

# Continuum Theory: Physical Nature Viewed from a Deeper Level; a Rewarding Replacement for SR/GR\*

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## Abstract

Relativity Theory rests upon two devastating inconsistencies: **1)** embracing the function of transverse electromagnetic (TEM) waves as perfect messengers, but denying the presence of an aether as defined by Maxwell's equations and essential for their existence; **2)** failing to recognize that force communication between two electromagnetically defined objects is progressively velocity-limited to  $c$  (e.g. *Heaviside 1889*), so this is what we observe with electromagnetic accelerators, not mass-increase.

Continuum Theory (CT) offers a competent and even more fruitful replacement for Special Relativity/General Relativity (SR/GR) and these basic inconsistencies. CT is based on **(A)** implementing Maxwell's aether as a massless all-pervasive superfluid elastic continuum of (negative) electric charge, and **(B)** seeing mass-bearing fundamental particles as vortical constructs of aether in motion, (e.g. *Maxwell, Larmor, etc*), so their diffraction is no surprise. For oppositely charged particles, one sort contains more aether and the other less, so particle-pair creation is 'easy'. This defines mean aether density as  $>10^{30}$  coulombs/cm<sup>3</sup>, so it provides a near-irrotational reference frame for our observations of 'absolute' direction with suitable devices.

CT recognizes the aether as reference frame for translational behavior of otherwise-separate bodies. This legitimizes the vector addition of velocities, yielding a resultant  $>c$ , thereby escaping SR's need for the Lorentz transformations. Under **(B)** the particle mass is measured by the aether-sucking capability of its vortex, positive-only gravitation being because sucking themselves together is the statistically prevalent expectation. This activity maintains a radial aether density gradient - the 'Gravity-Electric (G-E) Field' - around and within any gravitationally retained assemblage, so Newton's description of gravitation is an incomplete one. The effect on  $c$  of that charge density gradient yields gravitational lensing.

We show that G-E Field action on sufficiently charged ions and plasma is, and has been, astronomically ubiquitous. This strictly radial outward force has the property, shared with radiation pressure, of increasing the angular momentum of material driven outward, but at constant tangential speed. Spiral galaxies no longer require CDM to explain this. The force has comprehensive relevance to the high angular momentum achieved in solar planet formation, to their prograde spins and to exoplanet observations. Other probable cases are the solar wind, prodigious mass loss rates of highmass stars (supervening radiation pressure, which would inhibit building them) and the acceleration of  $\sim 10^{19}$  eV cosmic rays from neutron star surfaces, where the G-E field may attain  $10^{12}$  V/m.

The Michelson-Morley experiment was no basis for discounting the aether if it has a particle-tied nature, as in CT. But rejection enabled Einstein to evade that it might be in random motion, causing transmission effects. A particle-tied character renders such motion inescapable, however. I show that random motion of aether charge gives rise to four distance-cumulative, wavelength-independent transmission effects upon TEM waves, plus the generation of a low level of TEM-wave emission (the CMB). Redshift, one of the effects, is demonstrably manifest as the cosmic redshift and as intrinsic redshifts generated in intergalactic plasmas and stellar atmospheres, including solar. This removes Big Bang expansion and any need for CDM to control it. Dark Energy is not required either; need for it has arisen solely from application of the relativistic doppler formula, which is inappropriate if the redshift is not a velocity. Random electromagnetic excitation at small scales by all-pervasive aether motion offers a potential basis for quantum electro-dynamical behavior and the ZPF.

Finally, and briefly, the  $c$ -dependent mode of gravitational intercommunication in CT leads directly to *Paul Gerber's (1898)* formal resolution of perihelion advance, adopted, unacknowledged, by Einstein for GR. This lays a path to a Mach's Principle origin of inertia and suggests that inertial force is  $c$ -limited also, yielding a new and fruitful QSO model with lots of intrinsic redshift (including those of the Ly  $\alpha$  forest). The aether motion which constitutes a mass-bearing particle needs space for it to exist, which limits the mass-capacity of a black hole; when this is exceeded, e.g. by shrinkage, mass annihilation and a gamma ray burst (GRB) is likely, with potential for light-element synthesis. CT sees an infinite Electric Universe with continuing mass auto-creation from aether random motion. Positive feedback causes growth of galaxy clusters. Five further experimental tests of CT are suggested.

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