Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Quantum dynamics of H_2-H_2 collisions[1] BALAKRISHNAN NADUVALATH, SAMANTHA FONSECA DOS SANTOS, Department of Chemistry, University of Nevada Las Vegas, STEPHEN LEPP, Department of Physics, University of Nevada Las Vegas, GOULVEN QUÉMÉNER, JILA, University of Colorado, Boulder, ROBERT C. FORREY, Department of Physics, Penn State University, Berks Campus, PHILLIP STANCIL, Department of Physics and Astronomy and the Center for Simulational Physics, The University of Georgia, Athens — The H_2-H_2 system has long been considered as a benchmark candidate for quantum dynamics studies of molecule-molecule collisions. H_2 is the most abundant molecular species in the interstellar medium and rotational and vibrational transitions in collisions between H_2 molecules have been topics of considerable interest. Here, we present a full quantum mechanical treatment of collisions between ortho-ortho, para-para, and ortho-para H_2 molecules as well as the HD-H_2 system over a wide range of energies and for different initial rovibrational levels of the molecules. The computed rate constants are compared against available experimental data and previous theoretical results.

[1]This work is supported by NSF grants PHY-0855470 and ATM-0635715

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Date submitted: 03 Feb 2011 Electronic form version 1.4