

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Mechanical properties of the nucleon with the CLAS12

FRANCOIS-XAVIER GIROD, George Washington University, VOLKER BURKERT COLLABORATION, LATIFA ELOUADRHIRI COLLABORATION — The second Mellin moments of Generalized Parton Distributions (GPDs) are parameterized by the Energy Momentum Form Factors of partonic confined dynamics. A pair of photons in the Bjorken regime, one in the initial and one in the final state as in Deeply Virtual Compton Scattering (DVCS), can unravel mechanical properties of the nucleon otherwise only accessible through Graviton Scattering, such as the Pressure and Shear Force Distributions. We demonstrate the feasibility of this measurement, with a dispersion analysis of the DVCS cross-sections and beam spin asymmetries where the D-term is a subtraction constant. We will improve the uncertainties of this analysis by separating the DVCS squared amplitude from the interference term with the Bethe-Heitler process, using their beam energy dependences and new data from CLAS12. Preliminary results demonstrate high statistics samples of exclusive events up to $x_B = 0.7$ and $Q^2 = 10\text{GeV}^2$. We will extend this measurement employing Charge Asymmetries with Polarized Positrons, which will crucially constrain global analysis of GPDs, and provide a clean test of universality and factorization in the valence region, a crucial step towards an extension of this program to the sea quarks and gluons at Electron Ion Collider.

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Date submitted: 25 Jun 2020

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