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Proton Identification using Plastic Scintillator Counters at MAX-lab JASON LEMRISE, University of Massachusetts Dartmouth, MAX-TAGG COLLABORATION — One of the most important questions in nuclear science is describing the properties of the nucleon in terms of the framework provided by QCD. The QCD calculations in the low-energy nuclear region are impossible to do using standard techniques, making it necessary to use alternate approaches to solve these calculations. Two processes for which these techniques are both valid and useful are pion photoproduction and nuclear Compton scattering below the Δ resonance. The newly upgraded tagging facility at MAX-lab in Lund, Sweden is capable of tagging photons at energies up to 200 MeV, and is ideally suited to make measurements of these fundamental processes in the low-energy region. High-quality measurements are needed to test the predictions of the various quark-based models. To achieve the required precision, it is necessary to understand the detectors used for the measurements. For the pion photoproduction experiments, it is necessary to understand both the detection efficiency for different particle types and the energy determination from the plastic scintillator counters. Since the $^{12}C(\gamma, p)$ cross-section is well known, its determination using the proton yield from the counters and the photon flux from the tagger serves as a good test of the systematics of the new MAX-lab facility. An overview of the particle identification and energy determination for protons from $^{12}\mathrm{C}(\gamma, p)$ will be shown.

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