Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Continuous Production of Rovibrational Ground State RbCs via Photoassociation COLIN BRUZEWICZ, MATTIAS GUSTAVSSON, TOSHIHIKO SHIMASAKI, DAVID DEMILLE, Yale University — We photoassociate electronically-excited RbCs molecules into a deeply-bound vibrational level of the $\Omega = 0^+$ component of the $(2)^3\Pi$ state. Following spontaneous decay of the excited molecules, we measure the vibrational levels populated in the $X^1\Sigma^+$ state using resonance-enhanced multiphoton ionization through the well-characterized $(2)^1\Pi$ state. For photoassociation on the $J = 1$ level of the $\Omega = 0^+$ component, selection rules from the spontaneous decay constrain the ground state molecules to the $J = 0, 2$ rotational levels. We are currently investigating methods for the continuous accumulation of rovibrational ground state RbCs in an optical trap. We also intend to purify the molecular sample by exploiting trap loss due to inelastic scattering, which is predicted to remove only excited RbCs and hence yield a large, trapped sample of polar $v = J = 0$ molecules.

Colin Bruzewicz
Yale University

Date submitted: 27 Jan 2012 Electronic form version 1.4