

Abstract Submitted  
for the DNP13 Meeting of  
The American Physical Society

**Monte Carlo simulation of a photodisintegration of  $^3H$  experiment in Geant4**<sup>1</sup> ISAAH GRAY, University of Minnesota Twin Cities — An upcoming experiment involving photodisintegration of  $^3H$  at the High Intensity Gamma-Ray Source facility at Duke University [1] has been simulated in the software package Geant4. CAD models of silicon detectors and wire chambers were imported from Autodesk Inventor using the program FastRad and the Geant4 GDML importer. Sensitive detectors were associated with the appropriate logical volumes in the exported GDML file so that changes in detector geometry will be easily manifested in the simulation. Probability distribution functions for the energy and direction of outgoing protons were generated using numerical tables from previous theory [1], and energies and directions were sampled from these distributions using a rejection sampling algorithm. The simulation will be a useful tool to optimize detector geometry, estimate background rates, and test data analysis algorithms.

[1] C.R. Howell, Differential Cross-Section Measurements of Two- and Three- body Photodisintegration of the Triton and Search for a Bound Dineutron State: A New Proposal to the High Intensity Gamma-Ray Source (HI $\gamma$ S). [Conference] HI $\gamma$ S-PAC (June 2013).

<sup>1</sup>This work was supported by the Triangle Universities Nuclear Laboratory REU program at Duke University.

Isaiah Gray  
University of Minnesota Twin Cities

Date submitted: 30 Jul 2013

Electronic form version 1.4