

Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

The ^3He injection test for the experiment on the neutron electric dipole moment search¹ XIAOFENG ZHU, Duke University, NEDM COLLABORATION — A non-zero value of the neutron electric dipole moment (nEDM) is a direct consequence of the time reversal symmetry violation. As such it offers new insight into CP violation and has the potential for discovering new physics beyond the Standard Model. A new search for nEDM aiming at an two-order-of-magnitude improvement over the current experimental limit is underway. This new experiment is based on the nuclear magnetic resonance technique. The overall experimental strategy is to form a three-component fluid of ultracold neutrons (UCN) and ^3He atoms dissolved in a bath of superfluid ^4He at a temperature around 300 mK. The goal of the injection test is to study methods of injecting the ^3He , polarized by an existing and tested atomic beam source, into the superfluid ^4He and demonstrate that this can be done with acceptable polarization losses. Cryogenic problems associated with the injection apparatus will also be studied. The test will take place at the Los Alamos National Laboratory in the fall of 2007.

¹This work is supported in part by the U.S. Department of Energy under contract number DE-FG02-03ER41231.

Xiaofeng Zhu
Duke University

Date submitted: 05 Jul 2007

Electronic form version 1.4