

Abstract Submitted  
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**An Energy Calibration of the CATS large NaI Detector at MAX-lab** ERIN O'BRIEN, CODIE LEWIS, James Madison University, DAVID ELOFSON, Bridgewater State University, KELSEY BUGGELLI, NEVIN MILLER, KYLE O'CONNOR, GRANT O'RIELLY, University of Massachusetts Dartmouth, MAXTAGG COLLABORATION — An energy calibration for the large volume single crystal NaI detector CATS has been completed. CATS is currently located at the MAX-lab Tagged Photon Facility in Lund, Sweden and is being used for measurements of near threshold negative pion photoproduction and high-energy nuclear Compton scattering. These experiments, particularly the later, require accurate energy calibrations. To perform these calibrations the detector was placed directly in the tagged photon beam, which provides gamma rays with known energies from 145-165 MeV. The detector core is viewed by seven PMTs, and is surrounded by six segments, each of which is individually instrumented. The final output from CATS is an average of the core PMTs plus the segments PMTs to account for any energy losses from the core region. Consequently, gain matching of the core and segment PMTs as well as pedestal corrections for each PMT are required. The energy calibrations were done with two different triggers; one being from the photon tagger and the other from the detector itself; results from both will be compared. The final calibration showed a highly linear fit between the measured CATS output and the photon energies provided by the tagger with an energy resolution of approximately 2.3 MeV.

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