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New Deeply Virtual Compton Scattering results from Jefferson Lab

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The understanding of Quantum Chromodynamics (QCD) at large distances still remains one of the main outstanding problems of nuclear physics. Investigating the internal structure of hadrons provides a way to probe QCD in the non-perturbative domain and can help us unravel the spatial extensions of nature's building blocks. Deeply Virtual Compton Scattering (DVCS) is the easiest reaction that accesses the Generalized Parton Distributions (GPDs) of the nucleon. GPDs offer the exciting possibility of mapping the 3-D internal structure of protons and neutrons by providing a transverse image of the constituents as a function of their longitudinal momentum. A vigorous experimental program is currently pursued at Jefferson Lab (JLab) to study GPDs through DVCS. New results from Hall A and Hall B recently published will be shown and discussed. Special attention will be devoted to the applicability of the GPD formalism at the moderate values of momentum transfer (Q2) available at JLab. We will conclude with a brief overview of additional DVCS experiments under analysis and planned with the future Upgrade of JLab to 12 GeV, which will allow the full exploration of the valence-quark structure of nucleons and nuclei and promises the extraction of full "tomographic" images.

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