

DIS2023: XXX International Workshop on Deep-Inelastic Scattering and Related Subjects



Contribution ID: 175

Type: **Parallel talk**

Accessing gluon polarization in large- P_T SIDIS

Thursday, 30 March 2023 09:20 (20 minutes)

Since the EMC collaboration measurement of the small quark spin contribution to the proton spin in the late 1980s, the nuclear physics community has been actively working to resolve the so-called proton spin puzzle. While the size of the quark spin contribution is fairly well established, the gluon spin contribution is not as well established and recently has met theoretical tension. Recent global QCD analyses of jet production and other polarized scattering data find the presence of negative gluon helicity distributions, Δg , compatible with the existing data in addition to the traditional positive Δg distributions. In this work, we present an analysis of semi-inclusive deep inelastic scattering for produced hadrons with large transverse momentum for further constraint of the dependence of Δg on the parton momentum fraction, x , and focusing on the double longitudinal spin asymmetry, we identify kinematic regions relevant to future experiments at JLab and the Electron-Ion Collider which are particularly sensitive to Δg and are capable of distinguishing the different Δg distributions.

Submitted on behalf of a Collaboration?

No

Participate in poster competition?

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Session Classification: WG6

Track Classification: WG6: Future Experiments