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Creation and Characterization of a BEC of ^{7}Li[1] D. DRIES, M. JUNKER, Y. P. CHEN, C. WELFORD, J. HITCHCOCK, R. G. HULET, Rice University — We have designed and built an apparatus for trapping and cooling the isotopes of Li to quantum degeneracy. Presently, ^{7}Li atoms are first Zeeman slowed and loaded into a magneto-optical trap. The trapped cloud is cooled and compressed, magnetically polarized via optical pumping, and loaded into an electromagnetic trap. A 45 s RF evaporation is then performed, cooling the gas to 5 μK. The electromagnetic trap is switched off while a single beam optical-dipole trap is ramped on. An adiabatic RF sweep is used to transfer the population of atoms from the F=2, m$_F$=2 hyperfine state to the F=1, m$_F$=1 state, where the scattering length may be controlled by a Feshbach resonance. By tuning the scattering length to a large and positive value, evaporation proceeds efficiently below the Bose-Einstein condensation transition temperature. Quantitative information on the BEC is obtained via absorption or phase-contrast imaging of either the trapped atoms or the freely expanding cloud.

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