Deeply Virtual Compton Scattering at Jefferson Lab

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Recently, three dedicated Jefferson Lab experiments have taken data in order to measure Deeply Virtual Compton Scattering (DVCS) on the proton and the neutron. The two first experiments E00-110 and E03-106 ran in Hall A of Jefferson Lab in the fall of 2004 and recently published their results: they aimed at extracting the difference of cross sections and total cross sections for DVCS on the proton and neutron respectively. The last experiment E01-113 ran in the spring of 2005 in Hall B and measured the DVCS beam spin asymmetries. All these observables are directly related to the so-called Generalized Parton Distributions (GPD), which parameterize the structure of the nucleon at a very fundamental level. Those GPDs include both the Form Factors and Parton Distribution Functions but also contain information on the interference between quark configurations inside the nucleon, on the quark momentum distribution as well as their angular momentum distribution.

In this talk, I will show the great precision of the Hall A measurements of DVCS helicitydependent cross sections, which unambiguously prove that a precocious scaling property is observed in the DVCS channel, just like in regular DIS. This has the consequence that GPDs can indeed be measured using the factorization property of the DVCS amplitude, even at moderate Q^2 around 2 GeV². Moreover, I will show preliminary Hall B results on the beam spin asymmetry observable in a wide range of x_B and Q^2 and t, allowing for studies of kinematical dependences of this observable with very good accuracy.