

Abstract Submitted  
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**Progress on Study of Electric Breakdown in Superfluid Liquid Helium for the SNS nEDM Experiment** WANCHUN WEI, Los Alamos Nat'l Lab., DOUGLAS BECK, Univ., Of Illinois, NATHANIEL BOUMAN, Valparaiso Univ., VINCE CIANCIOLO, Oak Ridge Nat'l Lab., STEVEN CLAYTON, Los Alamos Nat'l Lab. , CHRISTOPHER CRAWFORD, Univ., Of Kentucky, SCOTT CURRIE, WILLIAM GRIFFITH, TAKEYASU ITO, JOHN RAMSEY, Los Alamos Nat'l Lab., RICHARDO SCHMID, California Inst., Of Tech., GEORGE SEIDEL, Brown Univ., SHIRVEL STANISLAUS, Valparaiso Univ., ZHAOWEN TANG, Los Alamos Nat'l Lab. , DANIEL WAGNER, Univ., Of Kentucky, STEVEN WILLIAMSON, Univ., Of Illinois, WEIJUN YAO, Oak Ridge Nat'l Lab. , SNS NEDM COLLABORATION — The SNS nEDM collaboration is developing an experiment to search for the neutron's electric dipole moment (EDM) to be run at the Spallation Neutron Source (SNS) at Oak Ridge National Laboratory. As the experimental sensitivity depends linearly on the strength of applied electric field, it is of critical importance to achieve a strong and stable electric field in the storage region of ultracold neutrons (UCN) in superfluid helium. However, the phenomenon of electric breakdown in liquid helium is poorly understood, and as such a major R&D effort is under way. We have developed an apparatus to test various coating materials on electrodes of 12 cm diameter and study breakdown in liquid helium at temperatures as low as 0.4 K and pressures between saturated vapor pressure and 1 atm. Meanwhile, a small test apparatus has been used to study various aspects of breakdown phenomenon. In this talk, the present status of our effort, implication of findings on the SNS nEDM experiment and future plans will be presented.

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