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Extracting the Neutron Structure Function from Global DIS Data

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The CJ (CTEQ-Jefferson Lab) collaboration provides a global fit of parton distribution functions with a special emphasis on the large x region. The latest CJ15 global analysis implemented deuteron nuclear corrections at the parton level, and included data that were sensitive specifically to the neutron. These nuclear corrections allow for a calculation of the F_2 structure functions of the proton, deuteron, and neutron from PDFs. In this work we re-estimated the uncertainties in the DIS F_2 data utilized in CJ15, and collected an extended set of existing high-precision, small Q^2, large x DIS data from JLab 6 GeV experiments. We employed the CJ15 calculation to remove nuclear effects from deuteron data where the proton was available from the same experiment, and thereby constructed a global data set for the F_2 neutron structure function. In this talk we will present the extracted F_2 neutron data sets, as well as select applications such as a new evaluation of the GSR sum rule, and a new neutron excess correction factor.

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