The GEM (Gravity-Electro-Magnetism) Unification Theory and Cosmic Baryo-Genesis

JOHN BRANDENBURG, Orbital Technologies Corporation — Sakharov\(^1\) proposed that in the early split-seconds of the Big Bang lepton and baryon number and CPT invariance were not conserved, resulting in the cosmos we know: dominated by hydrogen: protons and electrons, as opposed to their antiparticles. Accordingly, it is the premise of the GEM theory that out of Planckian “vacuum” quantities: G, c, and \(\hbar\): then emerge “particle” quantities : e, m\(_p\) and m\(_e\), the electron charge, the masses of the proton and electron respectively. In the GEM theory\(^2\) the triggering event for the Big Bang is the appearance of the “compact” Kaluza-Klein 5\(^{th}\) dimension, that breaks the symmetry of the Planckian vacuum and allows the separate appearance of both leptons from baryons, and EM fields from gravity. Assuming light-like vacuum intervals \((x^2+y^2+z^2)-c^2t^2=0\) in normal spacetime mix with a string-like 5\(^{th}\) dimensional vacuum \(r_o-\) to form two space-like intervals \(r_o^2-q_l^2=q_l^2\) and \(r_o^2-q_o^2=0\) that are the proton and the electron respectively. Thus, charge is the 5\(^{th}\) dimensional length in GEM and the lepton-baryon asymmetry reflects the time-space asymmetry of spacetime. A flat unstable vacuum results with hydrogen production from the vacuum in a “continually inflating” cosmos that satisfies the Dirac Large Numbers hypothesis.\(^2\)

1Sakharov A.D. JETP 5,24, (1967)

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