Abstract Submitted
for the DAMOP12 Meeting of
The American Physical Society

Progress towards creating and manipulating ultracold LiRb molecules[1] SOURAV DUTTA, ADEEL ALTAF, JOHN LORENZ, DANIEL S. ELLIOTT, YONG P. CHEN, Purdue University — We present our progress towards creating ultracold LiRb molecules from a dual species magneto-optical trap (MOT) of ^{7}Li and ^{85}Rb. We suggest photoassociation (PA) pathways for efficient production of ultracold LiRb molecules based on our recent experimental work on spectroscopy of LiRb molecules (S. Dutta et al., Chem. Phys. Lett. 511, 7 (2011)). We discuss a scheme based on interference of optical transitions to create ultracold molecules in a superposition of rotational states, and their manipulation based on an optical-phase based coherent control technique. We describe our apparatus where ultracold LiRb molecules will be created using PA, oriented using optical-phase based coherent control, and then detected using multiphoton ionization. We also discuss the ability of our apparatus to image the orientation of such molecules.

[1]This work is supported by the NSF grant number CCF0829918

Sourav Dutta
Purdue University

Date submitted: 27 Jan 2012 Electronic form version 1.4