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Determining π^0 A_{LL} from STAR 2012 Endcap Calorimeter Data
CLAIRE KOVARIK, Valparaiso University, STAR COLLABORATION — The Solenoidal Tracker at RHIC (STAR) located at Brookhaven National Laboratory in New York uses longitudinally polarized proton-proton collisions to determine the gluon contribution to the spin of the proton. One analysis of the 2012 data set, at a proton-proton center of mass energy of 510 GeV, studies the production of neutral pions (π^0) which immediately ($\sim 10^{-16}$s) decay into two photons. The neutral pion asymmetry, A_{LL}, can be determined through data collected by 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 each photons electromagnetic shower. By using this information as well as the angle between the photons, the two-photon invariant mass can be reconstructed. The invariant mass spectra are fitted using a skewed Gaussian plus a background function to determine the total number of π^0s present. The π^0 asymmetry is calculated from the number of π^0s in collisions with different polarization directions of the colliding proton beams. The status of the measurement of A_{LL} of the π^0s as a function of the transverse momentum, p_T , of the π^0 will be presented.

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