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Gain Calibrations for Scintillation Counters in Pion Photoproduction Measurements at MAX-lab[1] KHAYLA ENGLAND, University of Massachusetts Dartmouth, FOR THE MAX-TAGG COLLABORATION — In nuclear science, researchers strive to describe the properties of nucleons in terms of the underlying quark structure. In order to do this, comparison of experimental measurements with theoretical calculations are made for those reactions where both theory and experiment can provide accurate answers. One such reaction is pion photoproduction near the threshold energy. This is a fundamental nuclear reaction in which a photon interacts with a proton or neutron to produce a pion. Measurements of the $\gamma p \to \pi^+ n$ reaction are being performed using the photon tagging facility located at MAX-lab in Lund, Sweden. The outgoing pions were detected in scintillation counters. To ensure the accuracy of the pion energy measurements, gain calibrations of the scintillation counters were made during the data acquisition period. The energy spectrum produced by γ-rays emitted from a Th-C source was recorded. These data were analyzed to determine the position of the Compton edge, which has a known energy. Daily calibrations enabled changes in the scintillation counter gains to be monitored and corrected for in the data analysis. Additionally, these data also provided an estimate of uncertainties in the pion energy determination.

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