

Abstract Submitted
for the DAMOP19 Meeting of
The American Physical Society

A cold ^{171}Yb trap for atomic EDM measurement TAO ZHENG, YANG YANG, SHAOBO ZHANG, YUKUN FENG, ZHAOFENG WAN, SHAOZHENG WANG, TIAN XIA, ZHENG-TIAN LU, University of Science and Technology of China, MATTHEW DIETRICH, MICHAEL BISHOF, PETER MUELLER, KEVIN BAILEY, THOMAS O'CONNOR, Argonne National Laboratory, ROY READY, JAIDEEP SINGH, Michigan State University, BAO-LONG LV, ZHUAN-XIAN XIONG, Wuhan Institute of Physics and Mathematics, Chinese Academy of Sciences, RA-EDM COLLABORATION — We present a search for the atomic electric dipole moment (EDM) of ^{171}Yb , a stable isotope with the ground state property of $L = 0$, $S = 0$, and $I = 1/2$. ^{171}Yb atoms are captured by a two-stage MOT, transported using a movable optical dipole trap over 65 cm into a science chamber, and transferred to a 1D optical lattice. There, the atoms are allowed to precess under a uniform B field of 10 mG and a strong, reversible E field of 100 kV/cm. The precession frequencies measured under opposite E fields are used to search for the EDM. We describe the progress, challenges, and prospects of the experiment. Through this experiment, we develop atom manipulation techniques and study systematics for a parallel search for the EDM of ^{225}Ra , a radioactive isotope expected to possess a much larger Schiff moment due to its nuclear octupole deformation.

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Date submitted: 29 Jan 2019

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