

Abstract Submitted
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Progress Towards a Measurement of the Electric Dipole Moment of the Electron¹ SARAH BICKMAN, PAUL HAMILTON, YONG JIANG, Yale University, DAVID KAWALL, University of Massachusetts, RICHARD PAOLINO, US Coast Guard Academy, DAVID DEMILLE, Yale University — We have proposed a measurement of the electric dipole moment of the electron (d_e) using the metastable a(1) ($^3\Sigma^+$) state of the PbO molecule. A non-zero measurement of d_e within the next few orders of magnitude beyond the current limit of $(6.9 \pm 7.4) \times 10^{-28}$ e-cm[1] would be clear evidence for physics beyond the standard model. We will present recent results from and improvements to our experiment including a proof of principle for the experiment, recent data on the initial state preparation using stimulated microwave Raman transitions, and a new detection system. The new detection system uses Winston Cone optical concentrators and large-area, low-noise, high speed, photodiode-based fluorescence detectors with fast overdrive recovery [2].

[1] B. C. Regan, Eugene D. Commins, Christian J. Schmidt, and David DeMille, Phys. Rev. Lett. **88**, 071805 (2002)

[2] S. Bickman and D. DeMille, Rev. Sci. Instr. **76**,113101 (2005).

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