

Abstract Submitted
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Collision induced losses in a dual-species magneto-optical trap of Lithium and Rubidium¹ SOURAV DUTTA, ADEEL ALTAF, JOHN LORENZ, D.S. ELLIOTT, YONG P. CHEN, Purdue University, West Lafayette, IN 47907 — We have constructed a new apparatus for simultaneous trapping and cooling of ⁷Li and ⁸⁵Rb atoms in a dual species magneto-optical trap (MOT), aimed at creating ultracold polar LiRb molecules for potential applications in quantum computing. The key improvements over our previous apparatus include a time of flight mass spectrometer for imaging ions and a compact Zeeman slower for ⁷Li. Our dual species MOT allows us to trap $\geq 5 \times 10^8$ ⁷Li atoms loaded from the Zeeman slower and $\geq 10^8$ ⁸⁵Rb atoms loaded from a dispenser. We have observed interspecies collision induced losses from the MOTs, measured the trap loss rate coefficients $\beta_{\text{Li,Rb}}$ and $\beta_{\text{Rb,Li}}$ and studied their dependence on the MOT parameters. We will also present results on photo-association (PA) of Rb₂ molecules and report our progress towards creating ultracold LiRb molecules by PA.

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