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Neutron Structure at Large x

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While an impressive amount of high quality nucleon structure function data exists from hydrogen, deuterium, and other targets, the lack of a neutron target has made direct comparisons between proton and neutron structure nearly impossible at large x where nuclear effects become large. The behavior of the d quark as x approaches 1 is particularly sensitive to deuterium nuclear corrections. The impact on the parton distribution functions (PDFs) from uncertainties in the deuteron wave function at short distances, nucleon off-shell effects, the use of relativistic kinematics, as well as the use of less a restrictive parametrization of the d/u ratio have been evaluated within a global PDF analysis. These results will be discussed, as well as compared to results from the Barely Off-Shell Nucleon Structure (BONUS) Experiment. The BONUS experiment employed a novel radial time projection chamber to detect spectator protons resulting from electron-deuteron interactions in coincidence with electrons in the CEBAF Large Acceptance Spectrometer in Hall B at Jefferson Lab - thereby ensuring an inclusive electron-neutron scattering event. Lastly, an overview of additional, planned neutron structure measurements at large x will be presented.

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