

Deeply Virtual Compton Scattering off proton and neutron from deuterium with CLAS12 at Jefferson Lab

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A key step toward a better understanding of the nucleon structure is the study of Generalized Parton Distributions (GPDs). The particularity of GPDs is that they convey an image of the nucleon structure where the longitudinal momentum and the transverse spatial position of the partons inside the nucleon are correlated. Moreover, GPDs allow the quantification, via Ji's sum rule, of the contribution of the orbital angular momentum of the quarks to the nucleon spin, important to the understanding of the origins of the nucleon spin. Deeply Virtual Compton scattering (DVCS), the electroproduction of a real photon off the nucleon at the quark level, is the golden process directly interpretable in terms of GPDs of the nucleon. The GPDs are accessed in DVCS mainly through the measurements of single- or double- spin asymmetries. Combining measurements of asymmetries from DVCS experiments on both the neutron and the proton will allow performing the flavor separation of relevant quark GPDs via linear combinations of proton and neutron GPDs. This talk will mainly focus on recent DVCS off the neutron from deuterium measurement from the CLAS12 experiment at Jefferson Lab with the upgraded ~11 GeV CEBAF polarized electron beam. This process emphasizes mainly, in the kinematic range covered at Jefferson Lab, the access to the GPD E of the neutron which is the least constrained GPD up till now. Details on the data analysis along with results on Beam Spin Asymmetries will be presented.

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