

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Magneto-electrostatic trapping of neutral OH molecules¹ BRIAN SAWYER, BENJAMIN STUHL, JILA/University of Colorado, BENJAMIN LEV, University of Illinois, Urbana-Champaign, MARK YEO, JILA/University of Colorado, DAJUN WANG, JUN YE, JILA/NIST/University of Colorado — Advances in cold molecule production promise to profoundly impact research on precision measurement, quantum information, and controlled chemistry. To this end, we employ a Stark decelerator to remove 99.5% of the center-of-mass kinetic energy of a supersonic beam of ground-state OH molecules. We subsequently trap a 70 mK sample of the decelerated molecules at a density of $>10^5$ cm⁻³ within a magnetic quadrupole whose center lies ~ 1 cm from the decelerator exit. Our magneto-electrostatic trap (MET) design allows for the addition of an electric field of variable magnitude to the trapped sample to facilitate polar-molecule collision studies. We report progress toward observation of cold collisions between samples of polar molecules.

¹The authors acknowledge support from the NSF, DOE, NIST, and NRC.

Brian Sawyer
JILA/University of Colorado

Date submitted: 26 Nov 2007

Electronic form version 1.4