

Longitudinal Double-Spin Asymmetries for Intermediate Rapidity Inclusive π^0 Production from Polarized pp Collisions at $\sqrt{s} = 200$ GeV at STAR

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Abstract

We present an update of the analysis towards a new measurement of the longitudinal double-spin asymmetry A_{LL} for neutral pions (π^0 's) reconstructed in the STAR Endcap Electromagnetic Calorimeter (EEMC) from polarized proton-proton collisions at $\sqrt{s} = 200$ GeV with data taken in 2009. The EEMC is optimized for measurement of π^0 's, with full azimuthal coverage for $1.086 < \eta < 2.0$ and a fine granularity, scintillator-based shower maximum detector to identify π^0 's signature di-photon decay. Neutral pion A_{LL} is sensitive to the polarized gluon distribution function $\Delta g(x)$, as quark-gluon scattering is the dominant subprocess for π^0 production in the EEMC region. In the more forward pseudorapidity region of the EEMC ($\eta > 1.3$), where inclusive jet measurements are compromised due to increased charged-particle tracking inefficiencies, π^0 's can be reconstructed accurately, allowing us to probe lower values of partonic momentum fraction x , where $\Delta g(x)$ is poorly constrained.