Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Progress of the JILA electron EDM experiment DANIEL GRESH, WILLIAM CAIRNCROSS, KEVIN COSSEL, MATT GRAU, KIA BOON NG, YAN ZHOU, YIQI NI, JUN YE, ERIC CORNELL, JILA, NIST and University of Colorado, and Department of Physics, University of Colorado — A nonzero permanent electric dipole moment of the electron (eEDM) would have important implications for extensions to the Standard Model of particle physics. The JILA eEDM experiment uses trapped HfF^+ ions to attain large effective electric fields and long measurement coherence times. In our ion trap we prepare HfF^+ in a low-lying, metastable $^3\Delta_1$ state and perform Ramsey spectroscopy between two Zeeman sub-levels in the presence of rotating electric and magnetic bias fields with free-evolution times of $>$ 500 ms. Using this technique, we have thoroughly investigated sources of systematic error and have recently suppressed several of our leading systematics to the 10^{-30} e·cm level. Here, we present the results from our systematic error investigations and from a high-precision eEDM-sensitive 100-hour data run.

Daniel Gresh
JILA, NIST and University of Colorado, and Department of Physics, University of Colorado

Date submitted: 29 Jan 2016 Electronic form version 1.4