

Abstract Submitted  
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**$\pi^0$  Reconstruction using the Muon Piston Calorimeter Extension<sup>1</sup>**

DHRUV DIXIT, Stony Brook University, PHENIX COLLABORATION — The Muon-Piston Calorimeter Extension (MPC-EX) is a new detector in the PHENIX experiment at the Relativistic Heavy Ion Collider that was installed for the recent Run 15 of the experiment. In polarized p+p and polarized p+A collisions, an important measurement is the yield and momentum distribution of direct photons. Unaffected by the strong force, direct photons traverse the dense medium in the collision zone mostly unchanged, thereby providing information about the initial stages of the collision. However, there is a huge background of photons from other sources, primarily  $\pi^0$  which decay into two photons. The opening angle between the decay photons becomes smaller with higher energies of the original  $\pi^0$ . For energies greater than  $\sim 20$  GeV, the Muon Piston Calorimeter (MPC) cannot distinguish the two decay photons from a single photon, as their showers merge. The MPC-EX, an 8-layer tungsten and silicon sensor sandwich in front of the MPC, can measure and image the shower development, and help distinguish between direct photons and  $\pi^0$  decay photons up to higher energies than the MPC alone. We will describe the MPC-EX detector and its readout, and present the calibration procedures applied to the data in order to obtain the  $\pi^0$  spectrum.

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