Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Compatibility of photomultiplier tube operation with SQUIDs for a neutron EDM experiment MATTHEW LIBERSKY, Valparaiso University, NEDM COLLABORATION — An experiment at the Spallation Neutron Source at Oak Ridge National Laboratory with the goal of reducing the experimental limit on the electric dipole moment (EDM) of the neutron will measure the precession frequencies of neutrons when a strong electric field is applied parallel and anti-parallel to a weak magnetic field. A difference in these frequencies would indicate a nonzero neutron EDM. To correct for drifts of the magnetic field in the measurement volume, polarized ^{3}He will be used as a co-magnetometer. In one of the two methods built into the apparatus, superconducting quantum interference devices (SQUIDs) will be used to read out the ^{3}He magnetization. Photomultiplier tubes will be used concurrently to measure scintillation light from neutron capture by ^{3}He. However, the simultaneous noise-sensitive magnetic field measurement by the SQUIDs makes conventional PMT operation problematic due to the alternating current involved in generating the high voltages needed. Tests were carried out at Los Alamos National Laboratory to study the compatibility of simultaneous SQUID and PMT operation, using a custom battery-powered high-voltage power supply developed by Meyer and Smith (NIM A 647.1) to operate the PMT. The results of these tests will be presented.

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Date submitted: 31 Jul 2013 Electronic form version 1.4