Exclusive π^- Electroproduction off the Neutron in Deuterium in the Resonance Region

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We report new results for the exclusive and quasi-free cross sections off neutrons bound in deuterium $\gamma^* n(p) \rightarrow p\pi^-(p)$, which are presented over a wide final hadron angle range with a kinematic coverage of the invariant mass (W) up to 1.825 GeV and the virtual photon four-momentum squared (Q^2) from 0.4 to 1.0 GeV^2. The experimental data were collected with the CLAS detector in Hall B at Jefferson Laboratory. The exclusive structure functions have been extracted and their Legendre moments were obtained. The exclusive quasi-free process has been kinematically isolated as successfully demonstrated by the comparison of the spectator momentum distribution of the simulation with the missing momentum distribution of the data. Accordingly final-state-interaction contributions could be separated from the extracted quasi-free cross sections off bound neutrons solely based on the analysis of the experimental data. These new results will serve as long-awaited input for phenomenological analyses to extract the Q^2 evolution of previously unavailable n $\rightarrow$ N* electroexcitation amplitudes and to improve state-of-the-art models of neutrino scattering off nuclei by augmenting the already available results from free protons.