

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Long-Lived Complexes, Ergodicity and Chaos in Ultracold Molecular Collisions¹ JOHN BOHN, JAMES CROFT, JILA, NIST and Department of Physics, University of Colorado — Estimates for the lifetime of collision complexes formed during ultracold molecular collisions based on density-of-states arguments are shown to be consistent with similar estimate based on classical trajectory calculations. In the classical version, these collisions are shown to exhibit chaos, and their fractal dimensions are calculated versus collision energy. From these results, a picture emerges that ultracold collisions are classically ergodic, justifying the density-of-states estimates for lifetimes. These results point the way toward using the techniques of classical and quantum chaos to interpret molecular collisions in the ultracold regime.

¹This work was supported by the Air Force Office of Scientific Research under the Multidisciplinary University Research Initiative Grant No. FA9550-1-0588.

John Bohn
JILA, NIST and Department of Physics, University of Colorado

Date submitted: 30 Jan 2014

Electronic form version 1.4