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2-Dimensional Compressed Magneto-Optical Trap RAHUL MHASKAR, FOCUS Center, Physics Department, University of Michigan, VARUN VAIDYA, GEORG RAITHEL — We present an experimental implementation of a two-dimensional equivalent of a Compressed Magneto-Optical Trap (C-MOT [1]). A Zeeman slower produces a beam of rubidium atoms with flux $\sim 10^{11}$ atoms s^{-1}, velocity $\sim$25 m/s, and propagation direction along the z-axis. The Zeeman-slowed atoms enter a magnetic field of the form $\mathbf{B} \approx (\alpha x, -\alpha y, 0)$ with a magnetic-field gradient α that increases with z. Four cooling laser beams intersect the atomic-beam axis in a manner that the value of α increases from about 10 G cm^{-1} to about 50 G cm^{-1} within the cooling region. As a result, a magneto-optic compression effect is achieved. The velocity of the extracted, compressed atomic beam can be varied via a frequency difference among the cooling beams. In contrast to pulsed C-MOTs (see Ref. [1]), our device operates continuously, and can be used as a starting point for the preparation of continuous-wave Bose Einstein Condensates and atom lasers. Simulations comparing the two-dimensional compressed MOT with a two-dimensional MOT without compression are presented. Future directions of the experiment will be discussed. [1] W. Petrich, M. H. Anderson, J. R. Ensher, E. A. Cornell, J. Opt. Soc. Am. **11**, 1332 (1994).

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