

Investigating π^0 and η Production from STAR 2013 Endcap Calorimeter Data

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The Solenoidal Tracker at RHIC (STAR) experiment, located at Brookhaven National Laboratory, uses collisions of longitudinally polarized proton beams to study the gluon contribution to proton spin. While the proton spin is known to be $1/2 \hbar$, the contribution from gluon spin is not precisely known. Our analysis uses $\sim 250 \text{ pb}^{-1}$ of $\sqrt{s} = 510 \text{ GeV}$ collisions to determine the asymmetry of spin-dependent production of neutral pions (π^0) and eta (η) mesons. This asymmetry is sensitive to the gluon contribution to the spin of the proton and collisions at $\sqrt{s} = 510 \text{ GeV}$ have enhanced sensitivity to low- x gluons compared to other STAR analyses. π^0 s and η s are produced within the STAR detector via collisions of longitudinally polarized protons provided by the Relativistic Heavy Ion Collider (RHIC). The π^0 s and η s rapidly decay into two photons, which are detected by the Endcap Electromagnetic Calorimeter stationed at a pseudorapidity range of $1.1 < \eta < 2.0$. An invariant mass spectrum is constructed from the photon pairs. From this, the total number of π^0 s and η s can be determined. Various quality assurance checks are performed to assure the quality of the data being analyzed. The current status of this analysis, focusing on the 2013 dataset, will be presented.