MAR08-2008-020496

Abstract for an Invited Paper
for the MAR08 Meeting of
the American Physical Society

Exploring an ultracold Fermi-Fermi mixture: interspecies Feshbach resonances of ^{6}Li-^{40}K

FLORIAN SCHRECK, Oesterreichische Akademie der Wissenschaften

We report on the observation of interspecies Feshbach resonances in an ultracold mixture of two fermionic species, ^{6}Li and ^{40}K. Interpretation of the data unambiguously assigns molecular bound states to the various resonances and fully characterizes the ground-state scattering properties in any combination of spin states. Using this knowledge we hope to be able to produce ^{6}Li-^{40}K molecules, cool them to quantum degeneracy, and study their BEC-BCS crossover.

In collaboration with: F. Schreck, Institut fuer Quantenoptik und Quanteninformation, Oesterreichische Akademie der Wissenschaften, 6020 Innsbruck, Austria; E. Wille, Institut fuer Quantenoptik und Quanteninformation, Oesterreichische Akademie der Wissenschaften, 6020 Innsbruck, Austria and Institut fuer Experimentalphysik und Forschungszentrum fuer Quantenphysik, Universitaet Innsbruck, 6020 Innsbruck, Austria; F.M. Spiegelhalder, G. Kerner, D. Naik, A. Trenkwalder, G. Hendl, Institut fuer Quantenoptik und Quanteninformation, Oesterreichische Akademie der Wissenschaften, 6020 Innsbruck, Austria; R. Grimm, Institut fuer Quantenoptik und Quanteninformation, Oesterreichische Akademie der Wissenschaften, 6020 Innsbruck, Austria and Institut fuer Experimentalphysik und Forschungszentrum fuer Quantenphysik, Universitaet Innsbruck, 6020 Innsbruck, Austria; T.G. Tiecke, J.T.M. Walraven,Van der Waals-Zeeman Institute of the University of Amsterdam, 1018 XE, The Netherlands; S.J.J.M.F. Kokkelmans, Eindhoven University of Technology, P.O. Box 513, 5600 MB Eindhoven, The Netherlands; E. Tiesinga, P.S. Julienne, Joint Quantum Institute, National Institute of Standards and Technology and University of Maryland, Gaithersburg, Maryland 20899-8423, USA