

The Poynting Motivator, GEM Unification Theory and Possible Utilization of the Quantum Vacuum for Propellant-less Propulsion

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The positive results the Sonny White experiments [1] add impetus to the search for theory and technologies utilizing the quantum vacuum to provide reaction mass for propulsion. Our approach utilizes the GEM (Grandis et Medianis or Gravity-EM) Theory [2, 3] to propose designs for propellant-less propulsion devices. The GEM theory is a combination of Kaluza-Klein hidden 5th dimension and Sakharov Quantum ZPF(Zero Point Fluctuation) -Poynting model of Gravity-EM unification. The theory has yielded accurate formulas for “G” the Newton Gravitation Constant, the proton mass, and was used to predict the mass of the Higgs boson at 128GeV four months before its announcement[3]. In practical application, the theory proposes that the hidden 5th dimension in the vacuum behaves like a quantum resonant structure giving rise to quantum Mie scatterings. Gravity fields are modeled as arrays of “ExB” drifts or Poynting fields. This allows, theoretically, intense Poynting fluxes from EM radiation to Mie scatter from the hidden dimension structures in the vacuum and thus exchange momentum with it and produce propulsive force, similar to a submarine moving the water around it. Using Poynting’s theorem and the Maxwell stress tensor we derive the Murad-Brandenburg equation for the propagation of Poynting vector S in vacuum EM fields.

$$\mu_0 \left[\frac{1}{c^2} \frac{\partial^2 \bar{S}}{\partial t^2} - \nabla^2 \bar{S} \right] = \mu_0 \nabla \times \nabla \times \bar{S}.$$

Where S is interpreted to be both ordinary EM fields and the vacuum ZPF associated with gravity. It can be shown that this equation allows a combination of hidden dimension and tidal effects in gravity to scatter EM momentum and thus produce a propulsive force, thus leading to a “Vacuum Hall Effect” and the possibility of a “Poynting Motivator” for spacecraft[4]

[1] Brady, David A. et al. (2014). "Anomalous Thrust Production from an RF Test Device Measured on a Low-Thrust Torsion Pendulum". 50th AIAA/ASME/SAE/ASEE J. Propulsion Conference. [2] J.E. Brandenburg (2007) “The Value of the Newton Gravitation Constant and its Relationship to Cosmic Electrodynamics “ IEEE Transactions on Plasma Science , Vol 20, 6, p944. [3] J.E. Brandenburg (2012) “An Extension of the GEM Unification Theory to Include Strong and Weak Nuclear Forces and an Estimate of the Higgs Boson Mass STAIF II Conference Albq. NM March 2012. Also [Journal_of_Space_Exploration/vol_1_issue_1](#) Murad, P. A., Brandenburg, J. E., [4] “The Murad-Brandenburg Poynting Field Conservation Equation and Gravity” 48th AIAA Aerospace Sciences Meeting, 2010.