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The nCTEQ PDFs: LHC data and nuclear uncertainties

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A global analysis of the proton PDF requires a combination of DIS, DY, and jet data. The flavor differentiation depends heavily on the DIS data, all of which is measured on nuclear targets in neutrino scattering; hence the nuclear PDFs (nPDFs) come into play. Additionally, the LHC heavy ion runs with lead beams provide information in an entirely new kinematic regime; here, the W/Z production process is particularly enlightening. We study the compatibility of these data sets in a global nPDF analysis and extract the nuclear correction factors, and discuss the observed tensions between the nuclear correction factors in various data sets. We also quantify the nPDF uncertainty using a set of error PDF functions and show comparisons with recent nPDF determinations.

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