

Abstract Submitted
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Transport of polarized ^3He for the nEDM experiment at the SNS¹ THOMAS RAO, DOUGLAS BECK, JAAKKO KOIVUNIEMI, University of Illinois at Urbana Champaign, IKE SILVERA, Harvard University, STEVEN WILLIAMSON, University of Illinois at Urbana Champaign, WEIJUN YAO, Oak Ridge National Laboratory, NEDM COLLABORATION — The neutron electric dipole moment (nEDM) experiment at the ORNL SNS aims to determine the neutron's electric dipole moment to an accuracy of 5.4×10^{-28} e cm by measuring the Larmor precession of neutrons using the spin dependent reaction $n+^3\text{He} \Rightarrow p+^3\text{H}+764\text{KeV}$. In the experiment polarized ^3He is injected into a free surface of ^4He , and then brought to the measurement cell and removed once it depolarizes. The proposed transport method for the ^3He , the heat flush mechanism, must be tested. In the heat flush mechanism a thermal gradient along a long pipe, generates phonons whose collisions with ^3He , drives ^3He transport to the cold end of the pipe. Tests of the heat flush mechanism by measuring the change in ^3He concentration at the cold end of a long pipe, using a capacitive pressure sensor, are underway at Harvard University.

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Thomas Rao
University of Illinois at Urbana Champaign

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