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Progress towards an atomic EDM measurement of Ra-225¹ RICHARD PARKER, University of Chicago, KEVIN BAILEY, MATTHEW DI-ETRICH, JOHN GREENE, ROY HOLT, Argonne National Laboratory, MUKUT KALITA, WOLFGANG KORSCH, University of Kentucky, ZHENG-TIAN LU, PE-TER MUELLER, TOM O'CONNER, JAIDEEP SINGH, Argonne National Laboratory — We are searching for the permanent electric dipole moment (EDM) of the Radium-225 nucleus. A nonzero nuclear EDM is a signature of CP- and T-violating interactions within nuclei. Currently, the best experimental limits on these interactions are derived from EDM measurements of Mercury-199. The Ra-225 radioisotope (half-life of 15 days) is an attractive alternative because, due to its peculiar shape (nuclear octupole deformation), it is predicted to be a few hundred to a few thousand times more sensitive to these types of interactions than Hg-199. In our measurement scheme, Ra atoms are first laser cooled and trapped in a magneto-optical trap and then transferred to an optical dipole trap (ODT), both of which have already been demonstrated. The ODT is moved to a magnetically-shielded science chamber, and then the atoms are transferred to a perpendicular ODT in which the EDM will be measured. Transfer efficiencies between the two ODT's as high as 60% have been demonstrated. We will report on progress towards measurements of atomic properties necessary for the EDM search and the EDM search itself. Research supported by DOE, Office of Nuclear Physics, contract No. DE-AC02-06CH11357.

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