

Abstract Submitted
for the DAMOP06 Meeting of
The American Physical Society

Characterization and Stabilization of an Infrared CW Laser and Applications in Trapping Ultracold Atoms¹ J. HITCHCOCK, Y. P. CHEN, M. JUNKER, D. DRIES, C. WELFORD, R. G. HULET, Department of Physics and Astronomy, Rice University — We are currently implementing a 25 W, single-mode ELS Versidisk laser operating at $1.03 \mu\text{m}$, for creating an optical lattice of bosonic and fermionic isotopes of lithium. We have characterized both the intensity noise and the pointing noise from DC to 100 KHz. Some spurious noise was initially detected, but the manufacturer has since corrected these problems with a redesign of the laser power supply and the water-cooling system for the laser head. Despite these changes, single mode operation continues to be unstable. To remedy this, we have actively stabilized the laser cavity to an external Fabry-Perot cavity. We will present the results of this effort, as well as our progress in implementing an optical lattice for lithium.

¹Department of Physics and Astronomy, Rice University

James Hitchcock
Rice University

Date submitted: 27 Jan 2006

Electronic form version 1.4