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Impact of low-x resummation on QCD analysis of HERA data

Fits to the final combined HERA deep-inelastic scattering cross-section data within the conventional DGLAP framework of QCD have shown some tension at low x and low Q2. A resolution of this tension incorporating ln(1/x)-resummation terms into the HERAPDF fits is investigated using the xFitter program. The kinematic region where this resummation is important is delineated. Such high-energy resummation not only gives a better description of the data, particularly of the longitudinal structure function FL, it also results in a gluon PDF which is steeply rising at low x for low scales, Q2⪅2.5 GeV2, contrary to the fixed-order NLO and NNLO gluon PDF.

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