

Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Status of the nEDM Experiment at PSI MATTHEW MUSGRAVE,
University of Sussex — The search for the neutron electric dipole moment (nEDM) is one of the most sensitive probes for new sources of T and CP violation, which could provide insight into important unanswered questions in the Standard Model including the baryon asymmetry of the universe and the strong CP problem. The current limit of the nEDM is $d_n < 3.0E-26$ ecm (90% CL) [J. M. Pendlebury et al. PRD 92 092003 (2015)]. At the Paul Scherrer Institut (PSI) in Switzerland an international collaboration of 14 institutions intends to either discover an nEDM or improve this limit using a new solid deuterium ultracold neutron (UCN) source and an upgraded version of the RAL/Sussex/ILL apparatus. The experiment is currently in operation and has implemented a data blinding algorithm for future analysis. Additional milestones include a new technique to determine the UCN energy spectra using spin-echo, measurement of the ratio of the neutron and ^{199}Hg gyromagnetic ratios to within 0.8 ppm, and improved limits on the axion phase-space by searching for an oscillating nEDM. The current status of the experiment and future plans will be discussed.

Matthew Musgrave
University of Sussex

Date submitted: 05 Jul 2016

Electronic form version 1.4