

Abstract Submitted  
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**The Near-Threshold Pion Photoproduction Program 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 in terms of the framework provided by QCD. In the low-energy nuclear region the QCD calculations are impossible to do using standard techniques, so it is necessary to use alternative approaches to solve them. One process where these other techniques are both valid and useful is pion photoproduction near threshold. Since this process involves a rearrangement of the quarks in the nucleon it is directly accessing the underlying quark structure. Measurements of this fundamental process can be used to test the predictions from chiral effective-field theories, dispersion theory approaches and other quark-based models of the nucleon. The new 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. A comprehensive program to investigate pion photoproduction is currently underway at MAX-lab. These measurements will provide important new information on the  $p$ -wave contributions to charged pion photoproduction, resolve questions regarding the threshold  $E_{0^+}(\pi^-n)$  amplitude, and will be the first measurement of neutral pion production from the neutron. A brief overview of the pion program at MAX-lab, together with preliminary results from measurements already performed will be presented.

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