

Understanding the Gluon's Contribution to the Spin of the Proton using a π^0 A_{LL} Measurement with the STAR Experiment at RHIC

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The origin of the proton's intrinsic spin has remained a puzzle for 30 years. The STAR experiment at Brookhaven National Laboratory's Relativistic Heavy Ion Collider (RHIC) has played a major role in showing that the spins of gluons with at least a moderate fraction (x) of the proton's momentum play a role at least as important as the spins of quarks. But, a significant fraction of the proton's spin remains unaccounted for. So, a major goal in nuclear physics is to constrain the gluon polarization distribution $\Delta g(x)$ at low x and thus understand the spin contribution from low- x gluons. At STAR, strategies toward this end include analyzing larger datasets, using higher center-of-mass energy proton collisions, and forward detectors. Building on a published result from a 2006 dataset, our measurement of the inclusive π^0 A_{LL} with the intermediate pseudorapidity Endcap ElectroMagnetic Calorimeter (EEMC, $1.09 < \eta < 2.00$) in a large dataset (82 pb^{-1} collected by STAR in 2012) utilizes these strategies and is complementary to other measurements at STAR. The status of the measurement will be presented including recent efforts at a data-driven approach.