Abstract Submitted for the NWS08 Meeting of The American Physical Society

42.8503... A Theory of the Unification of Gravitation and Electromagnetism JOHN BRANDENBURG, Orbital Technologies Corporation — The GEM (Gravity Electro-Magnetism)(1), theory is presented as an alloy of Sakharov (2) and Kaluza-Klien approaches to field unification. The metric tensor becomes: g_{ab} $= 4(\mathbf{F}_{a}^{c}\mathbf{F}_{cb})/(\mathbf{F}^{ab}\mathbf{F}_{ab}),$ where \mathbf{F}_{cb} is the EM field due to the ZPF (Zero Point Fluctuation). It is found that this results in a massless ground state vacuum. It is found that a flat-space metric is recovered in the limit of a full spectrum ZPF. The vacuum ZPF energy and vacuum quantities G, h, and c give birth to particles quantities m_p, m_e , and e, in a process triggered by the appearance of the Kaluza-Klein fifth dimension. Where also, the EM and gravity forces split from each other in a process correlated to the splitting apart of protons and electrons. This leads to the formula $\ln(r_o/r_p) =$ $\sigma = 42.8503...$, where $\sigma = (m_p/m_e)^{1/2}$, where m_p and m_e are the electron and proton masses respectively and where $r_o = e^2/m_o c^2$, r_p is the Planck length, and where $m_{\rho} = (m_{p}m_{e})^{1/2}$ and the formula: $G = (e^{2}/m_{\rho}^{2})\alpha \exp(-2\sigma) = 6.668 \times 10^{-8} \text{ dynes-cm}^{2}/g^{2}$ (esu). The splitting of the electron and proton occurs as the splitting of a light-like space-time interval into a time-like part, the electron, and a space-like part, the proton, with three inseparable sub-dimensions, the quarks. (1) Brandenburg, J.E. (2007), IEEE Trans. On Plasma Sci., Vol.35, No. 4., p845. (2) Sakharov A.D. Sov. Phys. Doklady 12,1040, (1968).

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