

ELASTIC AND VIBRATIONALLY INELASTIC SLOW COLLISIONS: $\text{H} + \text{H}_2$, $\text{H}^+ + \text{H}_2$ (Ref. 1)

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We report on a comprehensive study of scattering of hydrogen atoms on the ground electronic surface of hydrogen molecules in the range of center of mass energies 0.1-100 eV. Differential and integral elastic cross sections, the related transport cross sections, and vibrationally inelastic cross sections starting from both ground and excited vibrational states, are calculated using a fully-quantal, coupled-channel approach in a truncated vibrational basis set. For comparison and to highlight the major physical mechanisms revealed in these collisions, a parallel study was carried out for scattering of protons on hydrogen molecules.

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