

Abstract Submitted
for the DNP08 Meeting of
The American Physical Society

Future Measurements to Constrain $\Delta g(x)$ at STAR JAMES SOWINSKI, Indiana University, STAR COLLABORATION — Understanding how the spin of the proton is assembled from the spin and orbital motion of its partons has been a long term quest of the community. It is well known that the spin of the quarks contribute only about 1/3rd of the proton's spin. RHIC provides the opportunity to look directly at the distribution of gluon spins in the proton via hard partonic processes in high energy polarized pp collisions. Recent STAR measurements,¹ along with others, have demonstrated that the gluons also do not make large contributions above a partonic momentum fraction x of ~ 0.02 . However a better understanding of the x dependence of the gluon contribution, $\Delta g(x)$, and its extension to lower x values, all at higher precision, are required to determine the integral contribution ΔG . Additional measurements are planned to utilize the large acceptance of STAR along with detection of di-jet and photon-jet correlations to gain sensitivity to the x dependence. Recent additions in calorimetry allow extension of the measurements down to near 10^{-3} in x . Improvements of beam luminosity and polarization as well as runs at $\sqrt{s}=200$ and 500 GeV/ c^2 are expected. The planned measurements will be described and projections of their implications for our understanding of the gluon's contribution to the proton spin will be presented.

¹B. I. Abelev *et al.* (STAR), Phys. Rev. Lett. **100** (2008) 232003.

James Sowinski
Indiana University

Date submitted: 01 Jul 2008

Electronic form version 1.4