Abstract Submitted
for the DAMOP13 Meeting of
The American Physical Society

Progress towards using Feshbach Resonance Optimized Photoassociation spectroscopy to map excited electronic states of Rb dimers SEAN KRZYZEWSKI, THOMAS AKIN, JAMES DIZIKES, GREGORY PARKER, MICHAEL MORRISON, ERIC ABRAHAM, University of Oklahoma — We present progress towards measuring the complete vibrational spectrum of singly-excited molecular electronic potential curves of Rubidium using Feshbach optimized photoassociation. In this process, Feshbach resonances are used to enhance the photoassociation signal by altering the initial scattering wave function, increasing the overlap with the final excited-state bound wave function. We focus on the purely triplet 0_g^- state of Rb_2 that connects asymptotically to the $5^2S_{1/2}+5^2P_{1/2}$ separated-atoms limit, due to its simple electronic structure. We present calculated absolute PA rates into vibrational states of excited electronic states that are inaccessible with conventional PA spectroscopy. These rates are found from a close-coupled scattering calculation.

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Date submitted: 28 Jan 2013 Electronic form version 1.4