

Differential cross section of exclusive π^- electro-production from deuterium

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Differential cross sections for exclusive π^- electro-production from the neutron in the reaction $e+d \rightarrow e'+\pi^-+p+p_r$ have been measured over a broad kinematics range in the BoNuS experiment. The experiment was performed using a radial time projection chamber (RTPC) and the CEBAF Large Acceptance Spectrometer (CLAS) at Hall B Jefferson Lab. The RTPC detector was specially built to detect low energy recoil protons and had a valid momentum acceptance from 67 to 250 MeV/c. Electron scattering data were taken with beam energies of 2.1, 4.2 and 5.3 GeV using a 7 atm gaseous deuterium target in 2005. The differential cross sections for $D(e, e'\pi^-p)p$ have been extracted, with the proton detected either by the CLAS or by the RTPC. The structure functions $\sigma_T + \varepsilon\sigma_L$, σ_{LT} and σ_{TT} were also determined and will be presented in comparison with MAID and SAID predictions. The cross sections of this process are also investigated in the framework of quark counting rule prediction and compared with other electro-induced processes.