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Erratum: integrand reduction of one-loop scattering amplitudes through Laurent series expansion

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Abstract: We correct an error affecting eq. (6.11) of the article.

The contribution to the (integrated) amplitude $\delta\mathcal{A}_n$, coming from the additional MI's that arise in the higher-rank case ($r \leq n+1$), which was given in eq. (6.11), should be replaced by,

$$\begin{aligned}\delta\mathcal{A}_n = &\sum_{i<j<k}^{n-1} c_{3,14}^{(ijk)}\; I_{ijk}[\mu^4] \\ &+ \sum_{i<j}^{n-1}\left\{ c_{2,13}^{(ij)}\; I_{ij}[((q+p_i)\cdot e_2)^3] + c_{2,10}^{(ij)}\; I_{ij}[\mu^2((q+p_i)\cdot e_2)]\right\} \\ &+ \sum_{i}^{n-1}\left\{ c_{1,14}^{(i)} I_i[\mu^2] + c_{1,15}^{(i)} I_i[((q+p_i)\cdot e_3)((q+p_i)\cdot e_4)]\right\}. \qquad (1)\end{aligned}$$

The expression of the integral $I_i[((q+p_i)\cdot e_3)((q+p_i)\cdot e_4)]$ can be obtained by contracting the covariant decomposition (B.3) with $e_3^\mu e_4^\nu$, and by using the relation $e_3 \cdot e_4 = -1$. The outcome is

$$\begin{aligned}I_i[(q+p_i)\cdot e_3)((q+p_i)\cdot e_4)] &= \int d^d\bar{q}\frac{(q+p_i)\cdot e_3)((q+p_i)\cdot e_4)}{D_i} = (e_3\cdot e_4)A_{00} \\ &= -\frac{m_i^2\, I_i + I_i[\mu^2]}{4} + \mathcal{O}(\epsilon)\,. \qquad (2)\end{aligned}$$

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