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# Neutron Electric Dipole Moment: Research and Development

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## **Neutron Electric Dipole Moment: Research and Development**

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The neutron's electric dipole moment (nEDM) serves as an important test of the Standard Model of particle physics and its various alternatives. Various models of fundamental physics allow for different magnitudes for the nEDM, and recent experiments have begun to exclude some models. Valparaiso University is part of a collaboration of institutions working on an improved experiment to measure the nEDM, to be conducted at Oak Ridge National Laboratory in the next few years. The experiment will be performed at 0.4 Kelvin, and will involve the use of magnetic fields and very large electric fields. Research at Los Alamos National Laboratory this summer has focused on identifying materials with the proper electronic properties under these conditions for further study and development efforts. Some measurements and conclusions are presented.

*Information about the Author:*

Benjamin Barber is a 2012 alumnus of Valparaiso University, having graduated in the spring with a bachelor of science in physics and mathematics. He currently is set to pursue a doctoral degree in physics at the University of Chicago, starting in the fall of 2012. Previous research experiences at Valpo include another nEDM experiment at the National Institute for Standards and Technology in 2010, and two summers of work on the STAR EEMC in 2009 and 2011.

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