Abstract Submitted
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A buffer-gas cooled BEC of metastable ^{4}He[1] S. CHARLES DORET, COLIN B. CONNOLLY, Harvard-MIT Center for Ultracold Atoms; Dept. of Physics, Harvard University, WOLFGANG KETTERLE, Harvard-MIT Center for Ultracold Atoms; Dept. of Physics, MIT, JOHN M. DOYLE, Harvard-MIT Center for Ultracold Atoms; Dept. of Physics, Harvard University — We report the first creation of a BEC (of metastable helium, ^{4}He*) using buffer-gas cooling, without the use of laser cooling. 10^{11} ^{4}He * atoms are produced via RF-discharge and magnetically trapped at an initial temperature of 400 mK in an anit-Helmholtz quadrupole field. These atoms are evaporatively cooled into the ultracold regime and transferred to a tightly confining superconducting QUIC trap with trap frequencies $\omega_{axial} = 2\pi$ x 210 Hz and $\omega_{radial} = 2\pi$ x 2500 Hz. Further cooling is achieved by driving transitions with resonant RF radiation. The transition temperature is reached at ~ 5 μK with approximately 10^6 atoms. The cloud is detected via phase-contrast imaging at 1083 nm, either in-situ or in time-of-flight.

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