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Constraining ΔG at low- x with Double Longitudinal Spin Asymmetries for Forward Hadrons in PHENIX CAMERON MCKINNEY, University of Illinois at Urbana-Champaign, PHENIX COLLABORATION — Recent global analyses that include polarized p+p data from RHIC through 2009 suggest for the first time a positive contribution of the gluon polarization, ΔG , to the overall proton spin. The data sets included in the analysis constrain $\Delta g(x)$ in the range $0.05 < x < 0.2$, leaving the lower x region nearly unconstrained. This low- x region can be accessed via a double helicity asymmetry in hadron production at large pseudorapidity, with a dominant contribution from collisions between a high-momentum quark and a low-momentum gluon. At PHENIX, we measure cluster A_{LL} at large pseudorapidity ($3.1 < \eta < 3.9$) using the Muon Piston Calorimeter (MPC). The majority of the clusters ($> 80\%$) come from π^0 decay where the photon showers in the calorimeter overlap. Simulations using the event generator PYTHIA have shown that measuring forward π^0 's can access $\Delta g(x)$ for $x \sim 10^{-2}$ for inclusive π^0 's or down to $x \sim 10^{-3}$ for the dihadron channel. Here, we present the status of A_{LL} measurements in the MPC at $\sqrt{s} = 500 \text{ GeV}$ from the 2011 through 2013 runs. This data will help to provide stronger constraints on the form of $\Delta g(x)$ in ongoing global analyses.

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