Abstract Submitted
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Ultracold vibrational relaxation of H_2 molecules[1] GOULVEN QUÉMÉNER, T. J. DHILIP KUMAR, BALAKRISHNAN NADUVALATH, Department of Chemistry, University of Nevada Las Vegas, Las Vegas, NV 89154, TECK-GHEE LEE, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831, ROMAN KREMS, Department of Chemistry, University of British Columbia, Vancouver, Canada — The success in creating Bose-Einstein condensates of molecules has spurred much interest in atom-molecule and molecule-molecule collisions at cold and ultracold temperatures. To understand the effect of rotational and vibrational relaxation in molecular collisions at ultracold temperatures we have performed quantum scattering calculations taking the H_2-H_2 system as an illustrative example. We have used a time-independent quantum formalism based on Jacobi coordinates in space fixed frame implemented in a new quantum scattering code [1] that includes all six internal degrees of freedom. Elastic and inelastic cross sections including state-to-state cross sections in cold and ultracold H_2(v=1,j=0) + H_2(v=0,j=0) and H_2(v=1,j=0) + H_2(v=1,j=0) collisions will be presented. [1] R. V. Krems, TwoBC - quantum scattering program, University of British Columbia, Vancouver, Canada, (2006)

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