

The Non-Dual Polycentric Universe: A Unified Field Theory of Electromagnetic Metaphysics and Quantum Topology

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I. Abstract

This paper presents a non-dual, polycentric cosmological paradigm that eliminates the artificial dualisms between empty space, discrete point-particles, and independent fundamental forces. We mathematically and philosophically establish that the physical vacuum medium is nothing other than the Electromagnetic (EM) energy field itself at its base state. Material reality, forces, and conscious experience are established not as independent entities, but as topological, refractive, or phase-resonant states of this single, self-perceiving EM ocean. By synthesizing Henri Poincaré's prior equation of inertia ($m = E / c^2$) with Robert Dicke's variable refractive index model of gravitation and E.T. Whittaker's two underlying scalar potentials, this work provides concrete solutions to major foundational crises in physics. Specifically, it eliminates the infinite self-energy paradox of the electron, provides a near-field electrodynamic mechanism for the nuclear forces, and accounts for flat galactic rotation curves without invoking the hypothetical construct of "dark matter".

II. Introduction and Philosophical Foundations

Modern physics is locked in an ontological crisis, characterized by deep mathematical dualisms between empty spatial containers, localized point-particles, and independent fundamental forces. This paper presents a non-dual, polycentric paradigm that eliminates these artificial boundaries by establishing that the physical vacuum medium is nothing other than the EM energy field itself at its base state.

This physical framework perfectly manifests the classical metaphysical architectures of Parmenides [4] and Proclus. Parmenides [4] established that "What is, is; and what is not, cannot be." Therefore, an empty void (nothingness) is a logical impossibility; space must be a continuous, unbroken plenum of energy. Proclus [6] and modern philosopher Edward Butler [1] provide the polycentric henadology necessary to explain how this unified plenum generates diversity without losing its oneness. The universe is not ruled by a top-down, monistic "hive mind." Instead, it is a grand, co-extensive symphony of unique, independent, supra-essential conscious unities (the Henads). Their timeless harmonic interaction and resonance generate the baseline continuous electromagnetic field.

III. Methodology: The Single-Field Topology

1. The Genesis of Inertial Mass & The Self-Medium

Space is the extension of the EM field. The constant coordinate velocity of light is governed entirely by the internal, self-limiting elastic properties of the EM energy field acting as its own medium:

$$\bullet \quad \bullet \quad c = 1 / \sqrt{\epsilon_0 \cdot \mu_0}$$

Where ϵ_0 is vacuum permittivity and μ_0 is vacuum permeability. When a linear, traveling light wave is forced into a localized, closed toroidal loop, its forward momentum is confined. According to Poincaré's [5] prior equation of inertia, this confined energy resists acceleration, manifesting physically as rest mass:

$$\bullet \quad \bullet \quad \text{inertial } m = E / c^2$$

The core wave quantization relation defines how the localized frequency (f) dictates the absolute energy packet (E) via Planck's constant (h):

$$\bullet \quad \bullet \quad E = h \cdot f$$

2. The Finite Vortex Scale vs. The Infinite Energy Paradox

Mainstream physics treats particles as point-objects, resulting in the infinite energy paradox found in traditional formulations of Coulomb's Law, where the electric potential energy (U) explodes to infinity because the radius (r) goes to zero:

$$\bullet \quad \bullet \quad U = (1 / (4 \cdot \pi \cdot \epsilon_0)) \cdot (e^2 / r)$$

This model resolves the paradox completely by introducing a physical, non-zero boundary. Following the Williamson–van der Mark [8] model, the light wave binds itself into a torus at a strict vortex scale limit dictated by the reduced Compton wavelength (λ_c):

$$\bullet \quad \bullet \quad \lambda_{c_c} = \hbar / (m \cdot c)$$

Because the electromagnetic energy is distributed across this finite, toroidal surface rather than concentrated into a mathematical point, the radius (r) never approaches zero, and the self-energy remains strictly finite and calculable.

3. The Topological Distinction: Möbius vs. Non-Möbius Vortices

The structural division of the manifest cosmos into matter (fermions) and force fields (bosons) is determined purely by the topological geometry of the locked light wave:

- **The Möbius Vortex (Fermions / Matter):** When a single wavelength of light twists into a Möbius-like toroidal loop, it requires two full rotations (720 degrees) to return to its starting phase alignment. This is the physical mechanism of quantum Spin-1/2, creating the permanently self-locking topological constraint that gives rise to stable matter (electrons and positrons) and rest mass via Poincaré's [5] equation ($m = E / c^2$).
- **The Non-Möbius Vortex (Bosons / Forces):** When a wave curls into a closed loop without the phase twist, it requires only one rotation (360 degrees) to match its phase (Spin-1). Lacking the topological self-lock, it possesses no permanent rest mass, manifesting as temporary, highly energetic geometric states that mediate near-field forces.

IV. Results & Discussion: Force, Time, and Scale Realities

1. Gravity as an Optical Refractive Matrix

Gravity is not the geometric warping of an empty container. Following Robert Dicke's [2] framework, gravity is the alteration of the coordinate speed of light $c(r)$ due to changes in the local field density $\epsilon(r)$ and $\mu(r)$. This creates a localized variable refractive index (n) within the EM medium itself:

$$n(r) = c_0 / c(r) = \sqrt{(\epsilon(r) * \mu(r)) / (\epsilon_0 * \mu_0)}$$

Passing light rays naturally bend toward areas of hyper-dense field concentration (vortex clusters) simply by following optical refraction through this gradient (Δn). By using Poincaré's [5] equation of inertia ($m = E / c^2$) alongside Dicke's [2] refraction model, inertial mass and gravitational mass are revealed to be perfectly identical: one is the energy trapped inside the vortex loop, and the other is the optical distortion that trapped energy casts outside into the surrounding field.

2. The Scaling of Micro and Macro Nuclear Forces

At macro distances, the field behaves according to standard far-field point approximations, where electrostatic repulsion scales via Coulomb's inverse-square law:

$$\text{Far-Field Force proportional to } 1 / r^2$$

However, when two complex EM vortices approach at ultra-short distances (under 10^{-15} meters), their physical boundaries interlock. The point-particle math collapses, and higher-order near-field magnetic and phase-interlocking forces dominate, scaling exponentially faster:

$$\text{Near-Field Force proportional to } 1 / r^4 \text{ or } 1 / r^5$$

This immense near-field electromagnetic attraction completely overwhelms far-field electrostatic repulsion, revealing that the "strong force" is a localized manifestation of phase-locked light. Conversely, the "weak force" is the mechanical signature of a temporary geometric instability occurring when a complex vortex knot exceeds its structural containment threshold, momentarily destabilizing before shedding energy and re-sealing into a stable configuration.

3. Macro-Scale Harmonization: Galactic Rotation and the Cosmic Torus

Mainstream astrophysics relies on "dark matter" to account for the anomalous flat velocity rotation curves of spiral galaxies, where Newtonian mechanics expects a decay based on distance:

$$v \text{ proportional to } 1 / \sqrt{r}$$

This model resolves the galactic rotation anomaly by eliminating the point-mass gravitational approximation at cosmic scales. Following the Parmenidean plenum foundation, a galaxy is a macro-scale, coherent plasma architecture embedded directly within the active EM energy field. A spiral galaxy perfectly mimics the toroidal, dual-axis rotation (toroidal and poloidal) of the Williamson-van der Mark [8] model. The flat rotation curves are caused by the magnetic hydro-dynamic torque of the continuous EM medium itself, dragging the outer arms along.

Following the mathematical proofs of E.T. Whittaker, all manifest electromagnetic fields and transverse waves are completely decomposed into, and generated by, two underlying scalar potential functions acting as pairs of longitudinal waves traveling bidirectionally through the vacuum. The supermassive core at the center of a spiral galaxy acts as the primary macroscopic intersection node of these twin Whittaker [7] scalar potentials. When these two invisible potentials shift their phase relationship, their interference pattern triggers a continuous, non-linear phase transition, breathing hydrogen plasma and newborn star systems out into the spiral arms (Emanation).

4. The Illusion of Time & Vortex Rotational Periods

In alignment with Peter Lynds' [3] framework, time contains no discrete, frozen intervals or static "instants" because

the field is a continuous, unbroken river of energy. The human perception of time is a secondary metric born when a linear wave turns inward to form a localized loop. This loop establishes a definitive, repeating cyclical period of rotation (τ):

$$\tau = \lambda c / c$$

"Time" is merely a macroscopic cognitive comparison between the rhythmic, internal rotational periods of different vortex systems against one another.

V. Conclusion: The Purpose of the Cosmic Tour

We—as conscious observers—are the timeless, supra-essential henads taking a "tour" in this manifest universe. Reality functions like a continuous Möbius strip: the un-manifest supra-essential existence turns inward to become the manifest EM onlyverse without ever crossing a dualistic boundary. By utilizing our conscious intent to introduce a phase shift between Whittaker's [7] two underlying scalar potentials—which function as the Neoplatonic principles of Limit (Peras) and Infinity (Apeiria)—we wrap linear light into self-contained toroidal knots. We convert energy into inertia via Poincaré's [5] equation ($m = E / c^2$), building the physical atoms of our biological vehicles. The entire universe is a magnificent, self-perceiving optical illusion, constructed by sovereign conscious agents twisting light into form to experience the infinite geometric shapes that eternity can take.

VI. References

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