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Impact of W and Z Production Data and Compatibility of Neutrino DIS Data in Nuclear Parton Density Extraction

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W and Z boson production and Neutrino deep inelastic scattering (DIS) data are the two most important data sets for constraining the strange quark parton distribution function (PDF) and for flavor decomposition in PDF extractions in general. We extend the nCTEQ15 nuclear PDFs (nPDFs) by adding the recent W and Z production data from LHC in a nCTEQ framework-based global nPDF fit. We identify the new nPDF set as nCTEQ15WZ and use it as a starting point for a follow-up study in which we assess the compatibility of neutrino DIS data with charged lepton DIS. Specifically, we re-analyze neutrino DIS data from NuTeV, Chorus, and CDHSW, as well as dimuon data from CCFR and NuTeV. Special emphasis is placed on the normalization uncertainty and corrections from target mass, deuteron, and higher twist effect. To highlight the level of compatibility, different kinematic regions of the neutrino data are investigated and consistency with leading-twist factorization picture is discussed.

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