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A Plan for a Ten-fold Improvement of the Neutron Electric Dipole Moment with the LANL UCN Source[1] CHEN-YU LIU, Indiana Univ - Bloomington, STEVE CLAYTON, SCOTT CURRIE, TAKEYASU ITO, MARK MAKELA, CHRIS MORRIS, ROBERT PATTIE, JOHN RAMSEY, ANDY SAUNDERS, ZHAOWEN TANG, Los Alamos Natl Lab, JOSH LONG, MIKE SNOW, Indiana Univ - Bloomington, BRAD PLASTER, Univ Kentucky, S.K. LAMOREAUX, Yale Univ, E SHARAPOV, JINP, Russia, LANL NEDM COLLABORATION
— The Electric Dipole Moment of the neutron is a probe for the violations in the combined Charge-conjugate and Parity-reversal symmetry. Many theories beyond the Standard Model, which aim to unify the fundamental forces and solve the problem of Baryon Asymmetry of the Universe, also predict sizable EDM just lurking around the corner for discovery. However, the low density of UCN limits the worldwide progress of current nEDM experiments; existing facilities have not been able to deliver significantly higher UCN flux. An opportunity exists in the LANL UCN facility: With an order of magnitude increase in the LANL UCN source intensity, one could realize a nEDM search at the 10^{-27}e-cm level of sensitivity soon. An upgrade to the LANL UCN facility is now underway; it will provide the UCN flux needed to meet the demand of this experiment. We will apply the Ramsey's separated oscillatory field method to measure the precession frequency of the neutron under a small, precisely controlled, static magnetic field. We will report the status and plan of the LANL nEDM experiment.

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