

Abstract Submitted
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Cosmic Ray Study with the Nose Cone Calorimeter¹ THOMAS LANGIN, Amherst College, FOR THE PHENIX COLLABORATION — The Nose Cone Calorimeter (NCC) is a proposed upgrade detector for the PHENIX experiment at Brookhaven National Lab. The NCC will be useful for a variety of measurements in polarized p+p, d+A, and A+A collisions at the Relativistic Heavy Ion Collider (RHIC). The NCC is a tungsten-silicon sampling calorimeter, made up of 3 mm tungsten plates sandwiched by $1.5 \times 1.5 \text{ cm}^2$ silicon pads. The NCC would add a new capability to measure the χ_C meson and electrons from W-boson decays in PHENIX, as well as adding acceptance for the π^0 and γ -jet and many other measurements. Since it uses tungsten plates which have a very small Moliere radius of 0.9 cm, the NCC is capable of distinguishing photons down to very small separations, which is essential for the high densities in the heavy ion collisions and for decay photons from very high energy π^0 's. The performance of the most recent NCC prototype was tested using cosmic rays, which deposit close to the lowest energies the NCC needs to measure. We find that the dynamic range of the NCC is within design specifications. Additionally, different methods to reconstruct the energy from the measured signal pulses were studied which will help in optimizing the pulse shaping for the next prototype.

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