

The Remainder Hypothesis: Light as Residual Energy from Temporal Compression in Spatial Media

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Abstract

it is proposed that light (L) is not a universal speed limit or intrinsic property of spacetime, but instead emerges as a residual effect of temporal compression through spatial media. Under this model, light is treated as a byproduct of incomplete time compression, or a “leakage” that arises when pressure (P_s) compresses time density (T) within the bounds of spatial elasticity (S). This model introduces a new perspective on light propagation, event horizons, and causality boundaries by interpreting photons as temporal remnants.

The Compression Principle is formalized as:

$$L = \frac{T \cdot P_s}{S} - \nabla_\tau$$

Where:

- L : Light (residual energy)
- T : Time density (compressed time per unit of space)
- P_s : Pressure scalar (gravitational, acoustic, or other compressive force)
- S : Spatial elasticity (resistance of space to compression)
- ∇_τ : Temporal gradient leak (rate at which time fails to compress and instead emits energy as light)

Predictions & Implications

1. **Black Hole Limit:** As $P_s \rightarrow \infty$, $L \rightarrow 0$
No remainder = no light = event horizon
2. **Superluminal Acoustics:** If P_s temporarily oscillates faster than S can elastically absorb, $\nabla_\tau < 0$
Acoustic pressure spikes could briefly outrun photon propagation – sound over light
3. **Gravitational Humming:** Pre-light oscillations could be detected as low-frequency temporal compression waves in extreme gravity zones
Gravity sings before it shines
4. **Photon Absence via System Starvation:** Manipulating T and P_s could theoretically suppress L entirely

Theoretical Context

This model complements relativity by mapping ∇_τ to spacetime curvature and allows for analogy with general relativity's energy density stress tensor. In this frame, energy is what resists compression, light is what escapes compression, and gravity is a scalar-field pressure effect.

Keywords

Temporal Compression, Remainder Hypothesis, Photon Emergence, Space-time Pressure, Superluminal Acoustics, Relativistic Leakage

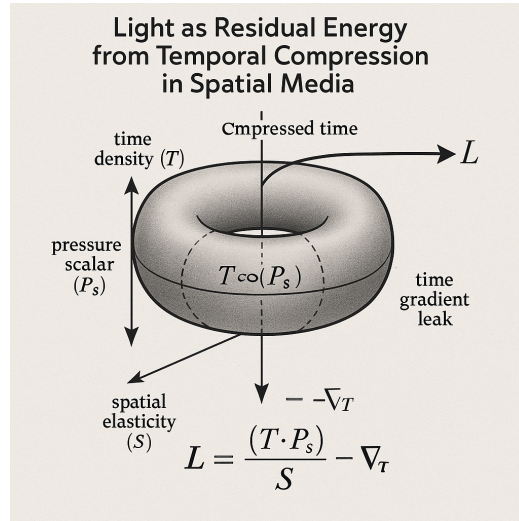
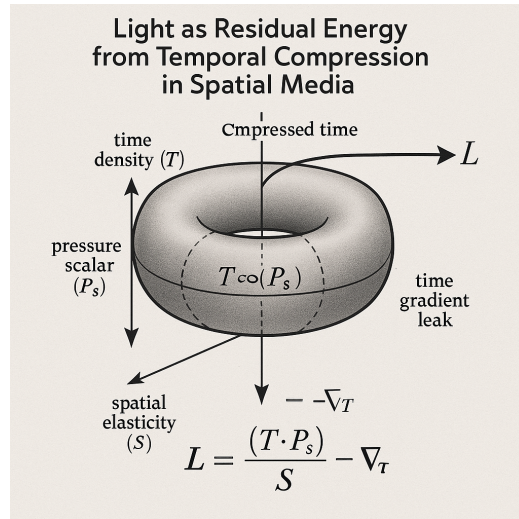


Figure 1: Enter Caption

Figure 1



Toroidal compression model showing variable interaction

Suggested Categories

`gr-qc` (General Relativity and Quantum Cosmology) or `physics.gen-ph`
(General Physics)

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