

Abstract Submitted
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Measuring the electron electric dipole moment using a cold molecular beam ELIZABETH PETRIK, Harvard University, WESLEY CAMPBELL, University of Maryland, YULIA GUREVICH, PAUL HESS, NICHOLAS HUTZLER, Harvard University, EMIL KIRILOV, Yale University, MAXWELL PARSONS, BENJAMIN SPAUN, Harvard University, AMAR VUTHA, DAVID DEMILLE, Yale University, GERALD GABRIELSE, JOHN DOYLE, Harvard University, ADVANCED COLD MOLECULE EDM (ACME) COLLABORATION — A test of theories beyond the standard model is in progress using a cold beam of thorium monoxide (ThO) to improve the experimental limit on the electric dipole moment of the electron (eEDM). Improvements are expected on the current experimental eEDM limit because of the large internal electric field of polarized ThO, the long lifetime and magnetic field insensitivity of the metastable H state used in the experiment, the powerful systematic error canceling provided by the H state Ω -doublet structure, and the high-flux, well collimated molecular beam provided by a buffer gas-cooled beam source. We detail the progress of this experiment, including the development of techniques to produce the ThO emission source, cool and collimate the molecular beam, and create stable electric and magnetic field configurations.

Elizabeth Petrik
Harvard University

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