

Abstract Submitted  
for the DAMOP05 Meeting of  
The American Physical Society

**Single-beam all-optical  $^{87}\text{Rb}$  BEC** NATHAN LUNDBLAD, Caltech, ROBERT THOMPSON, DAVID AVELINE, LUTE MALEKI, Jet Propulsion Laboratory — We report Bose-Einstein condensation of  $^{87}\text{Rb}$  using all-optical means. We observe a critical temperature of  $\sim 125\text{nK}$ ,  $\sim 100,000$  atoms at criticality, and pure condensates of  $\sim 20,000$  atoms. We have observed pure condensates in the  $m_F=0$  state as well as condensates distributed among all Zeeman sublevels, as also observed by Barrett et al. and Cennini et al. Our apparatus consists of a quasistatic dipole trap generated by a single tightly-focused 40W  $\text{CO}_2$  laser. Forced evaporative cooling is performed simply by temporal control of the laser intensity. Due to the dependence of trap frequency on intensity, particular attention has been paid to the choice of evaporative path using the scaling laws described by O'Hara et al.

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Date submitted: 01 Apr 2005

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