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EIC Impact Study on the Tensor Charge using TMDs from a Global Analysis of SSAs

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The tensor charge is one of the fundamental charges of the nucleon and, arguably, the least known. This quantity sits at the intersection of three key areas of nuclear physics: 3-dimensional tomography of the nucleon, searches for beyond the Standard Model physics, and lattice QCD. In this talk I will report on a recent study of the impact of the Electron-Ion Collider (EIC) on the phenomenological extraction of the tensor charge from a QCD global analysis of single transverse-spin asymmetries (SSAs). We generated EIC pseudo-data for the Collins effect in semi-inclusive deep-inelastic scattering for proton and He-3 beams across multiple center-of-mass energies. We find a significant reduction in the uncertainties for the up, down, and isovector tensor charges that will make their extraction from EIC data on SSAs as or more precise than current lattice QCD calculations.

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