

Abstract Submitted
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Rapid formation of atomic Bose-Einstein condensates in a three-beam crossed dipole trap CHIH-YUAN HUANG, C.-C. CHEN, H.-Y. LIU, Y.-H. CHENG, K.-S. WU, MING-SHIEN CHANG, None, IAMS LAB107 TEAM — We report on the rapid formation of Rubidium condensates in a three-beam crossed dipole trap. Our experiment comprises a simple vapor cell MOT and three single-focused and crossed Nd:YAG laser beams. Two stronger laser beams are focused and crossed at a small angle, which are responsible for collecting atoms from the MOT. Crossing two single-focused beams at a small angle allows us to greatly increase the longitudinal trap frequency and thus the atom density and collision rate in the trap. The third and weaker beam is then crossed perpendicularly to create a potential dimple for subsequent efficient evaporation. Laser-cooled atoms are directly loaded into this three-beam dipole trap, and the initial density in the dimple region is measured as high as 10^{14}cm^{-3} , which is limited by the 3-body collision loss. Evaporation is then forced for 3 sec till the formation of BEC. We will report the details of our studies and future direction of this experiment.

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None

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