

Abstract Submitted
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Commissioning the Neutral Meson Spectrometer at the High Intensity Gamma-Ray Source (HIGS) for Photo-Pion Experiments.¹ DANE GRASSE, St. Norbert College, MOHAMMAD AHMED, TUNL/Duke University, RICHARD PRIOR, TUNL & North Georgia College and State University, HENRY WELLER, TUNL/Duke University — An experimental program to study pion-nucleon interactions at the upgraded High Intensity Gamma-ray Source (HIGS) at the Duke Free Electron Laser Lab is being developed. The pions are produced via the reactions, $\gamma+p \rightarrow \pi^0+p$ and $\gamma+p \rightarrow \pi^++n$, using polarized gamma rays. The Neutral Meson Spectrometer (NMS) and the Blowfish neutron detector array will be used to study the pion kinematics. This work reports on the calibration and testing of the NMS. The 120 CsI crystals in the NMS were systematically gain calibrated using cosmic rays. The efficiency of a layer of scintillating veto detectors in front of the CsI array was analyzed by coincidence timing techniques. To test the system, the angular distribution of cosmic ray flux was measured. A Monte Carlo simulation was also performed for the $\gamma+p \rightarrow \pi^++n$ reaction to study the feasibility of π^+ detection by the NMS.

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