Abstract Submitted
for the DAMOP16 Meeting of
The American Physical Society

Magnetic-field Control of the Ultracold Chemistry of Simple Molecules[1] BRANDON RUZIC, JQI, NIST, and the University of Maryland, College Park, JISHA HAZRA, NADUVALATH BALAKRISHNAN, University of Nevada, Las Vegas, JOHN BOHN, JILA, NIST, and the University of Colorado, Boulder — New experimental techniques continue to bring new molecular species into the ultracold regime. At these temperatures, modest external fields can significantly affect collisions. We theoretically explore the ultracold quantum chemistry of simple molecules, including the benchmark chemical reaction of F + H_2. We find that resonances that exist in the van der Waals wells of entrance channels can be manipulated by magnetic fields, thus affecting the ability of the reactants to tunnel through the chemical barrier. We focus on the possibility of ultracold Fano-Feshbach resonances and their ability to affect the distribution of product states.

[1]We acknowledge support from the ARO MURI Grant No. W911NF-12-1-0476 and the National Institute of Standards and Technology.

Brandon Ruzic
JQI, NIST, and the University of Maryland, College Park

Date submitted: 28 Jan 2016 Electronic form version 1.4