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Double Longitudinal Spin Asymmetry Measurements of Inclusive π^0 and η Production at PHENIX in 200 GeV Polarized p+p Collisions

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A major emphasis of the RHIC spin program at BNL is to understand the gluon spin contribution, ΔG , to the spin of the proton. The PHENIX experiment at RHIC probes ΔG , utilizing its highly segmented calorimeter, by measuring the double longitudinal spin asymmetry, A_{LL} , in the production of inclusive channels like π^0 and η . π^0 data from runs 2005 and 2006 were included in a recent NLO global analysis [1], DSSV, and set substantial new constraints on the polarized gluon distribution in the proton over the kinematic range $0.05 < x < 0.2$. With improved luminosity and polarization, the figure of merit for the 2009 data set was a factor of 1.5 better than the previous runs combined. We present the 2009 results for π^0 and η A_{LL} , along with a discussion of the results from inclusion of these data in a recent update of the DSSV global analysis.

1: D. de Florian, R. Sassot, M. Stratmann, W. Vogelsang (DSSV), Phys.Rev.Lett. 101, 072001 (2008).

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