

Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Investigating Electrical Breakdown in Liquid Helium NATHANIEL BOUMAN, Valparaiso Univ, SNS NEDM COLLABORATION — The SNS nEDM experiment at Oak Ridge National Laboratory aims to search for the electric dipole moment of the neutron (nEDM) at the 3×10^{-28} level. The experiment is currently in the critical component demonstration phase. The design of the experiment calls for an electric field of 75 kV/cm across the experimental cells between electrodes within a bath of liquid helium (LHe). However, the electric breakdown phenomenon in LHe is poorly understood. Experiments investigating the breakdown of LHe were carried out at Los Alamos National Laboratory using a small-scale high voltage (SSHV) test apparatus at temperatures from 1.7K to 4K. Effects of varying temperature, pressure, and electrode surface conditions on LHe breakdown were investigated. Results and their implications to the SNS nEDM experiment will be presented.

Nathaniel Bouman
Valparaiso Univ

Date submitted: 25 Jul 2016

Electronic form version 1.4