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Theory and phenomenology of double deeply virtual Compton scattering

Generalised parton distributions (GPDs) defined in the framework of quantum chromodynamics (QCD) are three-dimensional objects containing a wealth of unique information about the nucleon structure. Current attempts to extract GPDs from experimental data are typically based on a single exclusive process known as deeply virtual Compton scattering (DVCS) and its leading order QCD description. This provides only limited information about GPDs. Namely, one can only access so-called subtraction constant and GPDs themselves in a very limited kinematic domain, where the longitudinal momentum of the active parton is equal to a variable called the skewness.

In our research, we consider an exclusive process known as double deeply virtual Compton scattering (DDVCS), which provides a unique opportunity to access GPDs in the entire kinematic domain. We describe this process at next-to-leading order accuracy, and we make predictions for observables such as cross-sections to determine the feasibility of measuring DDVCS in future Electron-Ion Collider (EIC) facilities.

Submitted on behalf of a Collaboration?

No

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