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Longitudinal Double Spin Asymmetry and Cross Section for Direct Photon Production at Mid-rapidity in Polarized $\sqrt{s} = 200$ GeV pp Collisions at PHENIX ROBERT BENNETT, State University of New York at Stony Brook, PHENIX COLLABORATION — Production of direct photons in collisions at RHIC is one of the important channels PHENIX will employ to determine the polarized gluon distribution. To establish the theoretical understanding of this process, we first present the comparison of the direct photon unpolarized cross section measured during $\sqrt{s} = 200$ GeV collisions, 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 decay photons from the total photon event sample. We then proceed to evaluate the double helicity spin asymmetries, A_{LL} , from these data sets and compare with theoretical models. Since the direct photon A_{LL} is linear in ΔG , it is sensitive to both the sign and magnitude of ΔG and it will eventually be able to serve as a complementary measurement to the π^0 A_{LL} analysis. A status of the analysis of data obtained in 2005, based on a luminosity of 2.7 pb^{-1} and polarization 50%, and 2006 with 7.5 pb^{-1} luminosity and 60% polarization will be presented.

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