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Determining π^0 A_{LL} from STAR 2012 Endcap Calorimeter Data
CLAIRE KOVARIK, ANAND AGRAWAL, MICHAEL BUKOWSKI, JOSEPH (JD) SNAIDAUF, WILLIAM BAKKE, Valparaiso University, STAR COLLABORATION — The Solenoidal Tracker at RHIC (STAR) located at Brookhaven National Laboratory uses longitudinally polarized proton-proton collisions to study the gluon contribution to the spin of the proton. One such method, using data from the 2012 longitudinally polarized proton-proton collisions ($\sqrt{s} = 510$ GeV), studies the production of neutral pions (π^0) from these collisions. The asymmetry of the spin-dependent neutral pion production, A_{LL} , can be determined by analyzing the photons produced from π^0 decays, as detected in the Endcap Electromagnetic Calorimeter (EEMC). The EEMC, positioned in an intermediate pseudorapidity range of $1 < \eta < 2$, is able to measure the energy and position of an incoming photons electromagnetic shower. From these measurements the two-photon invariant mass spectrum can be reconstructed. These spectra are then fitted using a skewed Gaussian plus a background function to determine the total number of π^0 s. The π^0 asymmetry is calculated from the number of π^0 s produced in collisions of protons with different spin alignments. The status of the analysis of the 2012 data set to measure the π^0 A_{LL} will be presented.

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