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The CryoEDM Experiment at ILL

Wednesday, 13 October 2010 15:00 (30 minutes)

The CryoEDM collaboration is building an experiment to measure the electric dipole moment (EDM) of the neutron with a precision, initially, of $\sim 3 \times 10^{-27}$ e.cm, and ultimately up to an order of magnitude beyond that. The experiment relies upon superthermal production of ultracold neutrons within a volume of superfluid helium, held at a temperature of 0.5 K. The Ramsey technique of separated oscillatory fields will be used to determine the Larmor precession frequency of batches of ultracold neutrons within a highly uniform and constant magnetic field: changes in this frequency that are proportional to the strength of an electric field applied parallel or antiparallel to the magnetic field are indicative of an EDM. This presentation will discuss the progress to date and the future development plans of this experiment, including some details of the potential systematic uncertainties.

This presentation is given by the author on behalf of the CryoEDM collaboration.

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