Abstract Submitted
for the TSF15 Meeting of
The American Physical Society

Simulating Neutron Interaction with Cryogenic Dark Matter Detectors[1] ALEX JAGROWSKI, ROB AGNESE, TAREK SAAB, JONATHEN SETTLE, None, SUPER CRYOGENIC DARK MATTER SEARCH COLLABORATION — The Super Cryogenic Dark Matter Search (SuperCDMS) is one of the experiments designed to directly detect dark matter in the form of weakly-interacting massive particles, or "WIMPS". The detectors used in this experiment are very sensitive at cryogenic temperatures and are designed to measure the recoil energy imparted to a nucleus in the detector due to collisions with WIMPs. These detectors have already achieved progressive improvements in detection technology; however, it remains unclear how the detectors will register interactions with WIMPS. Here we report on the use of Geant4, a Monte-Carlo framework, to simulate the SuperCDMS setup and its interaction with low-energy neutrons, which should closely approximate the response of the detector to WIMPs. Preliminary results of this simulation indicate a close match of the simulation to already-established physics for neutrons interactions with the materials in the simulation. This matching of the simulation to actual results suggests the future usefulness of the simulation for enabling a calibration of the detector with low-energy neutrons.

[1]This work was supported by NSF DMR-1461019.

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None

Date submitted: 02 Oct 2015 Electronic form version 1.4