Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Muon Simulations for LEGEND 1000 Using a GEANT4 Framework[1] CLAY BARTON, University of South Dakota, LEGEND COLLABORATION — Neutrinoless double beta decay is a proposed rare decay which, if discovered, would confirm the Majorana nature of the neutrino. The LEGEND (Large Enriched Germanium Experiment for Neutrinoless Double-beta decay) collaboration aims to develop a phased, Ge-76 based double-beta decay experimental program with discovery potential at a half-life beyond 10^{28} years, using existing resources as appropriate to expedite physics results. LEGEND 1000 will be the second phase, and is in the early stages of development. One of the major concerns is the site selection for the experiment. LEGEND 1000 must be built in a deep underground laboratory to escape the bulk of the cosmic rays. A depth requirement analysis is being performed, using the GEANT4 particle simulation toolkit to simulate cosmic ray muons in a few proposed experiment designs. This talk will discuss this ongoing simulation effort.

[1]This material is based upon work supported by the U.S. NSF, DOE-NP, NERSCC and through the LANL LDRD program, and the Oak Ridge Leadership Computing Facility; the Russian RFBR, the Canadian NSERC and CFI; the German BMBF, DFG and MPG; the Italian INFN; the Polish NCN and Foundation for Polish Science; and the Swiss SNF; the Sanford Underground Research Facility, and the Laboratori Nazionali del Gran Sasso.

Clay Barton
University of South Dakota

Date submitted: 02 Jul 2019 Electronic form version 1.4