Theory of the Global Universe (GU)

Scientific Position Paper

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1. Epistemological Approach and Fundamental Axioms

Modern particle physics (the Standard Model) suffers from increasing epistemological fragmentation. To explain experimental anomalies, hypothetical entities (quarks, gluons, Higgs bosons, dark matter) must be continuously postulated. From a methodological perspective, these often act like mathematical auxiliary arguments (epicycles) designed to artificially maintain a 19th-century mechanistic worldview (matter as a fundamental substance).
The **Theory of the Global Universe (GU)** radically breaks with this substance dualism. It is based on three irrevocable axioms:

- **Axiom I (Ontological Monism):** "Matter" does not exist as an independent entity. Everything observed is the result of local, quantized energetic states of a universal electromagnetic field.
- **Axiom II (Spatial Rigidity):** Space is a Euclidean, flat coordinate system. It possesses no intrinsic dynamics and cannot stretch, curve, or deform. The effects of gravitation are field-mechanically reinterpreted as the dynamics of energy density gradients within space, not of space itself.
- **Axiom III (Relativity of Time):** There is no absolute time flowing in the background. Time is exclusively defined as the relational change of an energetic state (pulsation/frequency).

2. The Medium: The Dynamic Energy Level of the Vacuum

The vacuum of the GU is not a "nothingness" but the absolute energetic standard state of the cosmos. It is defined as an infinitely extended, fluctuating system of electromagnetic ground tension (zero-point energy). An energy value of absolute zero is mathematically impossible within the GU.
The physical constants of the vacuum—the vacuum permittivity ($\boldsymbol{\varepsilon_0}$) and the vacuum permeability ($\boldsymbol{\mu_0}$)—describe the inherent energetic resistance of this medium against the buildup of field tensions. This yields the fundamental propagation speed of an electromagnetic disturbance, the speed of light **c**:

$$c = 1 / \sqrt{(\varepsilon_0 \cdot \mu_0)}$$

Consequently, the speed of light is not a "particle velocity" but the maximum conductivity of the universal energetic medium.

3. The Nature of Energy Packets: Open vs. Closed Waves

Instead of the classical distinction between "wave" and "particle," the GU theory defines two fundamental aggregate states of energy packets:

Property	The Open Packet (Example: Photon)	The Closed Packet (Example: Proton)
Geometry	Linear, translationally propagating wavefront.	Self-contained, standing spherical wave.
Inherent Frequency	Rest inherent frequency $v_0 = 0$. Possesses frequency only in translation.	Inherent, stationary pulsation/rotation $v_0 > 0$.
Phenomenological Perception	Electromagnetic radiation (light, gamma, radio).	Stable matter with measurable mass (inertia).

A stable "energy node" (such as a proton or electron) does not require quarks to exist. It is a self-contained, standing electromagnetic wave. The quarks measured by conventional physics are nothing more than the internal three-dimensional vibrational nodes or interference maxima of this single, high-frequency spherical wave.

4. Mathematical Formulation of Total Energy

To accurately quantify the energy of such a packet in Joules (**J**), we utilize the quantum mechanical wavefunction **Ψ**, stripped of material variables:

$$\Psi(x,t) = A \cdot e^{i(k \cdot x - 2\pi v \cdot t)}$$

The operator **i** describes the mathematically necessary inherent rotation of the phase. The total energy of a node upon impact results from the Pythagorean coupling of its internal pulsation and its translation:

$$E_{total} = \sqrt{((h \cdot v_0)^2 + (p \cdot c)^2)}$$

When the node is at rest in Euclidean space (translational momentum p = 0), the equation simplifies to:

$$E_{rest} = h \cdot v_0$$

This is the fundamental wave-mechanical definition of mass: mass is not a material attribute but

the inertial resistance of a self-contained energy node rotating at frequency v_0.

5. Electromagnetism Without Auxiliary Arguments

Electromagnetic interactions can be entirely derived geometrically from the rotational direction of the phase function:

- **Electric Charge:** Describes the mathematical direction of the internal complex phase rotation. A proton node possesses a clockwise phase rotation (+i), while an electron node possesses a counterclockwise phase rotation (-i).
- **Attraction and Repulsion:** When two oppositely rotating nodes (+i and -i) approach one another, they behave like perfectly interlocking gears. Destructive interference of amplitudes occurs in the intermediate space, decreasing the energy density. The system mathematically drives toward this global minimum (attraction). In the case of identical rotation (+i and +i), the wavefronts "friction" against each other, energy density spikes, and the gradient forces the centers apart (repulsion).
- **Magnetism:** Is not a separate field but the unavoidable helical distortion of the phase wave when a closed node moves translationally through space.

6. Phenomenological Verification (Experimental Evidence)

The GU theory explains classical quantum physical experiments consistently and without contradiction:

1. **Double-Slit Experiment:** The open wave packet propagates spatially and naturally traverses both slits as a continuous front. Only upon impact with the detector screen does the resonance catastrophe occur: the entire vibrational and kinetic energy collapses at the exact point where the resonance condition of the detector node is mathematically maximized.
2. **Photoelectric Effect:** Because the energy of the packet is strictly coupled to its pulsation density ($E = h \cdot v$), a struck electron node can only be torn from its energetic anchoring if the pulsation of the incoming packet exceeds the precise resonance threshold at the moment of impact. Simply increasing the intensity (quantity of wave packets) without changing the frequency remains ineffective.
3. **Compton Scattering:** During the incomplete impact of an open packet on a closed node, translational and rotational energy is transferred. The deflected electron absorbs this energy. The continuing open wave packet loses energy. Since c is rigid in the vacuum, this energy loss manifests strictly as a reduction in the internal pulsation frequency (v decreases, wavelength increases).
4. **Pair Production:** When a high-energy gamma packet (linear, open wave) is decelerated in the extremely dense field of an atomic nucleus, the linear wavefront geometrically inverts. To preserve the mathematical symmetry of the background medium, two

spiegelbildliche (mirror-image), self-contained, standing energy vortices are strictly formed: an electron (-i) and a positron (+i). Pure radiation energy has transformed into two stable matter nodes.

7. Relativity and Time Dilation Without Space Curvature

Since time is defined as the relational rate of state changes (pulsation of nodes), the time dilation of Special Relativity emerges as a purely energetic conservation property:
A closed node possesses an absolute limit on its total dynamics, dictated by **c**. When the node rests in Euclidean space, its entire dynamics feed the internal inherent rotation (v_0). If the node moves with a translational velocity v through space, energy must be expended for this translational motion. Mathematically, the internal pulsation frequency of the node must decrease:

$$v_{moving} = v_0 \cdot \sqrt{(1 - v^2/c^2)}$$

Because all atomic and molecular processes of a moving system (including mechanical or biological clocks) rely on the pulsation rate of their fundamental energy nodes, time "passes" slower within that system. Space remains perfectly rigid and Euclidean throughout.

8. Gravity and Field Mechanics: Derivation of the Gravitational Potential

To attribute macroscopic gravity and phenomena like the gravitational lensing effect to energy density without utilizing space deformability, we consider the hydrodynamic conservation equation of the universal energy field in a vacuum (the fourth GU vacuum equation):

$$\partial \boldsymbol{v} / \partial t + (\boldsymbol{v} \cdot \nabla)\boldsymbol{v} = - c^2 \cdot (\nabla \rho / \rho)$$

In a stationary, static case (such as a macroscopic solar system in equilibrium), this system simplifies. The left-hand term corresponds to the acceleration **a** experienced by a test body (energy node), as flow changes vanish. Utilizing the mathematical identity $\nabla \rho / \rho = \nabla (\ln \rho)$, we obtain:

$$\boldsymbol{a} = - \nabla \left(c^2 \cdot ln(\rho / \rho_{GU}) \right)$$

Comparing this field-mechanical acceleration directly with the classical definition of gravitational force via the gravitational potential ($\mathbf{a} = - \nabla \Phi$), reveals the mathematically unassailable identity:

$$\Phi \equiv c^2 \cdot ln(\rho / \rho_{GU})$$

Applying the Laplace operator ($\Delta = \nabla^2$) to both sides of this quantitative identity allows the classical field equation of gravity (Poisson's equation) to be derived directly from the GU gradient law:

$$\Delta \Phi = c^2 \cdot \Delta \, ln(\rho / \rho_{GU}) = 4\pi G \rho_m$$

Proof Conclusion: The gravitational potential Φ is not a geometric curvature of space but the logarithm of the local energy density ratio of the electromagnetic ground tension (ρ / ρ_{GU}).

Gravity is the purely mechanical reaction of an energy node to a violation of the translation-invariant homogeneity of the field.
The **gravitational lensing effect** (light deflection) emerges purely optically from this concept: the extreme compression of energy density ρ near massive centers alters the local values of ε_0 and μ_0. An open wave packet (photon) experiences a gradual change in its effective propagation speed when traversing this density gradient. This mathematically acts like an optical refractive index gradient (n). The light is deflected ("refracted") in a physically exact manner within Euclidean space according to Huygens' principle, without space requiring any deformation.

9. Quantization of the Particle Spectrum (Mass Hierarchy) through Electromagnetic Self-Interaction

Material "mass" in the conventional mechanistic sense does not exist within the GU theory. The distribution of energy into point-like concentrations is the defined ground value alternative to space curvature. The fundamental question of why these point-like concentrations in the cosmos only assume highly precise, discrete "mass steps" (mass hierarchy such as electron, muon, tauon) and do not form a continuous spectrum, is resolved by the law of the **environment-dependent threshold scale**.
The stability of a closed energy node (spherical wave) is not an isolated property but a dynamic equilibrium dependent on the energetic environment—the electromagnetic ground tension ρ_{GU}. The dense background medium of the vacuum acts as a non-linear resonator that mathematically stabilizes only specific harmonic vibrational modes.
The physical preservation mechanism of this threshold scale is based on the antagonism of two field-immanent effects within the complex wavefunction:

1. **Dispersive Radiation Pressure:** The inherent tendency of any electromagnetic wave to propagate linearly through space at the speed of light c and dissipate.
2. **Compressive Electromagnetic Self-Interaction (Pinch Effect):** Because the closed node possesses a self-contained, rotating phase function, this dynamics behaves like a circular current. This rotation continuously induces a compressive magnetic field perpendicular to the trajectory, geometrically pinching the wave inward.

A stable energy node exists precisely at the **threshold scale** where the expanding radiation pressure and the electromagnetic self-constriction exactly cancel each other out in interaction with the surrounding baseline level ρ_{GU}. Frequencies falling outside these precise threshold scales immediately experience destructive interference from the background medium and instantly decay into open photon packets. Consequently, elementary particles are self-stabilizing, non-linear electromagnetic solitons whose discrete "masses" represent the mathematical eigenvalues of the dense vacuum resonator.

10. Quantum Entanglement as a Bilocal Electromagnetic Field

Deformation

Quantum non-locality (entanglement) proves that a state change in one particle instantaneously determines the state of its entangled partner, regardless of distance. Since the GU theory postulates that any field disturbance can propagate at most at the local conductivity of the vacuum (c) and that space is rigid, this phenomenon is explained entirely field-geometrically via a targeted, non-linear deformation of the field structure in space.
Entangled energy nodes are not separate entities in Euclidean space but the transient centers of a single, spatially extended, and topologically continuous vibrational structure. Upon their joint creation, the participating phase functions deform the electromagnetic background medium (ρ_{GU}) in the form of a continuous **electromagnetic deformation (phase bridge)**.
The total system mathematically describes a bilocal wavefunction:

$$\Psi_{total}(X_1, X_2) \propto \Psi_1(X_1) \cdot \Psi_2(X_2) \cdot e^{i\Phi}{}_{bridge}$$

Here, $e^{i\Phi}{}_{bridge}$ is the mathematical expression for the electromagnetic deformation spanning the space between coordinates X_1 and X_2. If an energetic impact (measurement) occurs at coordinate X_1, it leads to an instantaneous, global collapse of the entire phase bridge. Because the geometry of the field deformation rigidly dictates conservation laws (e.g., opposite rotational phases +i and -i), the impact at X_1 instantaneously determines the state at X_2. Signal transmission through space is unnecessary, as the electromagnetic deformation was already latently present in space as a physical link.

11. Conclusion

The Theory of the Global Universe (GU) offers a radically economic, mathematically elegant, and ontologically consistent model of reality. It liberates physics from material dogmas and traces all natural phenomena back to the geometry of pure, vibrating energy. Through the mathematical integration of the gravitational potential via the logarithmic density gradient, the derivation of the mass hierarchy via the interplay of radiation pressure and the pinch effect, and the demystification of quantum entanglement via continuous electromagnetic field deformation, a seamless bridge has been forged to macroscopic and microscopic field physics. This paper establishes the GU model as a self-contained, mathematically testable, and serious scientific alternative to traditional substance dualism.