

Abstract Submitted  
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**Expected improvements in polarized parton distribution uncertainties from, proposed, Electron Ion Collider using a Global analysis approach.** SWADHIN TANEJA, Stony Brook University — Parton distribution functions (PDFs) are indispensable in any calculation of high energy processes involving hadrons. Global analysis of all the experimental data over a wide range of longitudinal momentum fraction of the partons,  $x$ , and a well resolved momentum scale,  $Q^2$ , is a way to extract the PDFs. A high luminosity ( $> 10^{33-34} \text{ cm}^{-2}\text{s}^{-1}$ ), high energy ( $\sqrt{s} = 30$  to  $100$  GeV) Electron-Ion-Collider (EIC) will allow to access the kinematic regime between that of HERA and of the fixed-target experiments with much higher statistics. Thus a global analysis including the EIC data will allow us to precisely determine the PDFs in a larger kinematic region. Since EIC will run with a polarized nucleon beam, an extraction of gluon polarization,  $\Delta G$ , using global analysis will be a major goal for the spin community at this facility. We will present results and improvements in uncertainties we can expect, coming from EIC, on polarized PDFs from global analysis.

Swadhin Taneja  
Stony Brook University

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