

Abstract Submitted  
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**Gain Calibrations for the BUNI Large-Volume NaI(Tl) Detector at MAX-lab**<sup>1</sup> OLIVIA CAMPBELL, University of Massachusetts Dartmouth, MAX-TAGG COLLABORATION — Quantum Chromodynamics (QCD) provides a framework for understanding the properties of the nucleon. Predictions from QCD-based theories combined with experimental results can provide important tests of these theories. A measurement of  $\gamma n \rightarrow \pi^- p$  close to threshold was performed in 2011 using the tagged photon facility at MAX-lab in Lund, Sweden. Using a LD<sub>2</sub> target, the  $\pi^-$  had insufficient energy to escape the target to be detected directly but were captured in the target producing a nominal 128-MeV gamma-ray through the  $\pi^- d \rightarrow nn\gamma$  channel. These high-energy gamma-rays were detected in three large-volume NaI(Tl) detectors located around the target. The NaI(Tl) detectors consist of a core surrounded by a segmented annulus. The core energy calibration was performed by placing each detector directly in the tagged photon beam which has a known energy and was monitored using cosmic-ray measurements throughout the experiment. During the data acquisition period, the gain of the annulus segments were measured daily using a Th-C gamma-ray source. These calibrations ensured that changes in the detector gains were accurately monitored and corrected for during the analysis of the data. Results from the gain calibrations will be presented.

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