

Accessing gluon polarization with high- P_T hadrons in SIDIS

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A recent global QCD analysis of jet production and other polarized scattering data has found the presence of negative solutions for the gluon helicity distribution in the proton, Δg , along with the traditional $\Delta g > 0$ solutions. We consider polarized semi-inclusive deep-inelastic scattering for hadrons produced with large transverse momentum as a means of constraining the dependence of Δg on the parton momentum fraction, x . Focusing on the double longitudinal spin asymmetry, we identify the kinematics relevant for future experiments at Jefferson Lab which are particularly sensitive to the polarized gluon channel and could discriminate between the different Δg behaviors. We find that a ~ 20 GeV beam at the high luminosity Jefferson Lab may be especially well-suited for discriminating between the positive and negative solutions.

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