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

Wednesday, 1 November 2023 18:10 (20 minutes)

A deeper understanding of the nucleon structure can be achieved through 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 constraind GPD up till now. Details on the data analysis along with preliminary results on Beam Spin Asymmetries will be
presented.

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