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Coherent π^+ Photoproduction on ^3He RAKHSHA NASSERIPOUR, BARRY BERMAN, The George Washington University, CLAS COLLABORATION — Comparing an elementary meson-production process on a free nucleon with the same process inside a nucleus has been an interesting problem in nuclear physics. Studying these processes are useful in developing our understanding of nuclear structure and the long-range part of the nucleon-nucleon interaction described by the one-pion-exchange model. In the present analysis, we have measured the differential cross section for the $\gamma^3\text{He} \rightarrow \pi^+t$ reaction channel. Studying this channel is ideal for understanding the interaction of pions with nuclei and for searching for possible effects mediated by nucleon resonances in nuclear matter. The ^3He target contains the lightest nucleus on which one can observe coherent (elastic) π^+ photoproduction with charge exchange that also leads to a well defined final state that can be easily identified. This reaction was studied using the CEBAF Large Acceptance Spectrometer (CLAS) at Jefferson Lab. Real photons produced with the Hall-B bremsstrahlung tagging system in the energy range from 0.35 to 1.55 GeV were incident on a cryogenic liquid ^3He target. The differential cross sections for the $\gamma^3\text{He} \rightarrow \pi^+t$ reaction were measured as a function of photon-beam energy and pion-scattering angle in the center-of-mass frame. Our results will be presented and discussed.

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