Contribution ID: **47** Type: **Oral**

Spin asymmetries of eta mesons in polarized proton collisions at PHENIX

For the last two decades, the PHENIX collaboration at Brookhaven National Laboratory has explored nuclear spin physics by leveraging the Relativistic Heavy Ion Collider's unique ability to collide transversely or longitudinally polarized protons. Eta meson production is a particularly practical channel at PHENIX as their detection is possible through diphoton decays in both the central and forward rapidity electromagnetic calorimeters, allowing for a broad reach in both transverse momentum and Feynman-x. In this talk, I will present a recent PHENIX measurement of the transverse single spin asymmetry of eta mesons in the forward rapidity region. This observable is directly sensitive to the twist-3 quark-gluon correlators in both the initial and final state. A comparison between the measurement and a theoretical prediction of the initial-state contribution to the asymmetry suggests that the final state plays a vital role in the generation of the large observed asymmetry. I will also present the status of a measurement of the longitudinal double spin asymmetry from our high luminosity 510 GeV data set. This observable probes the contribution of the gluon polarization to the proton's spin, providing a complementary final state to the earlier PHENIX neutral pion measurement which, for the first time, provided clear evidence of a nonzero gluon polarization.

Primary author: LOOMIS, Devon

Presenter: LOOMIS, Devon

Session Classification: Parallel

Track Classification: Three-dimensional structure of the nucleon: transverse momentum dependent parton distributions