

Abstract Submitted  
for the SES13 Meeting of  
The American Physical Society

**The Simulation of Slow Pulses in PPC Detectors**<sup>1</sup> JORDAN BALDWIN, Tennessee Technological University, DAVID RADFORD, Oak Ridge National Laboratory, MARY KIDD, Tennessee Technological University — The Majorana Demonstrator project, an international collaboration among 20 universities, is attempting to determine the mass of the neutrino by using an array of P-type point contact (PPC) germanium detectors to identify neutrinoless double beta decay. This point contact configuration allows us to identify neutrinoless double-beta decay events based on pulse-shape analysis. However, the dead layer around the perimeter of the PPC germanium detector significantly slows the collection of charge deposited there and distorts the shape of the resultant pulse. We have been developing simulations to further understand the physical mechanism that produces the slow pulses, namely diffusion and recombination in the dead layer. The results from these simulations are compared to experimental data obtained from a PPC detector.

<sup>1</sup>Research at ORNL is funded by the US DOE Office of Nuclear Physics. Student research at TTU was made possible by the TTU URECA program. The authors wish to acknowledge helpful discussions with J. Collar, P. Finnerty and L. Darken.

Jordan Baldwin  
Tennessee Technological University

Date submitted: 20 Sep 2013

Electronic form version 1.4