

Abstract Submitted
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Constraining ΔG at low- x with Double Longitudinal Spin Asymmetries for Forward Hadrons in PHENIX CAMERON MCKINNEY, University of Illinois, PHENIX COLLABORATION — Currently, global fits of the gluon polarization $\Delta g(x)$ are constrained by PHENIX and STAR data from polarized p+p collisions at RHIC in the range $0.03 < x < 0.3$. These fits yield a first moment of the gluon polarization, ΔG , consistent with zero, but they are not sensitive to possible contributions to ΔG from the low- x region. By measuring A_{LL} for forward ($3.1 < \eta < 3.9$) π^0 production in the Muon Piston Calorimeter (MPC) at PHENIX, we aim to probe the structure of $\Delta g(x)$ in this low- x region. Production of hadrons at large pseudo-rapidities is favored in asymmetric collisions between a high- x quark and a low- x gluon that give the center of momentum frame a large forward boost. Simulations using the event generator PYTHIA have shown that measuring forward π^0 's can access $\Delta g(x)$ for $x \sim 10^{-3}$. Here, we present the analysis status of A_{LL} for merged π^0 's in the MPC at $\sqrt{s} = 500 \text{ GeV}$ from the 2009 dataset. This data along with data from polarized p+p runs at PHENIX through 2015 will help to provide stronger constraints on the form of $\Delta g(x)$ for ongoing global analyses.

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