

Abstract Submitted
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Designing an Optical Dipole Trap for the Creation of Bose-Einstein Condensates¹ AMY VAN NEWKIRK, Grove City College, Department of Physics, L.S. LESLIE, University of Rochester, Institute of Optics, A. HANSEN, University of Rochester, Department of Physics and Astronomy, N.P. BIGELOW, University of Rochester, Department of Physics and Astronomy; University of Rochester, Institute of Optics — Bose-Einstein condensates have been produced with many different configurations of magnetic, optical, and hybrid traps. Pure optical dipole traps have the possibility of providing a spin state independent trapping potential, which is necessary in many BEC experiments. We are currently designing a red-detuned, single focused-beam dipole trap to be used in the production of BECs. The BEC is to be formed from rubidium-87 atoms. The lab currently has a magneto-optical trap and an Ioffe-Pritchard magnetic trap in place. The dipole trap will be the last step in the process to create a BEC. It will be formed with a single pass of a Yb fiber laser at 1064 nm. We developed a model for the dipole trap potential in mathematica. Using this model, we were able to see that our current lab configuration has the possibility of producing a dipole trap that will allow for Bose-Einstein condensation.

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