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Heavy flavor 3-loop corrections to Deep Inelastic Scattering

Heavy flavor contributions are of key relevance for DIS precision analyses of HERA and world hard scattering data. We present recent results on the $O(as^3T_F^2)$ contributions to the massive operator matrix elements (OMEs) describing the Heavy Flavor Wilson Coefficients in the limit $Q^2 \gg m^2$ for general values of the Mellin variable N. We thereby consider contributions stemming from diagrams with two fermionic lines of identical or different masses. For two heavy flavor Wilson coefficients, $L_q^{\mathsf{PS}}(N)$ and L_g^{S}, the complete 3-loop results for general vales of N has been obtained. Along with the computation for the OMEs a first independent recomputation of the corresponding contributions to the 3–loop anomalous dimensions $\gamma_{qg}(N)$, $\gamma_{qq}^{\mathsf{PS}}(N)$, and $\gamma_{qq}^{\mathsf{NS},(\mathsf{TR})}(N)$ has been performed. All our results could be expressed by nested harmonic sums only, while in intermediary results more general structures emerged.

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