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Longitudinal Double-Spin Asymmetry A_{LL} for Inclusive Jet Production in Polarized Proton Collisions at $\sqrt{s} = 510$ GeV AMILKAR QUINTERO, Temple University, STAR COLLABORATION — The STAR experiment at the Relativistic Heavy-Ion Collider (RHIC) at Brookhaven National Laboratory is carrying out a spin physics program in high-energy polarized proton collisions at center of mass energies up to 510 GeV, to gain a deeper insight into the spin structure and dynamics of the proton. The polarized gluon distribution function can be constrained in longitudinally polarized proton collisions through jet / di-jet production. Recent global analyses, which include results of the measurement of A_{LL} for inclusive jet production at 200 GeV at mid-rapidity at the STAR experiment, provide evidence of a non-zero gluon polarization in the measured range of partonic momentum fraction of approximately $0.05 < x < 0.3$. We present preliminary results of the measurement of A_{LL} for inclusive jet production at 510 GeV. The higher center-of-mass energy allows to probe the polarized gluon distribution function at smaller x values. The data were recorded at the STAR experiment during the 2013 running period at mid-rapidity ($|\eta| < 0.9$). The integrated luminosity recorded at STAR used for this study is approximately 250 pb^{-1} . We discuss and compare these results with previous STAR results and various next-to-leading order (NLO) calculations.

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