

Abstract Submitted
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Dual-Degeneracy in a Bose-Fermi Mixture with Extreme Mass Imbalance B. J. DESALVO, KRUTIK PATEL, JACOB JOHANSEN, CHENG CHIN, The James Franck Institute, The Enrico Fermi Institute, and Department of Physics, The University of Chicago — We have produced the first quantum degenerate mixture of bosonic ^{133}Cs and fermionic ^6Li . Owing to a narrow Feshbach resonance at 892 G, this system offers a flexible platform in which to study strongly interacting Bose-Fermi mixtures with large mass imbalance. To produce this sample, we first sequentially laser cool and load each species into separate optical dipole traps. The two species are evaporatively cooled and then combined at ~ 200 nK in a dual-color optical dipole trap. After a final stage of evaporative cooling near an interspecies Feshbach resonance, we obtain nearly pure Bose-Einstein condensates of $\sim 2 \times 10^4$ Cs atoms and $T/T_F \sim 0.2$ for Li. By tuning the interspecies interactions via the Feshbach resonance, we explore the phase diagram of this system and will present our efforts to observe beyond mean-field effects.

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