

Deeply Virtual Compton Scattering off ^4He

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The Generalized Parton Distributions (GPDs) open a new avenue for studying partonic structure of target hadrons in hard exclusive reactions. The GPDs contain information on quark/anti-quark correlations, and on correlation between longitudinal momentum and the transverse spatial position of partons. The Deeply Virtual Compton Scattering (DVCS), lepton production of a real photon where photon is emitted by the target hadron, has been a prime reaction for studying the nucleon GPDs. In particular, in beam and target asymmetry measurement interference of the DVCS and Bethe-Heitler (BH) process (where photon is emitted from incoming or outgoing electron) is used to access Compton form-factors that are linear combination of GPDs. In this talk we present the first measurement of the DVCS process off ^4He with longitudinally polarized electron beam of 6 GeV using the CLAS detector in the experiment Hall-B at Jefferson Lab. The ^4He is of particular interest since the number of form-factors is reduced to one because of its spin zero. The aim of this study is to understand the nuclear medium modifications of parton distributions. In our experiment, the CLAS detector was upgraded with a Radial Time Projection Chamber (RTPC) to detect the low-energy recoil nuclei, and an Inner Calorimeter (IC) to detect forward going photons. The details of the data analysis and the results on beam spin asymmetry will be discussed.