Kratzer Potential for Vibrational Levels in Molecular Hydrogen

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The vibrational part of the dihydrogen Hamiltonian obeys a quantized Sommerfeld-Kratzer potential, which takes into account internal H_2 symmetries. All constants ω_e, k_e, and r_e needed for the H_2 vibrational system derive from hydrogen mass. Ionic Kratzer bond theory gives covalent bond energy within 0.08% and all levels within 0.02%, which is 30 times better than with a Dunham oscillator and as accurate as early ab initio quantum mechanics.

Key words: Hydrogen Molecule; Kratzer Potential; Vibrational Levels.
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