

Abstract Submitted
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Studying nucleon structure using an Electron-Ion Collider

THOMAS BURTON, BNL, EIC TEAM — The detailed composition of the spin of the nucleon remains unknown. Numerous experiments over the past two decades have shown that the spin of quarks alone cannot account for more than a third of the nucleon's spin. Proton-proton collisions at RHIC suggest a small gluon polarisation, but uncertainties remain large. An Electron-Ion Collider is proposed as future machine for precision studies of nucleon and nuclear structure. It will allow the study of the spin contribution from gluons and quarks, including their flavour decomposition, in heretofore unprecedented precision, and will access a much wider kinematic space than ever before, in particular extending to the currently unmeasured low Bjorken- x sea. The formalism of generalised parton distributions (GPDs), accessible for example via deeply-virtual Compton scattering, promises to allow study of the role of orbital angular momentum in nucleon spin. Furthermore, GPDs will extend understanding of parton distributions beyond the well-known one-dimensional PDFs, accessing three-dimensional structure via the impact parameter distributions of partons.

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