

Abstract Submitted  
for the DAMOP20 Meeting of  
The American Physical Society

**Upgrades for an Improved Measurement of the Permanent EDM of Radium** TENZIN RABGA, Argonne National Laboratory, MSU, KEVIN BAILEY, MICHAEL BISHOF, DONALD BOOTH, MATHEW DIETRICH, JOHN GREENE, PETER MUELLER, THOMAS O'CONNOR, Argonne National Laboratory, 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 consequently also charge-parity ( $CP$ ) symmetry. EDM measurements are therefore sensitive searches for new  $CP$  violating interactions. The octupole deformation and nearly degenerate nuclear parity doublet in radium (Ra) make it an attractive candidate for probing  $CP$  violations in the hadronic sector. Experimental upgrades are being implemented to enhance the current EDM sensitivity for Ra-225. These include more than a factor of three enhancement in the electric field from our electrode upgrade, a STIRAP-based electron shelving for improved state detection efficiency, and an improved atom slowing scheme. With these upgrades, the increased EDM sensitivity will substantially improve constraints on certain  $CP$  violating processes within the nucleus. 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.

Tenzin Rabga  
Michigan State Univ

Date submitted: 31 Jan 2020

Electronic form version 1.4