Exclusive π^- Electro-production from the Neutron in the Resonance Region

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Pion production from the nucleon is a well-known technique for investigating the resonance region. However, data on the neutron are scarce, especially for pion electro-production. In Hall B at Jefferson Lab we have studied the $\gamma^* n \rightarrow \pi^- p$ reaction over a large kinematic region as part of the BoNuS (*Barely off-shell Nuclear Structure*) experiment. A radial time projection chamber (RTPC) based on gaseous electron multiplier (GEM) technology was constructed to detect low momentum, down to 67 MeV/c, recoil protons. Electron scattering data were taken with beam energies of 2.1, 4.2 and 5.3 GeV from a 7 atmosphere gaseous deuterium target using both the RTPC and the CEBAF Large Acceptance Spectrometer (CLAS). The absolute differential cross section of the exclusive $\mathrm{D}(e, e'\pi^- p)p$ reaction, in which the proton was detected either in CLAS or in the RTPC was measured. The structure functions $\sigma_{\mathrm{T}} + \varepsilon\sigma_{\mathrm{L}}$, σ_{LT} and σ_{TT} were extracted by fitting the ϕ-dependence of the measured cross sections. The comparison of these results with the MAID and SAID models will be presented.