Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Simulations of the UCN velocity distribution at Los Alamos National Lab[1] MARIE BLATNIK, Caltech, SNS NEDM COLLABORATION — Ultracold neutron (UCN) velocity distributions are particularly important to precision UCN experiments due to the velocity dependence in material bottle interactions, and other energy-sensitive effects such as magnetic interactions and bounce height. While the UCNs for the Spallation Neutron Source's neutron Electric Dipole Moment experiment at Oak Ridge National Lab will be created in situ (cold neutrons downscattered to UCN in the measurement cell), components such as the measurement cell are characterized at the UCN beamline at Los Alamos National Lab. A velocity spectrometer is being designed and created to measure the velocity distribution in this UCN beamline using the bounce height distribution of the neutrons based on ongoing development of this detector technology by members of the UCNTau collaboration. Simulations of this method will show its effectiveness, considering specularity, contaminants, and UCN spectrum evolution as they bounce down the beamline to the detector.

[1]NSF Grant 1812340

Marie Blatnik
Caltech

Date submitted: 01 Jul 2019 Electronic form version 1.4