Abstract Submitted
for the TSS10 Meeting of
The American Physical Society

Toward magnetic trapping of isotopes of hydrogen ROBERT CLARK, ADAM LIBSON, S. TRAVIS BANNERMAN, THOMAS MAZUR, ISAAC CHAVEZ, MARK RAIZEN, Department of Physics and Center for Nonlinear Dynamics, The University of Texas at Austin — Over the past decades, spectroscopy of atomic hydrogen has enabled precision measurements of many fundamental physical quantities. Today, the trapping of hydrogen and its isotopes remains an important goal in physics. One promising technique for obtaining such samples is magnetic deceleration of a supersonic beam, via an "atomic coilgun." In this work, we present progress toward magnetically trapping deuterium in a simple room-temperature apparatus, which includes the coilgun and a solid-state laser system for addressing the 1S-2S transition. We also discuss prospects for cooling samples of hydrogen, deuterium, and tritium through the recently discovered technique of single-photon cooling.

Robert Clark
Department of Physics and Center for Nonlinear Dynamics,
The University of Texas at Austin

Date submitted: 19 Feb 2010 Electronic form version 1.4