

Abstract Submitted
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First Atomic Electric Dipole Moment Limit Derived from an Octupole-Deformed Nucleus RICHARD PARKER, University of Chicago, MICHAEL BISHOF, Argonne National Laboratory, MUKUT KALITA, University of Kentucky, NATHAN LEMKE, MATT DIETRICH, KEVIN BAILEY, JOHN GREENE, ROY HOLT, WOLFGANG KORSCH, ZHENG-TIAN LU, PETER MUELLER, T.P. O'CONNOR, Argonne National Laboratory, JAIDEEP SINGH, Michigan State University — Ra-225 (half-life = 15 d, nuclear spin = 1/2) is a promising isotope for a measurement of the EDM of a diamagnetic atom. Due to its large nuclear octupole deformation and high atomic mass, the EDM sensitivity of Ra-225 is expected to be 2-3 orders of magnitude larger than that of Hg-199. We demonstrate an efficient multiple-stage apparatus in which radium atoms are first loaded into a MOT, then transferred into a movable optical-dipole trap (ODT) that carries the atoms over 1 m to a magnetically-shielded science chamber, loaded into a standing-wave ODT, polarized, and then allowed to precess in magnetic and electric fields. We will discuss our first measurement of the EDM of Ra-225, as well as plans for future improvements. This work is supported by DOE, Office of Nuclear Physics (DE-AC02-06CH11357).

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