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Upgrades for an Improved Measurement of the EDM of Ra-225 TENZIN RABGA, Argonne National Laboratory, Michigan State University, MICHAEL BISHOF, KEVIN BAILEY, MATTHEW DIETRICH, JOHN GREENE, PETER MUELLER, THOMAS O'CONNOR, Argonne National Laboratory, ZHENG-TIAN LU, University of Science and Technology of China, ROY READY, JAIDEEP SINGH, Michigan State University — A non-zero Electric Dipole Moment (EDM) in a non-degenerate system violates time-reversal (T) symmetry and therefore charge-parity (CP) symmetry due to the CPT theorem. EDM measurements are therefore sensitive and background-free searches for new CP violating interactions. Ra-225, with its octupole deformation and nearly degenerate nuclear parity doublet, is an extremely attractive candidate for probing CP violations in the hadronic sector. Our latest measurement limits the EDM of Ra-225 to be less than 1.4x10^{-23} e-cm (95% C.L.), and is the first ever measurement of an EDM limit using laser cooled and trapped atoms. Further experimental upgrades are being implemented including an electric field upgrade to enhance the EDM sensitivity and STIRAP-based electron shelving for improved state detection efficiency. With these upgrades in place our EDM sensitivity should increase by about two orders of magnitude and allow us to substantially improve constraints on certain T-violating processes within the nucleus. Updates on the status of these upgrades will be provided. This work is supported by the U.S. DOE, Office of Science, Office of Nuclear Physics, under contract DE-AC02-06CH11357 and the Michigan State University.

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