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# Compensation of Magnetic Fields at the TRIUMF nEDM Experiment (G)*

*Monday 11 June 2018 17:45 (15 minutes)*

The existence of a non-zero neutron electric dipole moment (nEDM) would violate parity and time-reversal symmetry. Extensions to the Standard Model predict the nEDM to be $10^{-26}$ – $10^{-28}$ e-cm. The current best upper limit set by Sussex/RAL/ILL nEDM experiment is $3.0 \times 10^{-26}$ e-cm. The nEDM experiment at TRIUMF is aiming at the $10^{-27}$ e-cm sensitivity level. We are developing the world's highest density source of UCN. The experiment requires a very stable (<˜pT) and homogeneous (<˜nT/m) magnetic field (B0) within the measurement cell. My involvement in the nEDM experiment is the development of active magnetic shielding to stabilize the external magnetic field by compensation coils. A prototype active magnetic shield has been tested at The University of Winnipeg. I will report on experimental results from this prototype and its performance compared to simulation studies. I will also discuss the greater challenges expected at TRIUMF, due to the large cyclotron field (almost an order of magnitude larger than in our lab in Winnipeg) and the changing magnetic environment from large iron structures. Simulation studies of the implementation at TRIUMF will also be reported.

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