Abstract Submitted
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Spectroscopic Characterization of Thorium Monoxide for use in an Electron Electric Dipole Momement Measurement[1] PAUL HESS, YULIA GUREVICH, NICK HUTZLER, ELIZABETH PETRIK, BENJAMIN SPAUN, JOHN DOYLE, GERALD GABRIELSE, Harvard University, EMIL KIRILOV, AMAR VUTHA, DAVID DEMILLE, Yale University, ACME COLLABORATION — The ACME Collaboration is searching for the electron electric dipole moment (eEDM) in the metastable H $^3\Delta_1$ state of thorium monoxide (ThO) using a cryogenic molecular beam.[2] The primary molecular beam source has been fully characterized and optimized.[3] We report on advances in characterizing the spectroscopic properties of the ThO molecule. Transitions necessary for H state preparation and detection have been observed for the the first time, and the saturation parameters for these transitions have been measured. The electric polarizability of the H state and its small g-factor have been measured. The lifetime of a key excited state has been measured. We also report on preliminary results on state preparation and readout of coherent precession phases.

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[2]A.C. Vutha *et al.*, Phys. B 43, 074007 (2010)
[3]N.R. Hutzler *et al.*, arXiv:1101.4217 (2011)

Paul Hess
Harvard University

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