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Recent Results of Double Helicity Asymmetries at PHENIX

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The determination of the gluon polarization within the proton, ΔG, is one of the critical pieces to understanding the proton spin puzzle. Using collisions of polarized protons with $\sqrt{s} = 200\,GeV$ and $\sqrt{s} = 500\,GeV$ at the Relativistic Heavy Ion Collider (RHIC), PHENIX can access gluons and ΔG at leading order. Constraints on ΔG come from measurements of double longitudinal asymmetries, A_{LL}, of various particle production cross sections. We will present the recent A_{LL} results at central ($|\eta| < 0.35$) and forward ($3.1 < |\eta| < 3.9$) rapidities along with comparisons to various models of the gluon polarization. A summary of the current issues limiting the precision of these measurements will follow. Finally, we will discuss the possibilities in the near to mid-term future of the PHENIX ΔG program, specifically, constraining ΔG at low-x.

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