Abstract Submitted
for the DAMOP10 Meeting of
The American Physical Society

Collisions in an ^{85}Rb MOT via the 5S-5D Long Range Molecular Potential[1] TRUMAN WILSON, JACOB ROBERTS, Colorado State University — We report an enhancement of two-body collisional losses induced via a two step excitation up to the 5S-5D long range molecular potential in an ^{85}Rb MOT. Excitation up to this state produces a flux of excited state atom pairs to close internuclear separations due to the long lifetime of this state. At these close separations, the atoms decay down to steeper potential curves, accelerating the pair out of the trap. Measurements of the loss rates as a function of laser intensities allow the identification of the loss channel involved in the collisions, and calculations of Landau-Zener avoided crossings explain the observed saturation effects. We found a two-body loss coefficient of 2.05 $\pm$ 0.06 (statistical) $\pm$ 1.0 (systematic) x 10^{-10} cm^3/s for our conditions.

[1]This work is supported primarily by the Monfort Foundation

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Date submitted: 22 Jan 2010 Electronic form version 1.4