

Longitudinal Double-Spin Asymmetry A_{LL} for Inclusive Jet and Di-jet Production in Polarized Proton Collisions at $\sqrt{s} = 510$ GeV

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We present preliminary results of longitudinal double-spin asymmetry A_{LL} measurements for inclusive jet and di-jet production at center of mass energy of 510 GeV. The data were collected by the STAR experiment at the Relativistic Heavy-Ion Collider (RHIC), during the 2013 running period at central pseudo-rapidity ($|\eta| < 0.9$). Recent STAR results with data recorded in 2012 at the same center of mass energy, allowed probing the polarized gluon distribution function at smaller momentum fraction values ($x \sim 0.015$) than previous STAR jet analyses in central pseudo-rapidity at center of mass energy of 200 GeV. A similar procedure for the A_{LL} calculation and systematics estimation is being applied for this newer data set, which provides a larger integrated luminosity ($\sim 300 \text{ pb}^{-1}$) for the presented studies than the 2012 data set (82 pb^{-1}). We discuss and compare these results with previous STAR gluon helicity results and various next-to-leading order QCD calculations.