

DIS at 4-loops with differential equations

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The computation of the structure functions for DIS can be tested across a range of energies with high accuracy and provides vital information for the evolution in the distribution of partons within a proton. We are currently investigating DIS at 4-loop, in particular the non-singlet sector.

Our approach consists of the determination large number of Mellin Moments, allowing for the reconstruction of the structure functions. This expansion is performed at the level of master integrals and through a novel system of expansion via differential equations.

We have started by considering n_f^2 contributions, obtaining an expansion up to $N=1500$, for the derivation of the corresponding coefficient functions.

We aim at pushing our efforts beyond that and compute new contributions to the 3-loop splitting functions, in particular, corrections corresponding to $C_f^3 n_f$.

Submitted on behalf of a Collaboration?

No

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