

Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Precooling optically-trapped ^{87}Rb atoms via spatially-selective hyperfine pumping¹ REBEKAH FERRIER, JACOB ROBERTS, Colorado State University — For almost all ultracold atom experiments employing an optical trap loaded from a Magneto-optic trap, the ability to increase both the spatial and phase-space density of the atoms is advantageous either as a starting condition for evaporative cooling or for enabling a sufficient density for other types of experiments. We describe a simple technique that exploits the aspect ratio of the optical trap to selectively optically pump ^{87}Rb atoms with higher than average energy from their lower to upper hyperfine state. Once in their upper hyperfine state, these atoms can be cooled in the center of the optical trap. By virtue of the atoms' higher-than-average energy, the cooling effectiveness is greater than for an average atom in the gas.

¹Supported by AFOSR

Rebekah Ferrier
Colorado State University

Date submitted: 30 Jan 2013

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