

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 — One of the most critical questions in nuclear physics today is how to describe the properties of the nucleon in terms of the framework provided by Quantum Chromodynamics. A number of different approaches to solving the QCD calculations at low energies exist. Comparing the results from high quality measurements with the predictions from various quark-based theories provides a way to test the theories. Pion photoproduction near threshold is one fundamental nuclear reaction where both theory and experiment can provide accurate answers. A measurement of  $\gamma n \rightarrow p\pi^-$  is currently being performed using the photon tagging facility located at MAX-lab in Lund, Sweden. Since a LD<sub>2</sub> target was used, the  $\pi^-$  cannot escape to be detected directly but are instead captured in the target and produce a nominal 128 MeV gamma-ray. These high-energy gamma-rays were detected in three large-volume NaI(Tl) detectors. The detectors have a core surrounded by a segmented annulus. During the data acquisition period, daily calibration runs were made using a Th-C  $\gamma$ -ray source to measure the gain of the annulus segments. These calibrations ensured that changes in the detector gains were accurately monitored and corrected for during the analysis of the data.

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