

Abstract Submitted
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Measurement of the Temperature Dependence of the Dielectric Constant of PMMA for the nEDM Experiment at Oak Ridge National Laboratory.¹ MARCUS OCHSENDORF, Valparaiso University — The nEDM experiment at Oak Ridge National Laboratory aims to search for the electric dipole moment of the neutron at the 10^{-28} level. The experiment is currently in the research and development phase. In the experiment, ultra-cold neutrons stored inside a container made from PolyMethylMethAcrylate (PMMA) will be subjected to a strong electric field. In order to calculate the electric field within the box very precisely, the dielectric constant of PMMA must be known very well. The experiment will take place at 0.4K and it is not known if the dielectric constant of PMMA changes as a function of temperature. In order to test this, a “Poor Man’s Cryostat” was constructed. PMMA was cooled down to 77K temperature, and the dielectric constant of PMMA was measured as a function temperature. Experimental details and results of the tests will be presented.

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