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Longitudinal Double-Spin Asymmetries for Dijet Production at Intermediate Pseudorapidity in Polarized Proton+Proton Collisions at $\sqrt{s}$ = 200 GeV

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One of the primary goals of the RHIC spin program is to determine the spin-dependent gluon distribution, Δg(x), of the proton. The measurements of the 2009 longitudinal double-helicity asymmetry, A_{LL}, for mid-rapidity inclusive jet and π^0 production in polarized proton+proton collisions at the center-of-mass energy √s = 200 GeV place strong constraints on Δg(x). They also for the first time find evidence for a non-zero gluon polarization value for partonic momentum fraction x greater than 0.05. In contrast to inclusive jets, dijet correlation measurements provide access to partonic kinematics at leading order, and thus give better constraints on the behavior of Δg(x) as a function of gluon momentum fraction. Furthermore, dijet measurements at higher rapidity probe the lower x values where ΔG is poorly constrained.

In this talk, we present the first measurement of A_{LL}, for dijets with at least one jet reconstructed within the pseudorapidity range 0.8 < η < 1.8 at STAR. The dijets were measured in polarized proton+proton collisions at √s = 200 GeV. Values of A_{LL} are determined for several distinct event topologies, defined by the jet pseudorapidities, and span a range of parton momentum fraction x down to x ~ 0.01. The measured asymmetries are found to be consistent with the predictions of global analyses that incorporate the results of previous RHIC measurements. They will provide new constraints on Δg(x) in this poorly constrained region when included in future global analyses.

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