

First Cross Section Results of $D(e,e'p)n$ at Very High Recoil Momenta

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ABSTRACT

Preliminary $D(e,e'p)n$ electro-disintegration cross sections at $Q^2 = 4.25 \text{ GeV}^2$ with recoil momenta up to 900 MeV/c will be presented. The experiment ran for a total of 6 days of beam time in April 2018 at Jefferson Lab in Hall C and it seeks to study the short range structure of the deuteron by probing its high momentum components beyond 500 MeV/c, where currently no data exists. The experiment was part of a group of Hall C experiments that commissioned the new Hall C Super High Momentum Spectrometer (SHMS). At the selected kinematics, Meson Exchange Currents (MEC) and Isobar Configurations (IC) are suppressed. Final State Interactions (FSI) have also been suppressed by choosing a kinematic region where the neutron recoil angle is between 35 and 45 degrees with respect to the momentum transfer. This suppression was seen in a previous $D(e,e'p)n$ experiment (Boeglin et al. Phys Rev Lett. 2011) and is also predicted in modern theoretical calculations (W. Boeglin & M. Sargsian Int.J.Mod.Phys. 2015). In this region, the Plane Wave Impulse Approximation (PWIA) dominates and comparisons between measured and predicted cross sections are sensitive to the deuteron momentum distributions. Comparisons between data and different calculations with different NN potentials will be shown.