

Abstract Submitted
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A precision measurement of the electrons electric dipole moment using trapped molecular ions WILLIAM B. CAIRNCROSS, DANIEL N. GRESH, MATT GRAU, KEVIN C. COSSEL, YIQI NI, TANYA ROUSSY, YUVAL SHAGAM, JUN YE, ERIC A. CORNELL, JILA, NIST and University of Colorado and Department of Physics, University of Colorado — A search for a permanent electric dipole moment of the electron (eEDM) constitutes an essentially background-free test for physics beyond the Standard Model. While some extensions to the Standard Model suggest an eEDM at presently achievable levels of sensitivity, none has yet been detected [1]. Independent measurements using different experimental techniques provide essential confirmation of this result and potential for sensitivity improvements. We will report on the first precision measurement of the eEDM using trapped molecular ions, demonstrating a uniquely long coherence time that provides excellent rejection of systematic errors and high eEDM sensitivity.

[1] J. Baron, W. C. Campbell, D. DeMille, J. M. Doyle, G. Gabrielse, Y. V. Gurevich, P. W. Hess, N. R. Hutzler, E. Kirilov, I. Kozyryev, B. R. O’Leary, C. D. Panda, M. F. Parsons, B. Spaun, A. C. Vutha, and A. D. West, *Science* **343**, 269 (2014)

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