

Abstract Submitted  
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**Near-Threshold Measurement of  $\gamma n \rightarrow p\pi^-$  at MAX-lab** GRANT O'RIELLY, University of Massachusetts Dartmouth, MAX-TAGG COLLABORATION — One of the important questions in nuclear science is to describe the properties of the nucleon using the framework provided by QCD. Pion photoproduction is one process where both experiment and theory can produce valid and useful results. Consequently, high-quality measurements of this fundamental process can be used to test the predictions of approaches such as chiral effective-field theories and dispersion relations, as well as provide additional data for the SAID and MAID partial-wave analyses. The Photon Tagging Facility at MAX-lab in Lund, Sweden is uniquely suited to perform measurements of pion photoproduction at energies between threshold and the  $\Delta$ -resonance. The MAX-TAGG collaboration is undertaking a comprehensive program to investigate the  $\gamma p \rightarrow n\pi^+$ ,  $\gamma n \rightarrow p\pi^-$  and, eventually,  $\gamma n \rightarrow n\pi^0$  channels to complement the existing large data set on the  $\gamma p \rightarrow p\pi^0$  channel. The first measurement of the  $\gamma n \rightarrow p\pi^-$  channel has just been completed. Using a  $\text{LD}_2$  target and the reaction  $\gamma d \rightarrow pp\pi^-$ , the  $\pi^-$  is captured on another deuteron creating a high-energy  $\gamma$ -ray. These  $\gamma$ -rays were detected using three very large NaI spectrometers. These new near-threshold data will be used to better evaluate the threshold  $E_{0+}(\pi^-p)$  amplitude, which can be compared with the predictions from Chiral Perturbation Theory and other quark-based theories. Initial results from this measurement will be presented.

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