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Characterization of a Crossed 1071 nm Dual Species Dipole Trap
JONATHAN TALLANT, CARLOS MENEGATTI, BRUNO MARANGONI, LUIS MARCASSA, Instituto de Física de São Carlos, Universidade de São Paulo — Several experiments involving heteronuclear molecules rely on dense atomic samples. In our experiment, overlapped magneto-optical traps (MOTs) containing ^{39}K and ^{85}Rb are used to load a broadband crossed dipole trap. A cooling sequence is applied to the MOTs to load the dipole trap. Several parameters are varied during the cooling sequence to optimize the loading of both species into the dipole trap with equal densities. The results of the optimization process are presented. We find that ramping the laser power during the potassium loading improves the number of potassium atoms that are captured by the dipole trap. The need for this ramp is supported by calculations of the ac Stark shift of the $4p_{3/2}$ hyperfine manifold of states. Finally, lifetimes of both species in the dipole trap are presented. The lifetimes show a fast decay at early times which suggests a density dependent, few-body loss mechanism. Evidence is presented suggesting the mechanism is photoassociation of deeply bound KRb molecules by the 1071 nm trapping light. This work was supported by Fapesp and INCT-IQ.

Jonathan Tallant
Instituto de Física de São Carlos, Universidade de São Paulo

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