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Measurement of Double Longitudinal Spin Asymmetry, A_{LL} , for Inclusive π^0 Production at Forward Rapidity in PHENIX for $\sqrt{s}=200$ and 500 GeV SCOTT WOLIN, University of Illinois at Urbana-Champaign, PHENIX COLLABORATION — The Relativistic Heavy Ion Collider (RHIC) is the world's only source of polarized proton-proton collisions which provides access at leading order to $\Delta G(x)$, the gluon contribution to the proton spin. Previously, PHENIX has only been sensitive to truncated moments of ΔG over the limited Bjorken- x range of $0.05 < x < 0.2$, leaving the low and high- x spin contributions unconstrained. While the $\Delta G(x) \approx 0$ scenario has not been ruled out by the data, the scenario with $\Delta G(x) \neq 0$ but with vanishing truncated moment, $\int_{0.05}^{0.2} G(x) dx = 0$, due to a node in the functional form of $\Delta G(x)$, is also consistent with the data. With the successful commissioning of the Muon Piston Calorimeter (MPC) at forward rapidity, di-hadron measurements with hadrons at both forward and central rapidities are now possible in PHENIX. Two forward hadrons extend the kinematic coverage for gluons down to $x \sim 10^{-3}$. Such an asymmetry measurement for di-hadrons and single hadrons at forward rapidity can be used to improve the constraints on $\Delta G(x)$ at small x . Here, we discuss the status of these measurements at forward rapidity in PHENIX using the MPC.

Scott Wolin
University of Illinois at Urbana-Champaign

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