Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Towards an order of magnitude improved sensitivity to the electron's EDM with trapped HfF^{+1} WILLIAM B. CAIRNCROSS, TANYA S. ROUSSY, DANIEL N. GRESH, KIA BOON NG, JEFFREY MEYERS, KEVIN BOYCE, YAN ZHOU, YUVAL SHAGAM, JUN YE, ERIC A. CORNELL, JILA, NIST and University of Colorado, and Department of Physics, University of Colorado — In 2017, our group completed the first measurement of the electron's electric dipole moment (eEDM, d_e) using trapped molecular ions, yielding a 90% confidence upper bound of $|d_e|<1.3 \times 10^{-28}$ e cm. Our measurement [1], which was statistics-limited, provided confirmation of the upper bound on $|d_e|$set by the ACME Collaboration [2], and demonstrated coherence times over 1 second using trapped molecules – a valuable feature for future eEDM searches. Here, we will present our progress towards an order of magnitude higher statistical sensitivity via increased sample size and coherence time, cooling of the rotational degree of freedom, and imaging of photodissociation products. [1] W. B. Cairncross *et al.*, Phys. Rev. Lett. **119**, 153001 (2017) [2] The ACME Collaboration, Science **343**, 269 (2014)

[1]This work was supported by NSF Award 1734006.

William Cairncross
JILA, NIST and Univ. of Colorado, University of Colorado

Date submitted: 07 Feb 2018 Electronic form version 1.4