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Subleading Logarithmic QED Initial State Corrections to $e^+e^- \to \gamma^*/Z^*$

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Using the method of massive operator matrix elements, we calculate the subleading QED initial state radiative corrections to the process $e^+e^- \to \gamma^*/Z^*$ for the first three logarithmic contributions. The calculation is performed in the limit of large center of mass energies $s \gg m_e^2$.

These terms supplement the known corrections to $O(\alpha^2)$, which were completed recently. The newly calculated radiators can be expressed in terms of harmonic polylogarithms of argument z and $(1-z)$ and in Mellin N-space by generalized harmonic sums.

Given the high precision at future colliders operating at very large luminosity, these corrections are important for concise theoretical predictions.

Time Zone

Europe/Africa/Middle East

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