

Photon and neutral pion separation in the PHENIX MPC-EX detector

The MPC-EX Si-W preshower sits in front of a PbWO₄ electromagnetic calorimeter, and consists of eight layers of thin tungsten plates and Si sensors. It covers the forward pseudorapidity range of $3.1 < \eta < 3.8$ and enabled the study of low- x partons in the gold nucleus through prompt photon production in p+A collisions. Each silicon sensor is divided into mini-pad sensors (2mm x 16mm) to provide detailed shape and evolution of EM showers. The MPC-EX is designed to reconstruct and identify neutral pions up to ~ 80 -100 GeV. Two photons decayed from a high momentum neutral pion can not be easily separated from a single photon in the preshower detector. By examining topological shapes of showers in the MPCEX, we can distinguish between merged double photons from a neutral pion and a single prompt photon based on a multivariate probability analysis. In this poster we will describe the shower properties which enable separation of prompt photons and π^0 's with high purity and efficiency. The performance of this topological separation will be presented.

Preferred Track

Jets and High p_T Hadrons

Collaboration

PHENIX

Primary author: DO, Jaehyeon

Presenter: DO, Jaehyeon

Session Classification: Poster Session