



Excitation of Molecular Vibration by Collision (Classic Reprint)

By Dr Morris Salkoff

Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****.Excerpt from Excitation of Molecular Vibration by Collision We have calculated the cross section for excitation of the first vibrational level in the collision of two hydrogen molecules in the ground state. A perturbation scheme must be used because of the many-body problem involved. The cross section is calculated by a partial wave analysis. We consider the collision of two H₂ molecules because the intermolecular potential is reasonably well known for this case. Because of the large masses of the particles, the de Broglie wavelength of the system is much smaller than the range of the intermolecular potential. Consequently many values of the angular momentum must be considered. We find that the major contribution to the total cross section comes from large values of the angular momentum - of the order of 10 to 20 - and that values of angular momentum up to about 80 must be considered. In order to solve the Schrodinger equation for arbitrary values of angular momentum with a Morse potential form for the intermolecular potential, the high speed computer Univac was...



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