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Variable Atomic Radius of Hydrogen Due to Vibrating Nucleus

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The H-atomic radius is variable because the H-nucleus is vibrating and the electric force field upon the electron is repeatedly changing due to the changing distance from the positive nucleus to the negatively charged electron. If the the distance from the nucleus to the electron is $d = r + Acos2\pi ft$ where $r = 5.29x10^{-11}m$, the calculated Bohr radius, and $d = 2.5x10^{-11}m$, the measured atomic radius of the H-atom, then the equation for the variable atomic radius of the H-atom is $5.29x10{-}11m + Acos2\pi ft = 2.5x10{-}11m$. If the RMS value for the average cosine is 0.707, solving for A, the average amplitude of nuclear vibration, $A = 3.95x10^{-11}m$. Therefore, the oscillating orbit of the electron in an H-atom has an average amplitude of $A = 3.95x10^{-11}$.

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