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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 ir-  
regularity in Max Planck's work led to the eventual discovery of pre-  
viously hidden quantum variables and constants, and re-interpretation  
of the photon and light's elementary quantum. The new work sug-  
gests 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 ( $6.626 \times 10^{-34}$  J/osc, the constant mean en-  
ergy 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 *en-  
ergy* constant, the mass of a single oscillation of light is:  $m_0 = 7.372 \times 10^{-51}$   
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  $1.2 \times 10^{-54}$  kg/photon  
corresponds to an oscillation mass of  $4.32 \times 10^{-51}$  kg/osc. De Broglie's  
rest mass of  $7.372 \times 10^{-51}$  kg/osc is within the same order of magnitude  
and is consistent with Einstein's principle of energy-mass equivalence.

- Prefer Oral Session  
 Prefer Poster Session

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