Abstract Submitted
for the APR10 Meeting of
The American Physical Society

The Speeds of Light JULIANA BROOKS, General Resonance, LLC — A recent advance in the foundations of quantum mechanics suggests that light propagating *in vacuo* has two different types of speeds, and obeys both the Galilean and Lorentz transformations (Brooks, J., "*Hidden Variables: The Elementary Quantum of Light*" and "*Is indivisible single photon really essential . . . #4*", Proc. of SPIE Vol. 7421, 74210T-3 and 74210Y-7, 2009). The true elementary particle of light is the single EM oscillation, and it is absorbed or emitted as a complete energy unit (6.626 X 10^{-34}J/osc). The energy is distributed in space over the physical length of the oscillation (i.e., its wavelength). The speed of the leading and trailing edges of a single oscillation of EM energy ("wave speed") is constant (3 X 10^{8}m/s). The speed of the *energy* quantum embodied in a single oscillation (light's "energy speed") is infinitely variable, however, depending on its wavelength and inertial reference frame. Consider two oscillations of differing wavelengths, both traveling at the constant Lorentzian speed of light, which strike a detector simultaneously. The complete energy quantum of the shorter oscillation is absorbed by the detector before the trailing edge of the longer oscillation reaches the detector. The *energy speed* of the shorter wavelength is faster than that of the longer wavelength oscillation. When Einstein struggled with the law of the propagation of light and the principle of relativity in his special relativity, he was unaware of the distinction between light's *wave speed* and its *energy speed*.

Juliana Brooks
General Resonance, LLC

Date submitted: 06 Oct 2009 Electronic form version 1.4