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De Broglie's Rest Mass of Light JULIANA BROOKS, General Resonance, LLC — An advance has occurred in the foundational problems of quantum mechanics. Examination of a seemingly minor irregularity in Max Planck's work led to the eventual discovery of previously hidden quantum variables and constants, and re-interpretation of the photon and light's elementary quantum. The new work suggests a richer and more realistic interpretation of quantum mechanics. (Brooks, J., "Hidden Variables: The Elementary Quantum of Light", Proc. of SPIE Vol. 7421, 74210T-3, 2009.) One of the hidden constants - Planck's *energy* constant (6.626 X 10^{-34}J/osc, the constant mean energy of a single oscillation of EM energy) – led to the discovery of another hidden constant – De Broglie's rest mass of light. Using De Broglie's, $E = m_0c^2$, the rest mass for the elementary quantum of light (a single EM oscillation) has been calculated. Setting "E" equal to Planck's *energy* constant, the mass of a single oscillation of light is: $m_0 = 7.372 \text{ X } 10^{-51}$ kg/osc. This calculated value for the rest mass light of is in close agreement with Luo *et al's* calculation for the upper limit of light's rest mass (Phy Rev Let 90(8) 2003). Luo used a rotating torsion balance to detect the product of the photon mass squared and the ambient cosmic magnetic potential vector. Luo's upper limit of $1.2 \text{ X } 10^{-54}$ kg/photon corresponds to an oscillation mass of $4.32 \text{ X } 10^{-51}$ kg/osc. De Broglie's rest mass of $7.372 \text{ X } 10^{-51}$ kg/osc is within the same order of magnitude and is consistent with Einstein's principle of energy-mass equivalence.

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