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Prompt Photon Longitudinal Double Spin Asymmetry in Polarized Proton-Proton Collisions at 200 GeV at STAR MICHAEL BETANCOURT, Massachusetts Institute of Technology, THE STAR COLLABORATION — Over the past decade experiments at RHIC have significantly constrained the polarized gluon distribution function, $\Delta g(x, Q^2)$, with asymmetry measurements of various hadronic final states. While powerful, these hadronic measurements are limited by systematic uncertainties from hadronization and their sensitivity to the gluon polarization is diluted by contributions from the quark polarization. Prompt photon final states admit cleaner and more direct probes of the gluon polarization, limited by the decreased statistics from a smaller cross section and the ability to discriminate the signal from the overwhelming hadronic backgrounds. Mitigating these drawbacks requires the introduction of sophisticated data analysis techniques, efficiently utilizing as much information as possible from the large acceptance electromagnetic calorimetry and tracking provided by the STAR detector and taking full advantage of the collected data. I will present the status of a mid-rapidity prompt photon cross section and longitudinal double spin asymmetry, A_{LL} , analyses using $\sim 14\text{pb}^{-1}$ of integrated luminosity taken during the 2009 200 GeV running period, using beams averaging 59% longitudinal polarization.

Michael Betancourt
Massachusetts Institute of Technology

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