Abstract Submitted
for the DAMOP18 Meeting of
The American Physical Society

Prospects for a Third Generation ACME Search for an Electron Electric Dipole Moment XING WU, Yale University; Harvard University, DANIEL ANG, Harvard University, XINYI CHEN, DAVID DEMILLE, Yale University, JOHN DOYLE, GERALD GABRIELSE, JONATHAN HAEFNER, Harvard University, NICHOLAS HUTZLER, California Institute of Technology, ZACK LASNER, Yale University, COLE MEISENHELDER, CRISTIAN PANDA, Harvard University, ADAM WEST, Yale University, ELIZABETH WEST, Harvard University, ACME COLLABORATION — The observation of an electron electric dipole moment (eEDM) would reveal new sources of time-reversal symmetry violation and indicate physics beyond the Standard Model. The most stringent upper limit on the eEDM, $|d_e|<9.4 \times 10^{-29}$ e•cm, was set by the first generation of the ACME experiment by means of measuring electron spin precession in a beam of thorium monoxide (Science 343 (2014), 269-272). Here, we present studies for further improvements to the ACME experiment, with the eventual goal of sensitivity at the 10^{-30} e•cm level, roughly 1 order of magnitude smaller than the currently running second generation experiment. The methods we discuss focus primarily on improving statistics, and include a magnetic lens to focus the molecular beam and optical cycling to improve detection.

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Date submitted: 19 Apr 2018 Electronic form version 1.4