Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Spin-exchange collision cooling in an ultracold ^{85}Rb/^{87}Rb Mixture[1] MATHEW HAMILTON, REBEKAH FERRIER, JACOB ROBERTS, Colorado State University — We have confined ultracold ^{85}Rb and ^{87}Rb simultaneously in an optical trap. Through optical pumping, spin-exchange collisions between ^{85}Rb and ^{87}Rb in a magnetic field can be made to be endothermic, transferring kinetic energy to Zeeman energy. Subsequent optical pumping removes the Zeeman energy from the gas, cooling it without requiring atom loss. We describe our implementation of this cooling scheme[2] and describe our experimental observations and characterizations of this cooling. We also discuss the advantages of using two different types of atoms in the cooling.

[1]This work is supported by the AFOSR.
[2]G. Ferrari, European Physical Journal D 13, 67-70 (2001).

Jacob Roberts
Colorado State University

Date submitted: 07 Feb 2011 Electronic form version 1.4