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**Advance in the Foundations of Quantum Mechanics** JULIANA BROOKS, General Resonance, LLC — An advance has occurred in the foundations of quantum mechanics. Examination of a seemingly minor mathematical irregularity in Max Planck's work led to the discovery of previously hidden quantum variables and constants. A richer and more realistic interpretation of quantum mechanics is suggested. (Brooks, J., "Hidden Variables: The Elementary Quantum of Light", Proc. of SPIE Vol. 7421, 74210T-3, 2009.) Planck's quantum formula, $E = h\nu$, is missing the variable for measurement time. Planck included the missing time variable in his earlier work, but omitted it in his famous quantum paper. Restoring time ("t") to Planck's quantum formula produces $E = h^{\sim}\nu\ t$, where "$h^{\sim}$" is Planck's *energy* constant, the mean energy of a single oscillation of light, namely $6.626 \text{ X } 10^{-34}$ J/osc. Light's mean oscillation energy is *constant*, and invariant with frequency or wavelength. The "photon" is a time dependent (one second) packet of energy, and thus cannot be a truly indivisible and elementary particle of nature. The true elementary particle of light, with its invariant and universal energy constant, is the single EM oscillation. Many of the quantum mechanical paradoxes - uncertainty, wave-particle duality, normalization of wave functions, the fine structure constant, and problems of quantum gravity - are simplified or eliminated by a re-interpretation of quantum mechanics using Planck's complete quantum formula, with its time variable and energy constant, $E = h^{\sim}\nu\ t$.

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