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Feasibility of probing parton orbital angular momentum through elastic dijet production in electron-proton collisions

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Elastic dijet production in electron-proton collisions is one of the main proposed probes of the quark and gluon orbital angular momentum (OAM) distributions. In particular, the azimuthal angular correlations amongst the jets, outgoing proton, and outgoing electron provide access to the OAM distributions. At small x, this access is quantified through the first impact-parameter moments of the polarized dipole amplitudes, which have been shown to be directly related to the OAM distributions. In this study, we assess the feasibility of extracting these moment amplitudes through azimuthal correlations in the double spin asymmetry of elastic dijet production at the future Electron-Ion Collider. We identify the kinematic regimes with enhanced sensitivity and discuss both the opportunities and limitations associated with this process, including constraints from the magnitude of the cross section and experimental resolutions.

Track

2: Polarized deep-inelastic physics

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