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Further Control of Ultracold Collisions with Frequency-Chirped Light M. J. WRIGHT, J. A. PECHKIS, J. L. CARINI, P. L. GOULD, University of Connecticut, Physics Department, Storrs, CT 06269 — We report measurements of collisions between ultracold Rb atoms induced by frequency-chirped laser light. The dependence of the collision rate on the chirp direction, the center detuning, and the delay between successive chirps has been investigated with a chirp that sweeps 1 GHz in 100 ns. If the laser light is resonant with the attractive potential of a pair of atoms at some point during the chirp, the pair is efficiently and adiabatically transferred to the excited state, resulting in collisional loss from the trap. Simulations show that our measurements are consistent with total adiabatic transfer. Through recent experiments, we have demonstrated that the collision rate for the negative chirp differs from that of the positive chirp at particular center detunings. Finally, by varying the delay between successive positive chirps, we have observed evidence of depletion for short delay times and incoherent flux enhancement for intermediate delay times. This work is supported by DOE.

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