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Studies of N3LO Fits to DIS Data Using xFitter

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We investigate the impact of recently computed N3LO corrections to QCD splitting and DIS coefficient functions on global fits of parton distribution functions (PDFs) using the xFitter framework. By comparing fits performed at different perturbative orders, we analyze the modifications introduced to PDFs and their associated uncertainties, incorporating correlated experimental errors. Additionally, the effects of various approximations for splitting functions are assessed, providing a basis for estimating theoretical uncertainties. The results show the importance of the N3LO corrections and the need for further theoretical refinement in the low-x regime.

Secondary track

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