

Abstract Submitted  
for the DNP20 Meeting of  
The American Physical Society

**Measurement of Nuclear Isomer Gamma Emissions in Geant4**

LAUREN FISHER, ANDREA BRACAMONTE, ADAM FRITSCH, Gonzaga University, JIM BROWN, Wabash College — Nuclear isomers have a wide variety of applications, yet many properties, such as energy levels, are not well known. Energy levels are experimentally determined by detecting gamma emission from nuclear de-excitation. Through Monte Carlo simulations, this process has been simulated using various beam and target combinations in Geant4. A detector ring consisting of multiple scintillation detectors has been placed in optimal positions to specifically measure energy from gamma emissions. Using the analysis capabilities of CERN's Root, various physical phenomena have been observed. Since energy levels of neutron-rich isomers are not well identified, excitation states are of particular interest to better develop nuclear structure models.

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Date submitted: 30 Jul 2020

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