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Species selectivity of adiabatic RF potentials MARCIUS H.T. EXTAVOUR, LINDSAY J. LEBLANC, Department of Physics and Institute for Optical Sciences, University of Toronto, Canada, THORSTEN SCHUMM, Atominstitut d. osterr. Universitaten, Austria, ALAN STUMMER, JOSEPH H. THYWISSEN, Department of Physics and Institute for Optical Sciences, University of Toronto, Canada — We report on the successful implementation of a species-selective double-well micromagnetic trap on an atom chip. Adiabatic RF potentials have recently been used for coherent beam splitting [1], and been suggested for species-selective manipulation [2]. We report on our implementation of this suggestion for a ^{40}K-^{87}Rb Bose-Fermi mixture, where the radio frequency resonances are distinct since the Lande g_F factors differ between the two elements. We demonstrate, for instance, that beam splitting of ^{87}Rb can occur while ^{40}K remains confined in an overlapping single-well potential [3]. We also report on our progress toward direct observation of relative number squeezing in an RF beam splitter, for which indirect evidence was recently reported [4].

Refs: [1] T. Schumm et al., Nature Phys. **1**, 57 (2005). [2] Ph.W. Courteille et al., J. Phys. B: At. Mol. Opt. Phys. **39**, 1055 (2006). [3] M. H. T. Extavour et al., Atomic Physics **20**, 241 (2006); also cond-mat/0609259. [4] G.-B. Jo et al., Phys. Rev. Lett. **98**, 030407 (2007).

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