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Effect of Nanosecond-Timescale Frequency-Chirped Light on Ultracold $^{85}Rb_2$ Ground-State Formation J.A. PECHKIS, J.L. CARINI, C.E. ROGERS III, P.L. GOULD, Department of Physics, University of Connecticut, Storrs, CT 06269 USA — We report on progress towards ultracold $^{85}Rb_2$ formation using frequency-chirped light on the nanosecond-timescale in a Magneto-Optical Trap (MOT). In previous work, we showed coherent control of ultracold atomic ^{85}Rb trap-loss collisions with chirped light. In our current research, we use Resonantly-Enhanced Multi-Photon Ionization (REMPI) to directly detect ground-state $^{85}Rb_2$ molecules. Either positive or negative chirps, centered at a variable detuning below the D_2 line, sweep over 1 GHz in 100 ns. The effect of these chirps on the formation of ground-state $^{85}Rb_2$ in the MOT is compared to that of a CW probe laser. While initial experiments have shown an increase in atomic trap-loss with the addition of either the frequency-chirped light or the CW probe, a reduction in MOT-formed ground-state $^{85}Rb_2$ is seen. This work is supported by DOE.

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