Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Towards Improvements to the Statistical Sensitivity of the ACME Electron EDM Experiment NICHOLAS HUTZLER, PAUL HESS, Harvard University, EMIL KIRILOV, BRENDON O'LEARY, Yale University, ELIZABETH PETRIK, BENJAMIN SPAUN, Harvard University, DAVID DEMILLE, Yale University, GERALD GABRIELSE, JOHN DOYLE, Harvard University, ACME COLLABORATION — Construction of the first generation ACME experiment [A. C. Vutha et al., J. Phys. B 43, 074007 (2010)] to measure the electron electric dipole moment (eEDM) has been completed, and data acquisition and analysis are currently underway. In order to further increase our statistical sensitivity, several improvements are being developed and implemented. We report on: progress towards increasing our total molecule flux with a new beam source; utilizing microwaves, optical pumping, and electrostatic beam focusing to increase the molecule flux in a single state; efficient state preparation via STIRAP; improving detection efficiency by photon cycling; and apparatus redesign to allow more efficient fluorescence collection.

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Date submitted: 27 Jan 2012 Electronic form version 1.4