

Abstract Submitted  
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**First Study of Three-body Photo-disintegration of  ${}^3\text{He}$   ${}^3\text{He}(\vec{\gamma}, n)pp$  with Double Polarizations**<sup>1</sup> W. CHEN, X. ZONG, M.W. AHMED, H. GAO, S. HENSHAW, B.A. PERDUE, X. QIAN, P. SEO, S. STAVE, H.R. WELLER, Q. YE, W. ZHENG, X. ZHU, M. BUSCH, J. LI, S.F. MIKHAILOV, C. SUN, Y.K. WU, TUNL/Duke, R. LU, Institute of Modern Physics, CAS — The study of the three-nucleon system has long been of fundamental importance to nuclear physics. We report on a first study of three-body photo-disintegration of polarized  ${}^3\text{He}$  with a circularly polarized  $\gamma$ -ray beam at an incident energy of 11.4 MeV. This experiment was carried out at the High Intensity  $\gamma$ -Ray Source (HI $\gamma$ S) facility located at the Duke University Free Electron Laboratory. A high-pressure polarized  ${}^3\text{He}$  target based on spin-exchange optical pumping of hybrid alkali was used in the experiment. Both differential cross sections and asymmetries were extracted from the experiment. The results are compared to the three-body calculations using both CD Bonn and AV18 potentials and are in agreement within experimental uncertainties.

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