/\partial y)$, 240

- PBW, 111
- Poincaré-Birkhoff-Witt, 111
- polynomial over a UA algebra, 199
- power series
 - formal, 101
- primitive element, 167
- product space, 53

- quotient algebra, 58

- right-nested, 59

- semigroup, 56
- stratification, 475
- structure constants, 332
- substitution (formal power series), 481
- symmetric algebra, 501
- symmetric tensor space, 509
- symmetrizing operator, 508

- tensor algebra, 75
 - basis (of the), 77
- tensor product, 73
 - basis (of the), 74
 - of algebras, 81
- theorem
 - $\mathcal{L}(\mathbb{K}\langle X \rangle) \simeq \text{Lie}(X)$, 91
 - $\mathcal{T}(\mathbb{K}\langle X \rangle) \simeq \text{Libas}(X)$, 79
 - $\widehat{\mathcal{T}} \otimes \widehat{\mathcal{T}}$ is a subalgebra of $\widehat{\mathcal{T} \otimes \mathcal{T}}$, 106
 - associativity, 313
 - associativity (nilpotent case), 320
 - Campbell, Baker, Hausdorff, 141
 - Cartier, 258
 - CBHD, 125
 - completion of a metric space, 98
 - conjugation by an exponential, 205
 - convergence, 285, 296
 - convergence (improved), 301
 - Djoković, 208
 - double limits, 318
 - Dynkin, 151
 - Dynkin, Specht, Weber, 145
 - Eichler, 188
 - finite associativity, 310
 - free Lie algebra, 91
 - Friedrichs, 133, 137
 - fundamental estimate, 281, 296
 - Hausdorff group, 143
 - nested brackets, 60
 - on the completion of metric spaces, 98
 - on the formal power series, 102
 - PBW, 111
 - prolongation, 103
 - rate of convergence, 298
 - real-analiticity, 288
 - Reutenauer, 248
 - third fundamental (of Lie), 328
 - Varadarajan, 227
 - third fundamental theorem of Lie, 328
 - topological algebra, 94
 - topologically admissible family, 94
 - topology induced by an admissible family, 95

- UA algebra
 - free, 69
- UAA morphism, 57
- ultrametric
 - inequality, 94
 - space, 94
- uniformly convergent (series of function), 278
- unital associative algebra, 56
 - morphism, 57
- unital magma, 56
- universal enveloping algebra, 108
- universal property
 - $\mathcal{L}(\mathbb{K}\langle x, y, z \rangle)$, 107
 - $\mathcal{L}(\mathbb{K}\langle x, y \rangle)$, 107
 - $\mathcal{T}(\mathbb{K}\langle x, y, z \rangle)$, 107
 - $\mathcal{T}(\mathbb{K}\langle x, y \rangle)$, 107
 - algebra of a magma, 68
 - algebra of a monoid, 68
 - external direct sum, 54
 - free algebra, 70
 - free Lie algebra generated by a vector space, 86
 - free magma, 64
 - free monoid, 66
 - free nilpotent Lie algebra, 472
 - free UA algebra, 71
 - free vector space, 52
 - symmetric algebra, 505
 - tensor algebra, 77
 - tensor product, 74
 - universal enveloping algebra, 110

- von Neumann, 119

- word, 65

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