

Abstract Submitted
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Progress Towards an Order of Magnitude Improvement on the Measurement of the Electron Electric Dipole Moment¹ DANIEL ANG, Harvard University, DAVID DEMILLE, Yale University, JOHN DOYLE, GERALD GABRIELSE, JONATHAN HAEFNER, Harvard University, ZACK LASNER, Yale University, COLE MEISENHELDER, CRISTIAN PANDA, Harvard University, ADAM WEST, Yale University, ELIZABETH WEST, Harvard University — The search for the electron electric dipole moment (eEDM) is a powerful probe of fundamental physics beyond the Standard Model. In 2014, the first generation of the ACME experiment set the most stringent upper limit on the eEDM of $|d_e| < 1 \times 10^{28} e \cdot cm$ by means of measuring spin precession in a beam of thorium monoxide (Science 343 (2014), 269-272). Since then, we have implemented various improvements, such as STIRAP preparation of the experimental H state, rotational cooling, optimized apparatus geometry, and enhanced detection efficiency, boosting our signal by a factor of about 400. We have also devised means to reduce the leading systematics we found in the Generation I experiment. We describe the recent progress in taking data using our Generation II apparatus and our ongoing efforts to investigate various systematics.

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