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Gluon Helicity Distribution from Longitudinally Polarized Proton Collisions at STAR SUVARNA RAMACHANDRAN, Univ of Kentucky, STAR COLLABORATION — The spin program at STAR has been exploring a wide range of measurements with longitudinally polarized protons to determine the gluon helicity distribution inside the proton and understand its contribution to the spin of the proton. The inclusive jets and pions in the kinematic range accessed by RHIC are dominantly produced from quark-gluon and gluon-gluon scattering processes. The longitudinal double-spin asymmetry (A_{LL}) is sensitive to polarized parton distributions and can be used to extract information about the gluon helicity contribution (ΔG) to the spin of the proton. Previous A_{LL} measurements have shown the first evidence of polarized gluons for gluon momentum fractions above 0.05. The data collected at $\sqrt{s} = 510$ GeV will extend the current constraints on ΔG to lower gluon momentum fractions, and the measurement of dijet A_{LL} will allow for the reconstruction of the partonic kinematics at leading order. This presentation will focus on the recent results from the A_{LL} measurements at STAR, and how they extend the sensitivity to the gluons at lower momentum fractions.

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