

XXVIII International Workshop on Deep-Inelastic Scattering and Related Subjects



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Testing large- x asymptotics in nucleon and pion PDFs

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We discuss strategies for comparisons of nonperturbative and lattice QCD predictions for collinear PDFs at large partonic momentum fractions x with high-energy experiments. While nonperturbative approaches offer increasingly complete predictions about the nucleon and meson structure at energies below 1 GeV, experimental measurements at energies above 1 GeV rely on perturbative QCD factorization. Using the CT18 NNLO global analysis as an example, we point out comparison strategies that are more informative when bridging the low- and high-energy formalisms and controlling for systematic effects. We compare effective power laws of the $(1-x)$ dependence obtained from a global fit with predictions of quark counting rules. We also demonstrate that analytic predictions for functional forms for PDFs are not uniquely determined from the typical DIS and Drell-Yan data because of a mathematical property of mimicry of PDF parametrizations that we investigate using a representation based on Bézier curves.

Primary authors: COURTOY, Aurore (Instituto de Fisica, UNAM); NADOLSKY, Pavel (Southern Methodist University)

Presenter: COURTOY, Aurore (Instituto de Fisica, UNAM)

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