

The SNS neutron electric dipole moment experiment

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Experimental searches for a permanent electric dipole moment (EDM) of the neutron provide an extremely sensitive probe for CP violation beyond the standard model. A new neutron EDM measurement is under development for installation at the Oak Ridge Spallation Neutron Source. The experiment will use ultracold neutrons (UCN) produced in superfluid helium, along with He3 that will act as a neutron spin analyzer and comagnetometer. The UCN and liquid helium will be contained in an acrylic measurement cell. Neutron spin precession detection will be provided by spin direction dependent neutron capture on He3, which will produce scintillation light in the liquid helium. The UV scintillation light will be downconverted by deuterated TPB on the cell walls. The acrylic cell walls also act as light guides for PMT detectors outside of the liquid helium volume. An overview of the experiment will be given, focussing on measurement cell development and light detection issues.

Primary author: GRIFFITH, Clark (California Institute of Technology)

Presenter: GRIFFITH, Clark (California Institute of Technology)

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