Abstract Submitted for the DAMOP08 Meeting of The American Physical Society

Toward Creation of an Ultracold Dense Gas of Polar Molecules KANG-KUEN NI, SILKE OSPELKAUS, A. PE'ER, M. MIRANDA, B. NEYEN-HUIS, J. ZIRBEL, JILA, S. KOTOCHIGOVA, Temple University, P. JULIENNE, NIST Gaithersburg, J. YE, D. JIN, JILA, NIST and the University of Colorado, Boulder — We present experimental efforts toward the creation of ultracold gas of KRb polar molecules. We start by creating extremely weakly bound molecules using a magnetic-field Feshbach resonance. This ultracold dense sample of Feshbach molecules provides a starting point for coherent optical transfer schemes aimed at creating tightly bound, polar molecules. Starting with Feshbach molecules, we have performed two-photon and one-photon spectroscopy. We have also demonstrated coherent optical transfer of Feshbach molecules to a more deeply bound state in the electronic ground state. We will discuss suitable routes to extend this work to even more deeply bound vibrational levels where the molecules can have a significant electric dipole moment.

Kang-Kuen Ni JILA

Date submitted: 01 Feb 2008 Electronic form version 1.4