

## Neutral Pion Background Analysis at STAR

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The STAR detector at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory takes measurements of polarized proton collisions which can then be used to extract cross sections and spin asymmetries. The Endcap Electromagnetic Calorimeter (EEMC) in STAR allows measurements of electromagnetic particles in the forward direction,  $1 < \eta < 2$ . The EEMC will be used to determine the neutral pion ( $\pi^0$ ) cross section and the double longitudinal spin asymmetry (ALL) which gives us information about the gluon contribution to the proton's spin. The  $\pi^0$  cross section is an important supporting measurement to verify our signal reconstruction and the background characterization for the  $\pi^0$  asymmetry. In order to measure the  $\pi^0$  cross section and asymmetry, the backgrounds must be well understood (such as those from photon conversions and reconstruction errors where one photon reconstructs as two clusters). Efforts toward the  $\pi^0$  cross section and asymmetry measurements and, specifically, those to understand  $\pi^0$  backgrounds are discussed.

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Adam Clark is a sophomore physics and mathematics double major at Valparaiso University. Adam, originally from New Lenox, Illinois, was selected for a summer internship position at Valpo to work on this project. His future goals include attending graduate school to pursue a Ph.D. in nuclear physics.

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