Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Towards an electron electric dipole moment search with trapped HfF+ molecular ions[1] HUANQIAN LOH, KEVIN COSSEL, KANG-KUEN NI, MATT GRAU, DANIEL GRESH, JUN YE, ERIC CORNELL, JILA, NIST and University of Colorado (Boulder) — The search for an electron electric dipole moment (eEDM) serves as a sensitive probe for physics beyond the Standard Model. The $^3\Delta_1$ metastable state of the HfF^+ molecular ion is a suitable candidate for the eEDM search because of its high effective electric field and potentially long spin coherence times. By performing STIRAP in the presence of a rotating electric field and a magnetic field, we have prepared HfF^+ ions in the desired $^3\Delta_1$ states belonging to an eEDM sensitive transition and mapped out relevant spectroscopic parameters. We report our results on the coherent state transfer and spectroscopy of trapped molecular ions in a rotating field.

[1]This work is funded by the National Science Foundation and the Marsico Research Chair.

Huanqian Loh
JILA, NIST and University of Colorado (Boulder)

Date submitted: 29 Jan 2013 Electronic form version 1.4