

Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

Longitudinal Double Spin Asymmetry and Cross Section for Direct Photon Production at Mid-rapidity in Polarized pp Collisions at $\sqrt{s} = 200$ GeV ROBERT BENNETT, State University of New York at Stony Brook, PHENIX COLLABORATION — Inclusive direct photon production in $\sqrt{s} = 200$ GeV pp collisions at RHIC, is one of the important channels PHENIX will employ to determine the polarized gluon distribution. To establish the usability of this process, we first present the comparison of its total cross section measured using our data, recorded in 2003 (Run-3) and 2005 (Run-5), with the perturbative QCD calculations at next-to-leading order. The extraction of the cross section relies on two techniques: First purifying our sample by considering only isolated photons as direct photon candidates and second by a statistical subtraction of weighted spectra of known sources of indirect photons from the total photon event sample. We then proceed to evaluate the double helicity spin asymmetries from these data sets, and to extract the polarized gluon distribution, ΔG , using the known polarized quark distribution functions obtained from deep inelastic scattering. Final results from Run-3, based on luminosity of 240 nb^{-1} and polarization of 27%, and the status of Run-5 analysis, 2.7 pb^{-1} and polarization 45%, will be presented in this talk.

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Date submitted: 06 Jul 2006

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