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**Magnetic Field Simulations for the n2EDM Experiment at Paul Scherrer Institute** TOM SHELTON, University of Illinois at Urbana-Champaign, CHRISTOPHER CRAWFORD, University of Kentucky, N2EDM COLLABORATION — Precision spin-precession experiments like searches for the neutron electric dipole moment (nEDM) place stringent requirements on the magnetic field. We present a global simulation of a magnetic field map in and around the six-layer magnetic shield room (MSR) of the n2EDM experiment, a large multinational endeavour to measure the nEDM with a statistical sensitivity of  $1 \times 10^{-27}$  e-cm. In addition to the precession field and spin transport coils, our simulation takes into account nearby superconducting coils and a high-performance active magnetic shielding system. We describe techniques used to characterize measurements of these coils, integrating them with background fields into the environment of the MSR. This simulation will be used to optimize spin transport of UCNs in and out of the Ramsey measurement cell, and to study the effect of external fields on the experimental sensitivity.

Tom Shelton  
University of Illinois at Urbana-Champaign

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