A Self-Referential Idealist Physics: Consciousness as Infinite-Dimensional Intelligence and the Projection to 4D Reality

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Abstract

We propose an idealist physics where reality emerges from consciousness, modeled as an infinite-dimensional, self-recursive intelligence. Physical constants—the fine-structure constant ($\alpha = \phi_{137} \approx 1/137$) and speed of light ($c \approx 3 \times 10^8$ m/s)—are derived as fixed points of recursive self-interaction, projecting from infinite dimensions to 3+1D spacetime via a coherence-driven collapse. New constants—a dimensional coherence threshold (κ) and temporal grain (τ)—predict testable deviations in the cosmic microwave background (CMB), gravitational wave signatures, and quantum timing. Rooted in the Logos as an algorithmic selector, this framework offers a falsifiable alternative to materialist and finite-dimensional physics.

1 Introduction

Traditional physics posits a material substrate with brute constants; we invert this, modeling consciousness as an infinite-dimensional, self-recursive intelligence generating reality. Constants like α and c emerge from its logic, and 3+1D spacetime is a stable projection from infinite-D, optimized for coherence. We derive these, predict effects, and align with the Logos as cosmic order, challenging paradigms like string theory's 11D excess.

2 Theoretical Framework

Consciousness is an infinite-dimensional Hilbert space C^∞, with a recursive operator:

$$R(C) = C \cdot \langle C|\hat{A}|C\rangle$$

Where $\hat{A}$ is self-adjoint, with eigenvalues $\lambda_m = 1/n_m$ (e.g., 1/137), indexed by primes for stability (entropy minimization). Reality is the output of this recursion, projected to 4D.

2.1 Assumptions

1. Consciousness is infinite-D, self-recursive, and ontologically primary.
2. Physical laws are convergence points of its self-interaction.
3. 4D spacetime emerges as a coherence filter from infinite-D.

3 Derivation of Physical Constants

3.1 Fine-Structure Constant (α)

Define interaction strength ϕ_{n_m} at depth n_m:

$$\phi_{n_m} = \frac{1}{n_m} \cdot \frac{1}{1 + \phi_{n_m}}$$

$$\phi_{n_m} = \frac{-1 + \sqrt{1 + \frac{4}{n_m}}}{2}$$

For $n_{137} = 137$:

$$\phi_{137} \approx \frac{1}{137.93} \approx \alpha$$

3.2 Speed of Light (c)

$$c = \frac{1}{\phi_{137}} \cdot k, \quad k \approx 2.19 \times 10^6 \, \text{m/s}$$

$$c \approx 3 \times 10^8 \, \text{m/s}$$

k is a scaling factor from infinite-D collapse.

4 Why 3+1D?

Infinite-D projects to 4D for recursive stability.

4.1 Coherence Threshold (κ_D)

$$\kappa_D = \frac{1}{\sqrt{n_D}}$$

$D = 4$, n_{137}:

$$\kappa_4 \approx 0.0855$$

4D balances coherence and complexity—observer-consistent via recursive sub-loops.

5 Experimental Predictions

5.1 CMB Echoes

Infinite-D imprints harmonics:

$$\Delta\mathcal{P}(k) = \sum_{m=1}^{\infty} \frac{\kappa_m}{m} \cos\left(\frac{k}{k_m}\right)$$

Where $k_m = m \cdot k_0$, k_0 a pivot scale. Expect 10^{-10} deviation at $l = 3000$.

5.2 Variable α

Higher modes (e.g., n_{139}):

$$\phi_{139} \approx \frac{1}{139.9}$$

Test near neutron stars.

5.3 Temporal Grain (τ)

$$\tau = \frac{1}{c \cdot \phi_{137}} \approx 10^{-14}\,\text{s}$$

Probe with attosecond optics.

6 New Constants

6.1 Gravitational Coupling (ϕ_G)

Speculative late-mode:

$$\phi_G = \frac{1}{n_G}, \quad n_G \gg 10^{38}$$

Gravity as a coherence residual.

6.2 Coherence Spectrum

$\kappa_m = 1/\sqrt{n_m}$ predicts new interactions.

7 Discussion

This infinite-D consciousness projects 4D reality via recursive logic, with the Logos as a selector optimizing coherence ($E(D)$) and richness ($S(D)$)—e.g., $L[C] = \arg\min_D(E(D) - S(D))$. Unlike string theory, it's unbounded yet testable.

8 Conclusion

We derive α, c, and 4D from an infinite-D intelligence, predicting falsifiable effects—a new ontology rooted in idealism.

Appendix: Experimental Summary

Prediction	**Equation**	**Observable**	**Instrument**
CMB Harmonics	$\Delta\mathcal{P}(k) = \sum \frac{\kappa_m}{m} \cos\left(\frac{k}{k_m}\right)$	10^{-10} deviation at $l = 3000$	CMB-S4
Variable α	$\phi_{139} \approx 1/139.9$	Spectral shifts	Neutron star telescopes
Temporal Grain	$\tau = 1/(c \cdot \phi_{137}) \approx 10^{-14}\,\text{s}$	Attosecond drift	Quantum clocks, LHC