

Measurement of Direct Photon Cross Section and Double Helicity Asymmetry at $\sqrt{s}=510$ GeV in pp Collisions at PHENIX

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Understanding the gluon spin contribution to the proton spin is among the primary motivations of the spin program at the Relativistic Heavy Ion Collider (RHIC). Double helicity asymmetry ALL of direct photon production in pp collisions at RHIC is sensitive to the gluon helicity in the polarized proton. Direct photons are dominantly produced by the quark-gluon Compton process at RHIC energies, and utilizing an isolation criteria can reduce the fragmentation contributions and photons from hadronic decays. The asymmetry measurement with isolation criteria provides clean access to the polarization of the gluon. I will present the cross section and double helicity asymmetry measurements of direct photon production in longitudinally polarized proton collisions at $\sqrt{s} = 510$ GeV at midrapidity ($|\eta| < 0.25$). These data are expected to provide additional constraints on the gluon helicity distribution in the gluon momentum fraction range $0.02 < x < 0.08$.

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Via Zoom