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# Neutral Pion Background Analysis at STAR

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## 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 cross section and spin observables of polarized proton collisions. The Endcap Electromagnetic Calorimeter (EEMC) allows measurements of electromagnetic particles in the forward direction,  $1 < \eta < 2$ . The EEMC detector will be used to measure the neutral pion ( $\pi^0$ ) double longitudinal spin asymmetry which gives us information about the gluon contribution to the proton's spin. The  $\pi^0$  cross section is an important measurement to verify our signal reconstruction and the background characterization. In order to measure the  $\pi^0$  cross section and asymmetry, the backgrounds must be identified (such as those from photon conversions and reconstruction errors where one photon reconstructs as two clusters). This project describes efforts toward measuring the  $\pi^0$  cross section and asymmetry, specifically efforts to understand  $\pi^0$  background using Monte Carlo computer simulation events and collision data.

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