Published for SISSA by Springer

Received: April 20, 2022
Accepted: April 22, 2022
Published: May 18, 2022

Erratum: The LPM effect in sequential bremsstrahlung: nearly complete results for QCD

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Erratum to: JHEP11(2020)053

ArXiv ePrint: 2007.15018

Eq. (A.37) for $\mathcal{A}^{\rm pole}_{\rm seq}(x,y)$ gives incorrect $i\pi$ terms when the arguments x or y are negative, which means it generates an incorrect result when front-end transformed in (A.60) for evaluation of type II virtual sequential diagrams. The correct formula for (A.37) is derived in appendix A of ref. [1] below and is

$$\mathcal{A}^{\rm pole}_{\rm seq}(x,y) = -\frac{\alpha_{\rm s}^2\,P(x)\,P(\mathfrak{y})}{4\pi^2(1-x)}\,\mathrm{Re}\Big[i(\Omega\,\mathrm{sgn}\,M)_{E,x}\left(1+\tfrac{i\pi}{2}\,\mathrm{sgn}\,M_{(1-x)E,\mathfrak{y}}\right) + i(\Omega\,\mathrm{sgn}\,M)_{(1-x)E,\mathfrak{y}}\left(1+\tfrac{i\pi}{2}\,\mathrm{sgn}\,M_{E,x}\right)\Big] \tag{A.37a}$$

or equivalently

$$\mathcal{A}^{\rm pole}_{\rm seq}(x,y) = -\frac{\alpha_{\rm s}^2\,P(x)\,P(\mathfrak{y})}{4\pi^2(1-x)}\,\mathrm{Re}\Big[i(\Omega\,\mathrm{sgn}\,M)_{E,x} + i(\Omega\,\mathrm{sgn}\,M)_{(1-x)E,\mathfrak{y}}\Big] \times\left(1-\tfrac{\pi}{2}\,\mathrm{sgn}\,M_{E,x}\,\mathrm{sgn}\,M_{(1-x)E,\mathfrak{y}}\right). \tag{A.37b}$$

This correction propagates to our numerical results, with the effect that the single log coefficients $s(x)$, $\bar{s}(x)$, and $c(x)$ plotted in figures 19 and 20 are changed to the numbers shown minus 4π. (See, for example, figure 5 of ref. [1] below.) Correspondingly, the choice $c = 9.0$ in (4.11) should instead be $c = 9.0 - 4\pi$.

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https://doi.org/10.1007/JHEP05(2022)114

References

[1] P. Arnold, T. Gorda and S. Iqbal, *The LPM effect in sequential bremsstrahlung: analytic results for sub-leading (single) logarithms*, *JHEP* **04** (2022) 085 [arXiv:2112.05161] [INSPIRE].

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