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Extracting twist-three GPDs from deeply virtual Compton scattering

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Observables in the hard exclusive lepton production of real photons can be cleanly expressed in terms of the Compton amplitudes involving generalized parton distributions (GPDs). This process can be factorized into the product of a short-distance partonic subprocess with a long-distance, off-forward hadronic matrix element. They involve nonlocal quark and gluon operators and are naturally expressed in terms of GPDs; quantities which may carry crucial information about the nucleon's intrinsic properties. In this talk, I will be providing an overview of the theoretical formalisms of these processes and a detailed look at some of the relevant asymmetry observables is given to twist-three accuracy. In particular, the relevant twist-two and -three GPDs which complete a newly-found nucleon spin sum rule in the transverse polarization plane are discussed.

Author: SHIELLS, Kyle (University of Manitoba)

Presenter: SHIELLS, Kyle (University of Manitoba)

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