

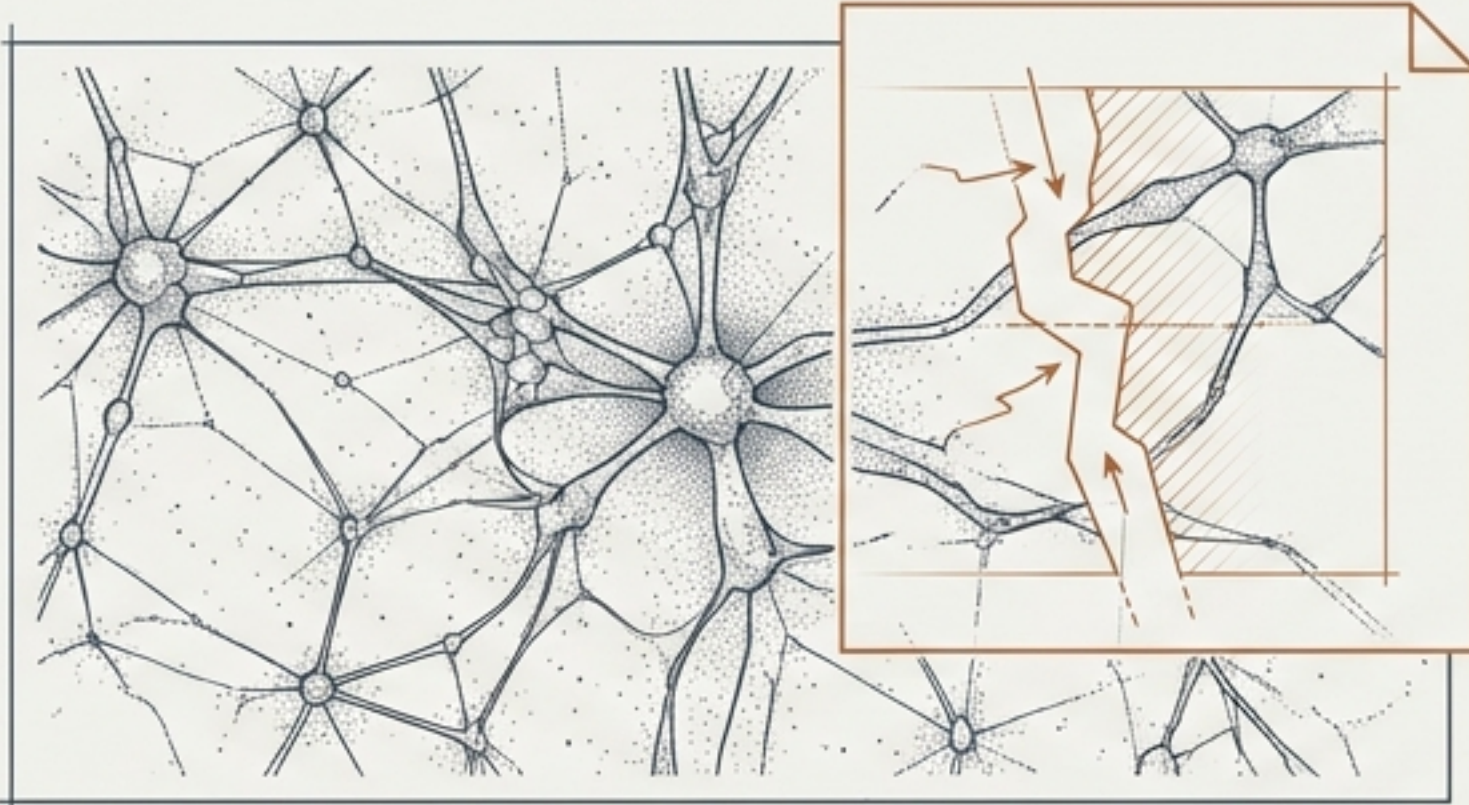
The Zero Infinity (0^∞) Framework

Resolving Cosmological and Quantum Inconsistencies through Scale-Dependent Geometry

Based on the 2026 work of Sid J.A. Hubbard



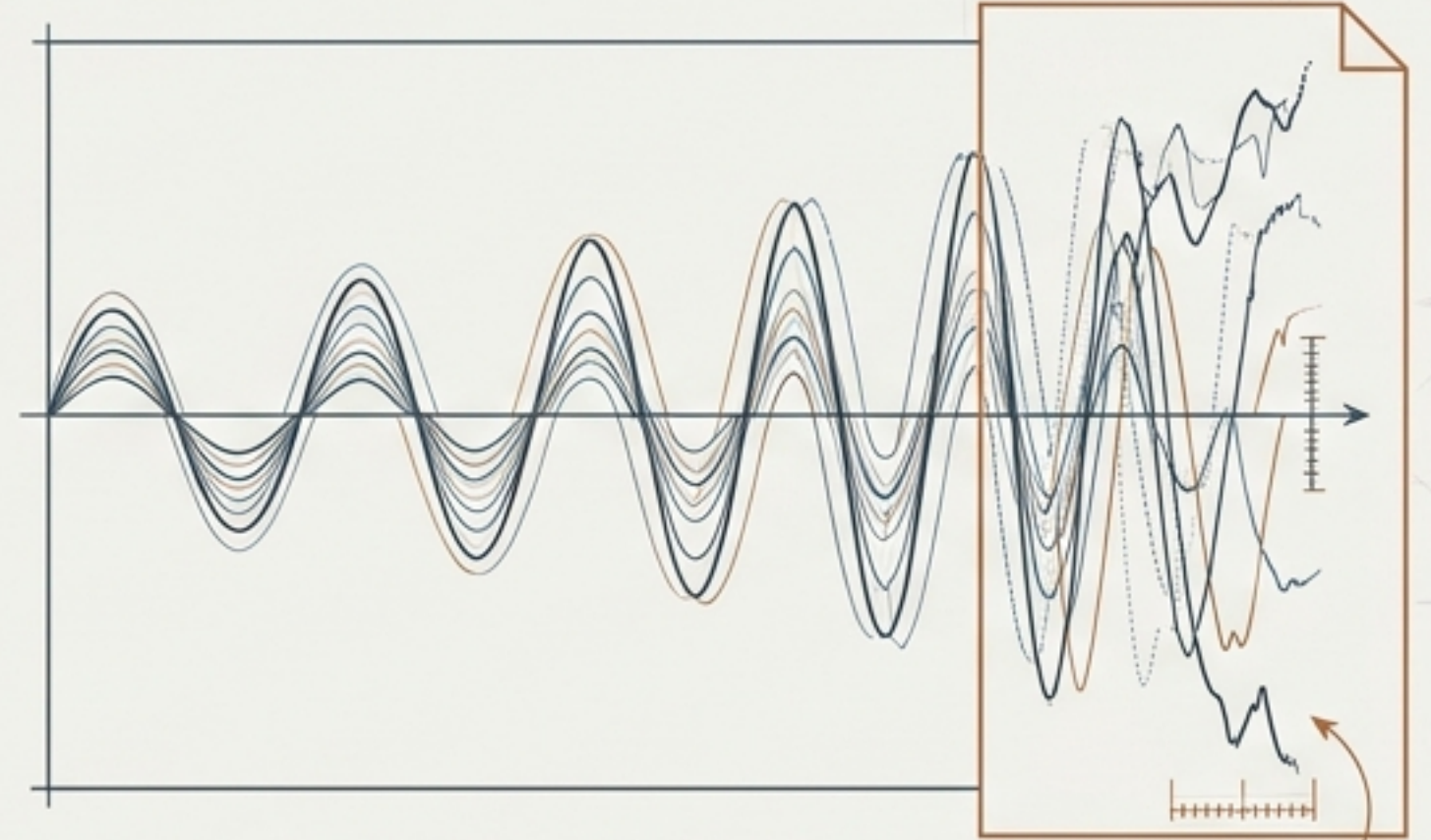
Cosmology: Λ CDM Model



The Hubble Tension: A 5σ discrepancy between local expansion ($H_0 \approx 73.5$ km/s/Mpc) and global expansion ($H_0 \approx 67.5$ km/s/Mpc).

The Vacuum Energy Catastrophe: A 120-order-of-magnitude mismatch between observed limits and quantum field theory predictions.

Quantum Mechanics



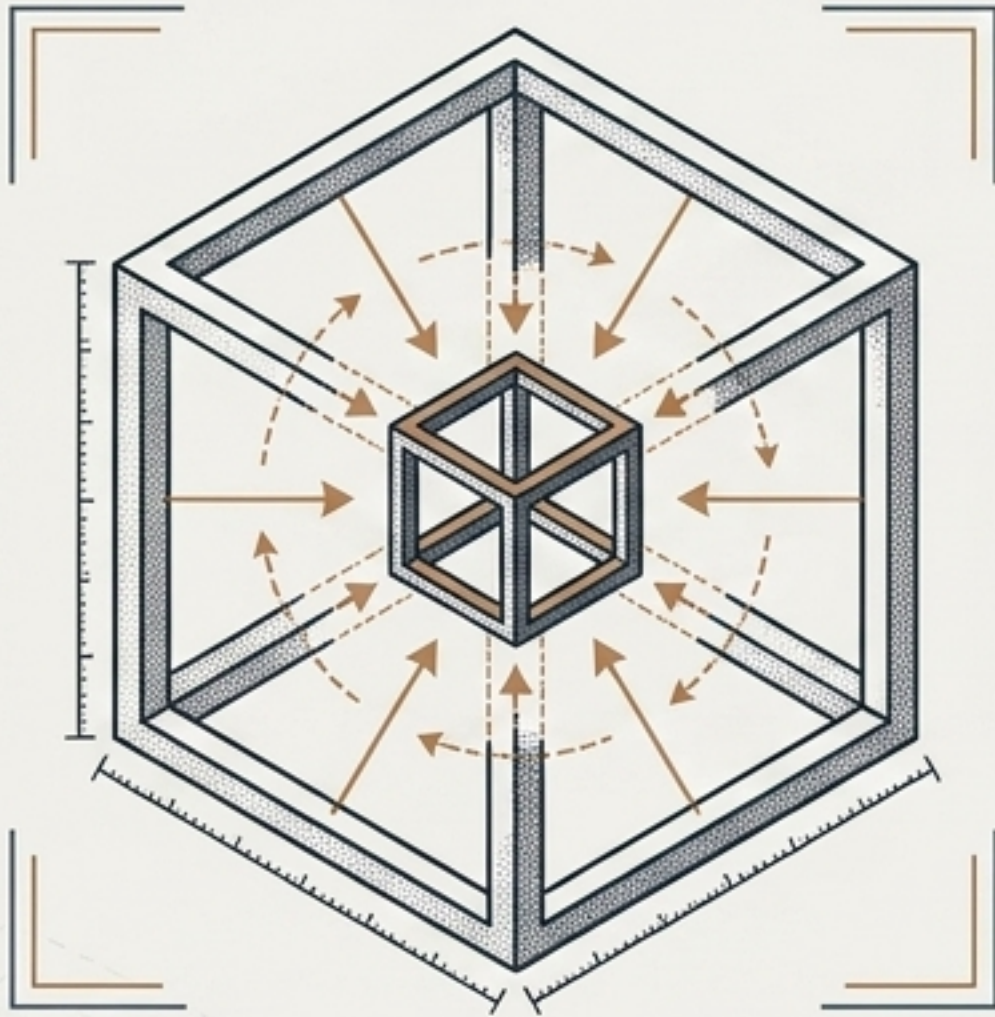
UNBOUNDED WAVE EDGES

The Measurement Paradox: Non-computable, infinite spreading of probability waves requiring ad-hoc, ill-defined measurement collapse.

The Core Diagnosis: Both crises stem from a single flawed assumption in classical physics—that **spacetime is a smooth, continuous, unbounded continuum.**

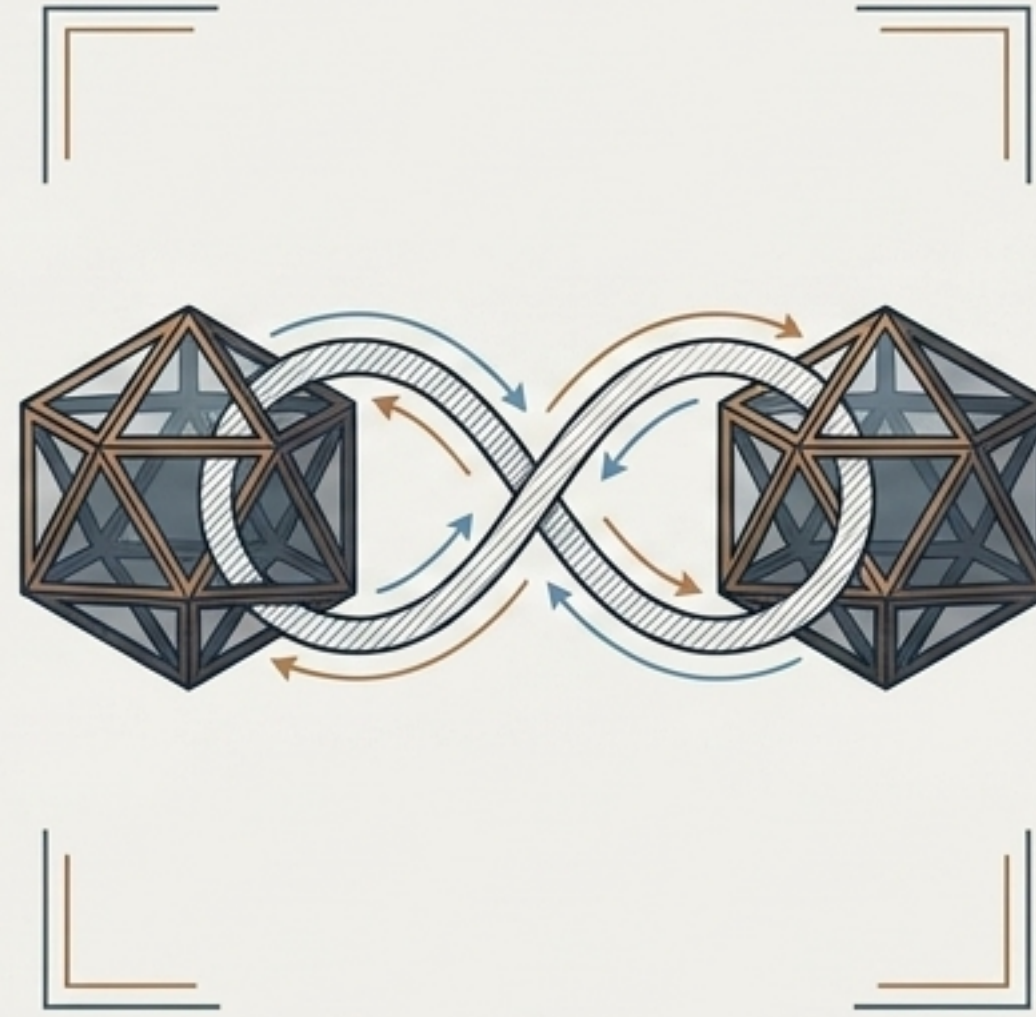
The New Paradigm: Three Laws of Nested Causality

1. Law of Nested Causal Enclosure



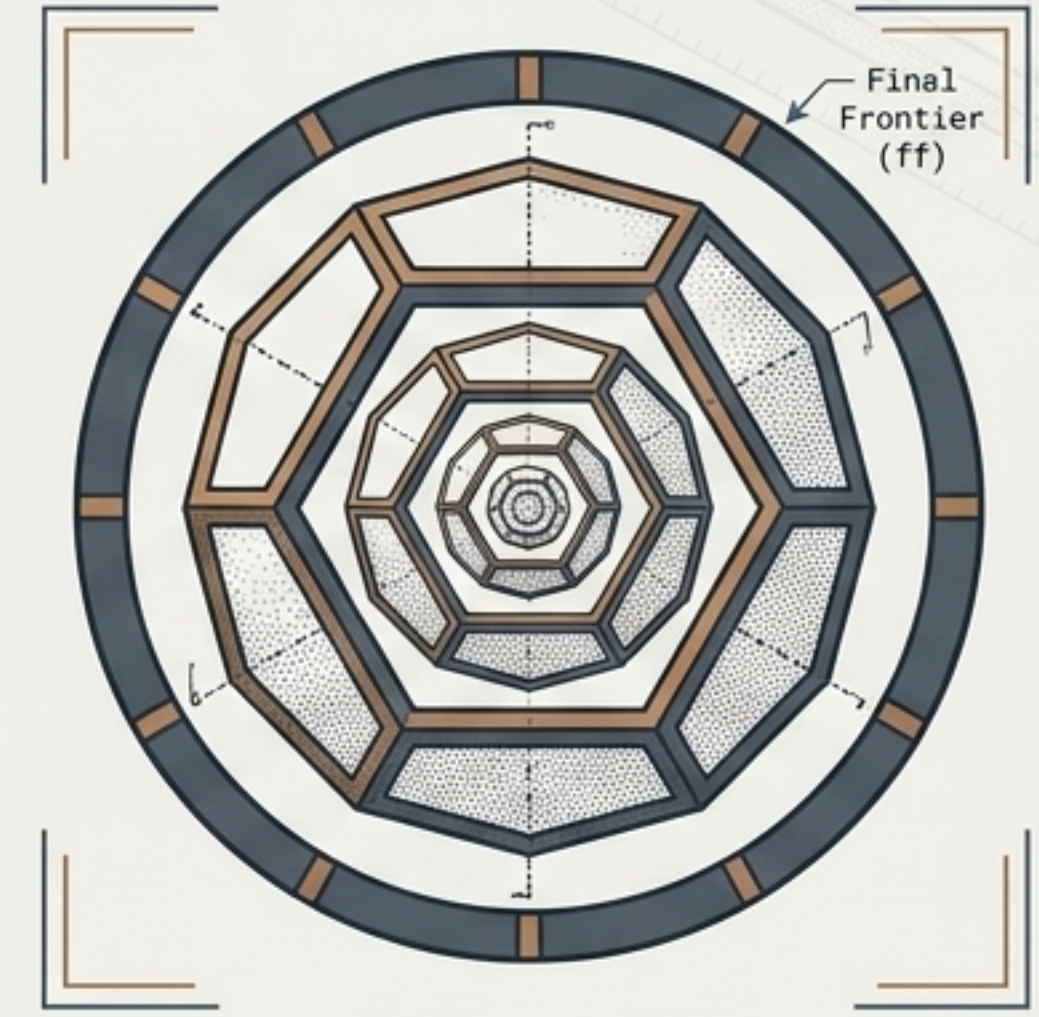
Every steady-state system is enclosed by a macro-enclosure that projects initial and boundary conditions inward.

2. Law of Nested Exchange



Energy transfer is lossless. Apparent entropic heat dissipation is localized "metric friction" returned negentropically to adjacent spatial configurations.

3. Law of Nested Infinities



Causal enclosures repeat recursively up and down, but are structurally bounded at the macro-limit by a deterministic boundary condition: the Final Frontier (ff).

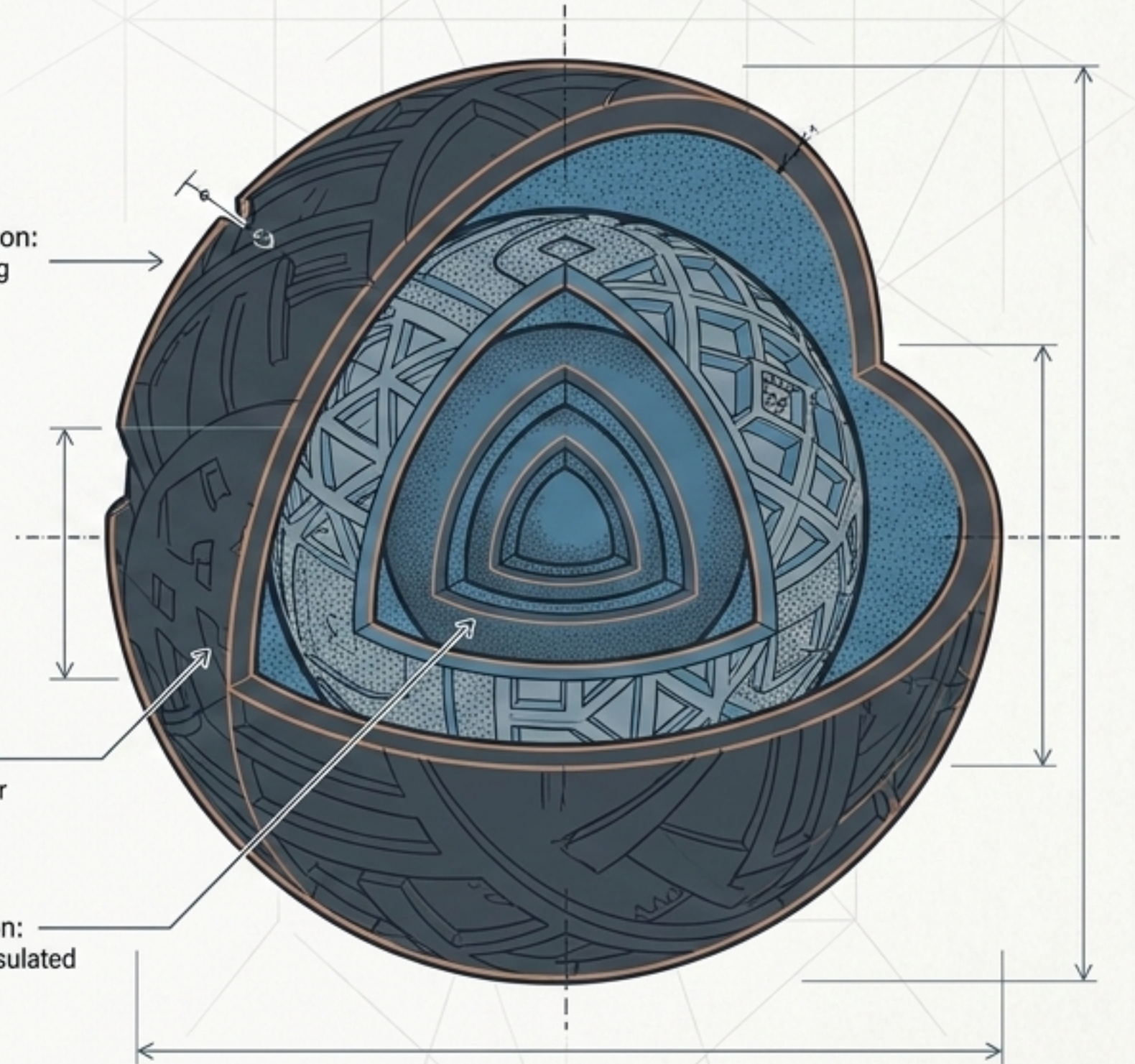
The Mathematical Engine: Recursive Ternary Geometry

$$\Psi_n = \left[\Psi_{n+1} \mid \sigma_n \mid \Psi_{n-1} \right]$$

Macro-Enclosing Function:
Inward causality projecting
structural limits.

Departure State:
The local contracted (-1) or
expanded (+1) geometric
condition.

Micro-Enclosed Function:
The nested system encapsulated
inside the current tier.



Expanding any position automatically yields a new ternary split, perfectly preserving infinite self-containment without breaking the structural frame.

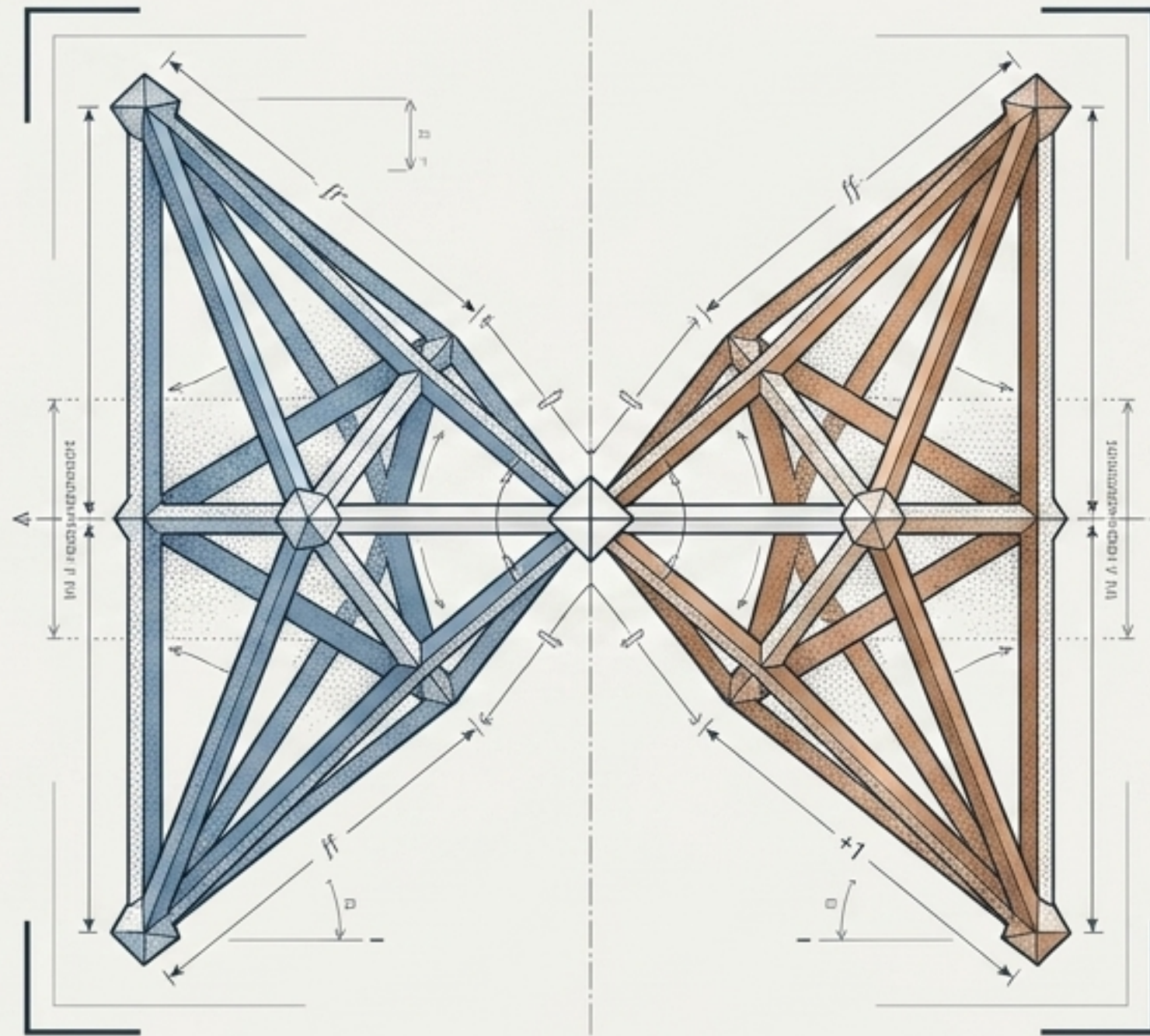
Formalizing the Baseline: The Zero Infinity (0∞)

$$\Psi_{0\infty} = [[ff \mid -1 \mid ff] \mid \Psi_{VE} \mid [ff \mid +1 \mid ff]] = 0\infty$$

A Matrix of Tension

Space is not an empty vacuum. It is a countably infinite hierarchy of perfectly juxtaposed forces canceling upon a zero state.

The contraction pressure (-1) and expansion pressure (+1) achieve perfect equalization at the central Vector Equilibrium (Ψ_{VE}).



The Nature of Matter

No localized departure can statically reside within this zero-phase configuration.

All physical matter, radiation, and momentum ($T_{\mu\nu}$) are strictly active, scale-dependent departures away from this equalized 0∞ reference condition.

Macro Physics: Redefining General Relativity

Standard General Relativity

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \cancel{\Lambda g_{\mu\nu}} = \frac{8\pi G}{c^4} T_{\mu\nu}$$

Hubbard Modification

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \left[\frac{L^2}{\zeta \cdot \tanh(d)} \right] g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}$$

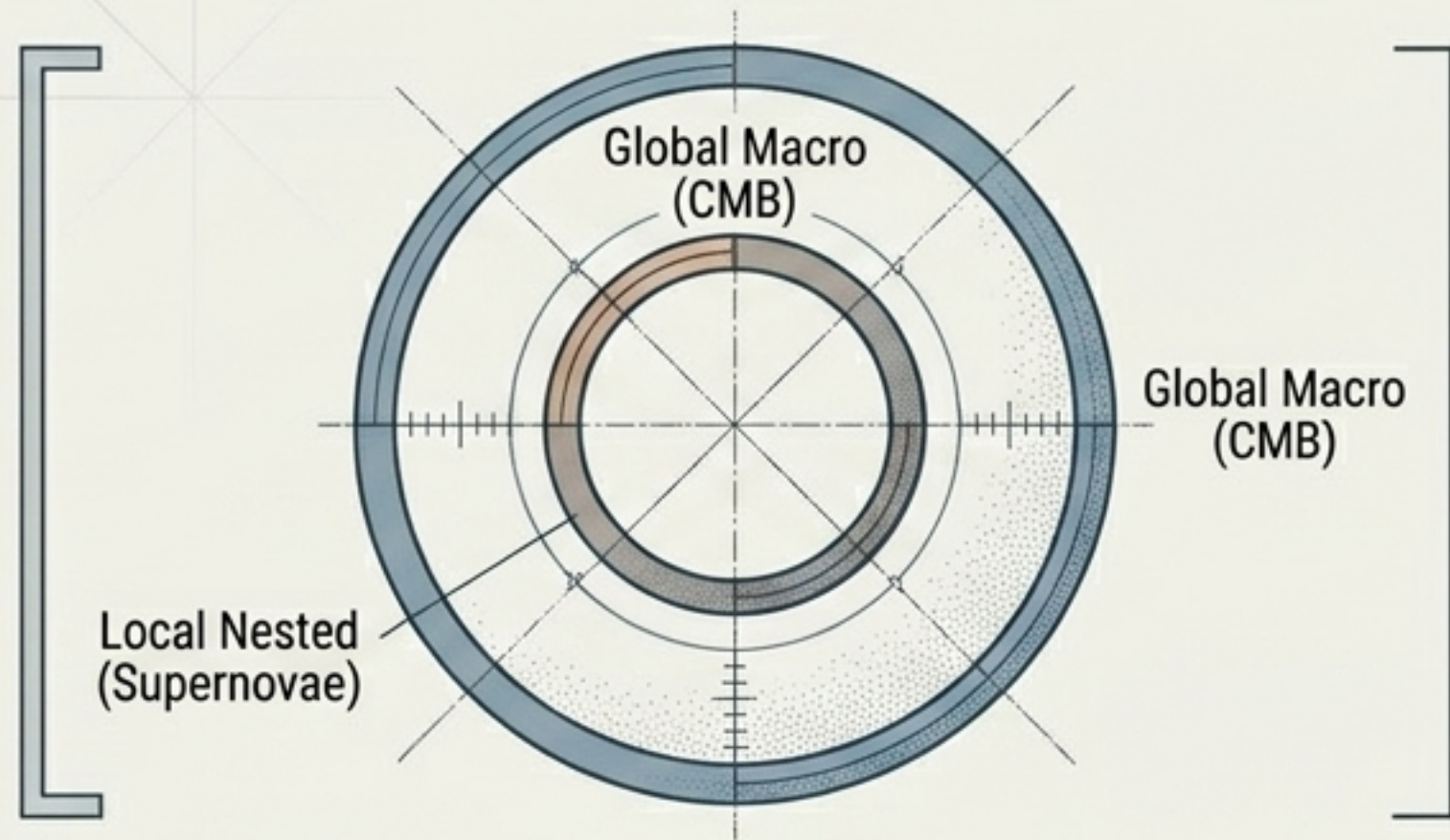
The Shift

The invariant cosmological constant (Λ) is removed. It is replaced by the Departure Calculus modifier—a dynamic engine mathematically driven by enclosure scale (L) and metric departure depth (d).

Eliminating Singularities

Governed by the hyperbolic tangent function $\tanh(d)$. As a system attempts absolute collapse ($d \rightarrow 0$), internal geometric pressure mathematically approaches infinity. This forms an absolute structural barrier, forcing an instantaneous, lossless geometric rebound. Black hole singularities cannot physically exist.

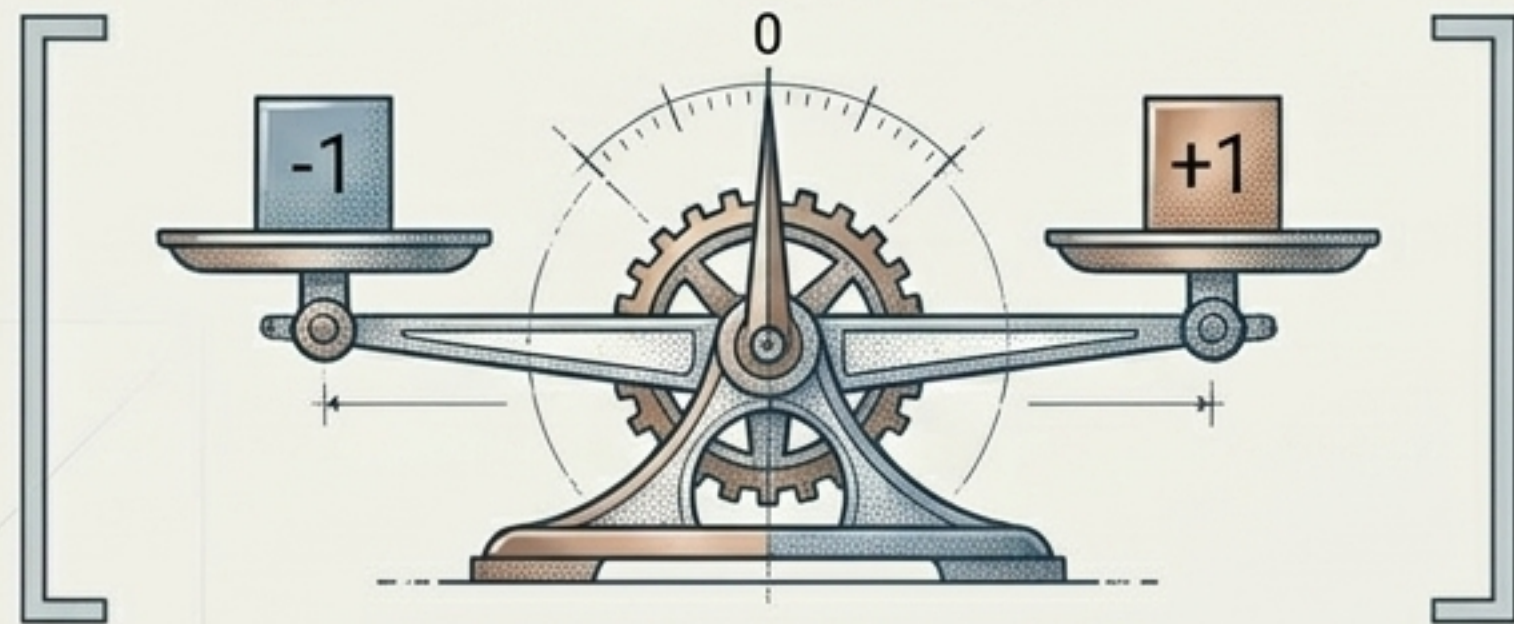
Resolving the Cosmological Crises



Expansion is Scale-Dependent

The Hubble parameter is redefined as $H(L)$.

- **Global Macro (67.5):** Internal phase variations cancel out across the vast geometric matrix, smoothing into a lower, stable cosmic baseline.
- **Local Nested (73.5):** Energy accumulates near local scale-transition thresholds, mathematically driving higher localized expansion velocities.

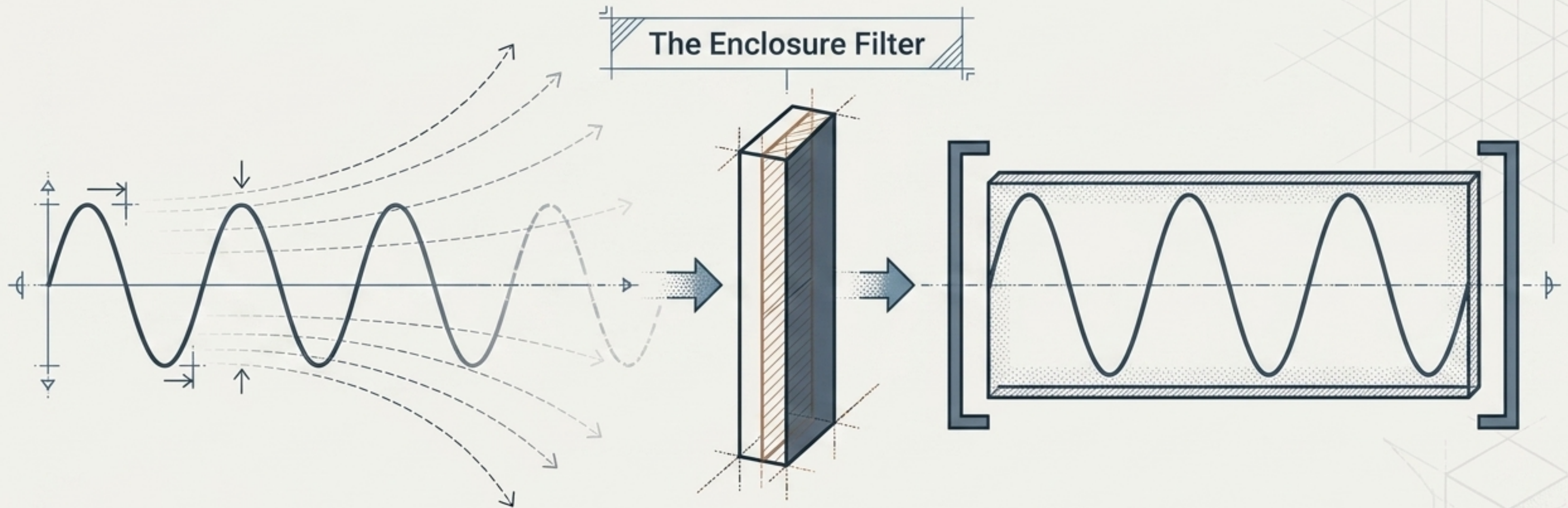


Structurally Pre-Canceled

The 120-order-of-magnitude mismatch vanishes.

Zero-point fluctuations are **symmetric** potential pairs (+1 and -1) embedded natively in the 0_{∞} matrix. **Natively**, they **cancel cleanly** across any finite enclosure, exerting zero global gravitational pressure.

Micro Physics: Bounding the Quantum Realm



Nesting the Quantum State

The wave function is no longer an unbounded free probability wave spreading across an abstract continuous background. It is rewritten as an enclosure-bound state within the matrix:

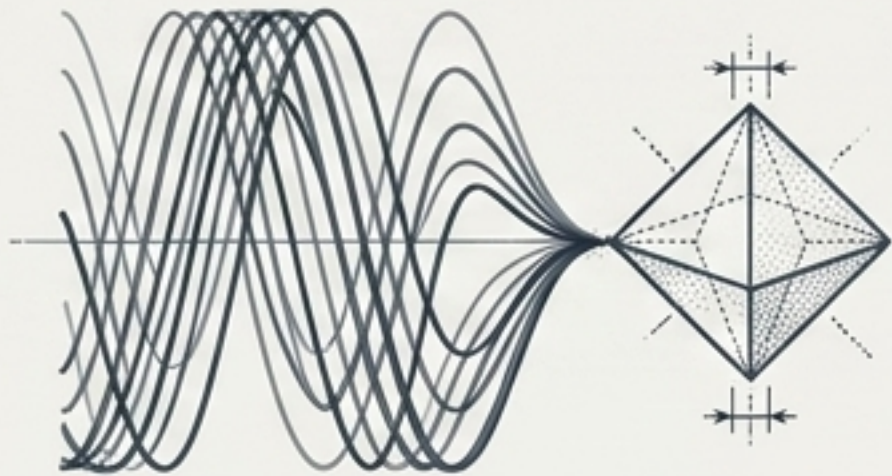
$$\Psi_{\text{Total}} = [\Psi_{\text{enclosed}} \mid \Psi_{\text{departure}(t)} \mid \Psi_{\text{enclosing}}]$$

The Enclosure-Filtered Schrödinger Equation

Time evolution is strictly governed by a new Enclosure Operator ($\hat{E}_{0\infty}$). This operator mathematically functions as a native geometric probability filter, strictly enforcing the omnidirectional balance and boundary limits of the 0∞ matrix.

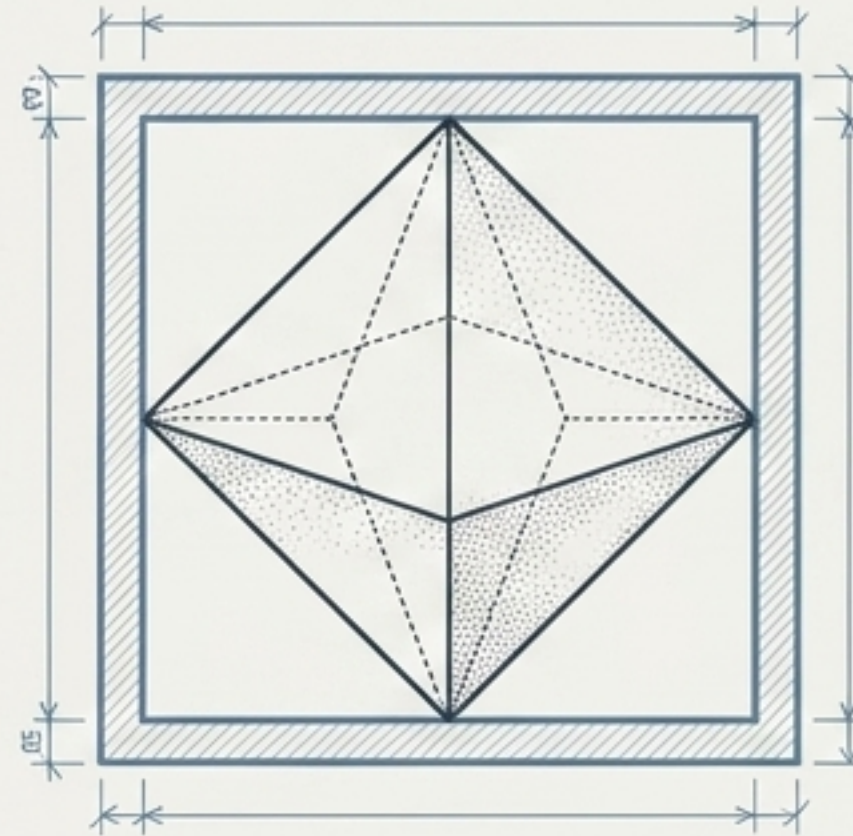
Deterministic Quantum Collapse (The Jitterbug Transformation)

1. Signal Extraction



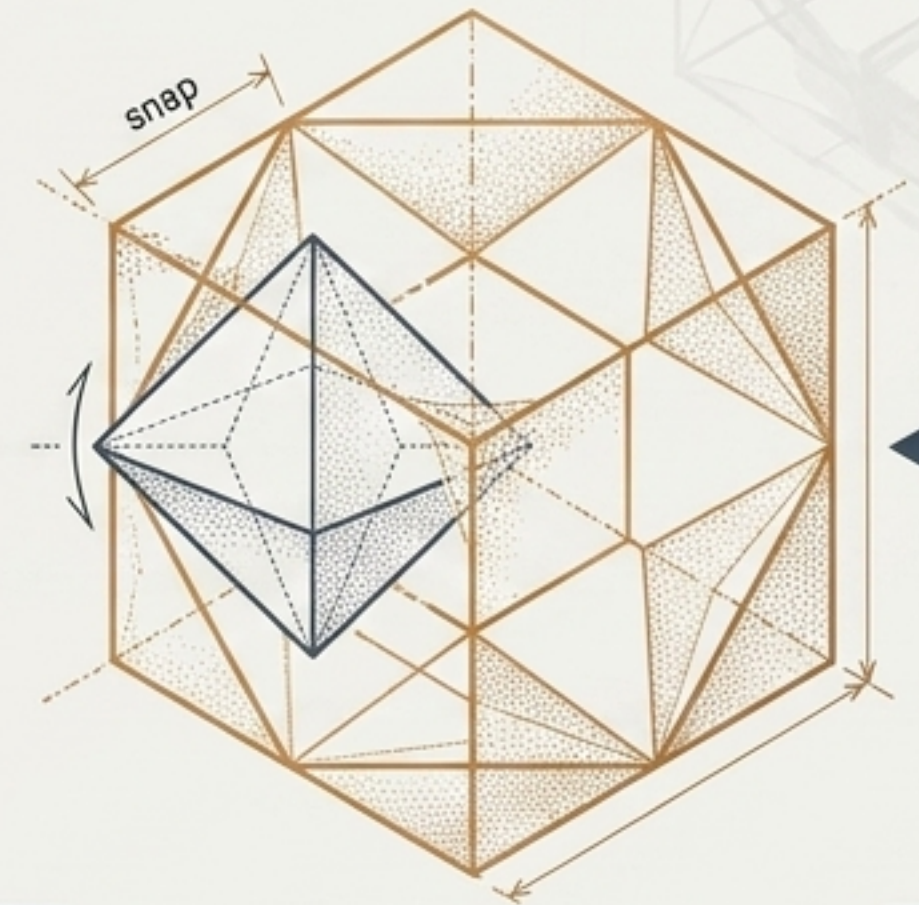
Internal parallel sub-branches undergo quantized compactification, canceling directly across the ∞ baseline. The remaining un-canceled directional bias forms the stable physical particle.

2. Lossless Constraints



Structurally bounded by the Final Frontier (ff). As departure states accumulate, the Enclosure Operator drops to zero, forcibly halting spatial probability spreading.

3. Lossless Collapse



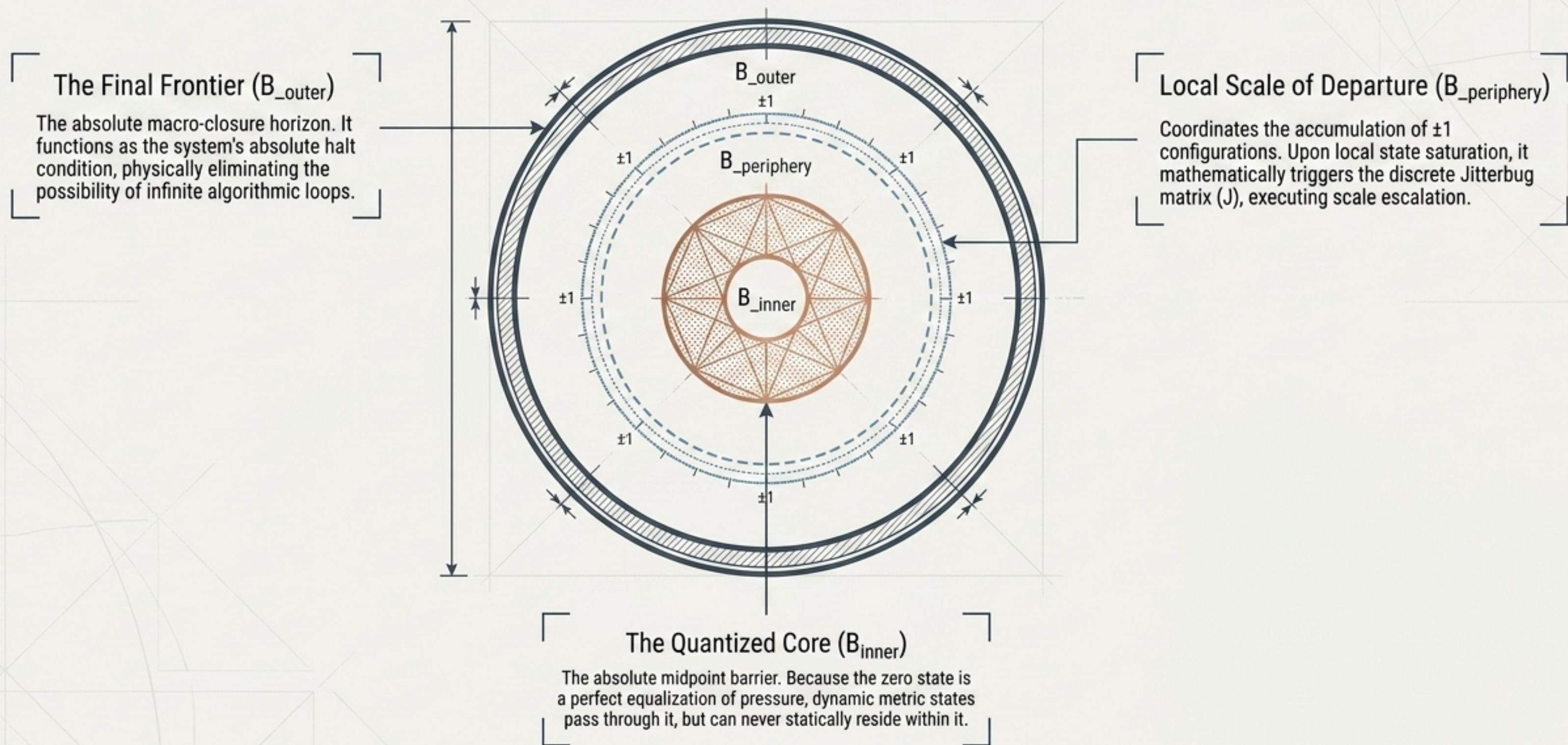
Hitting the rigid boundary triggers the discrete Jitterbug matrix (J). The wave function collapses losslessly and deterministically into the matching adjacent scale tier dictated by its macroenvironment.

Paradigm Comparison Matrix

	Standard Paradigm	Hubbard 0^∞ Framework
Spacetime Geometry	Smooth, Unbounded Continuum	Recursively Nested Causal Enclosures
Cosmological Constant	Invariant and fixed variable (Λ)	Dynamic, scale-and-depth dependent modifier ($\tanh(d)$)
Vacuum Energy	120-order-of-magnitude mathematical mismatch	Structurally pre-canceled to exact zero globally
Quantum Wave Collapse	Stochastic, random, infinitely spreading	Deterministic, mathematically bounded Jitterbug scale transformations

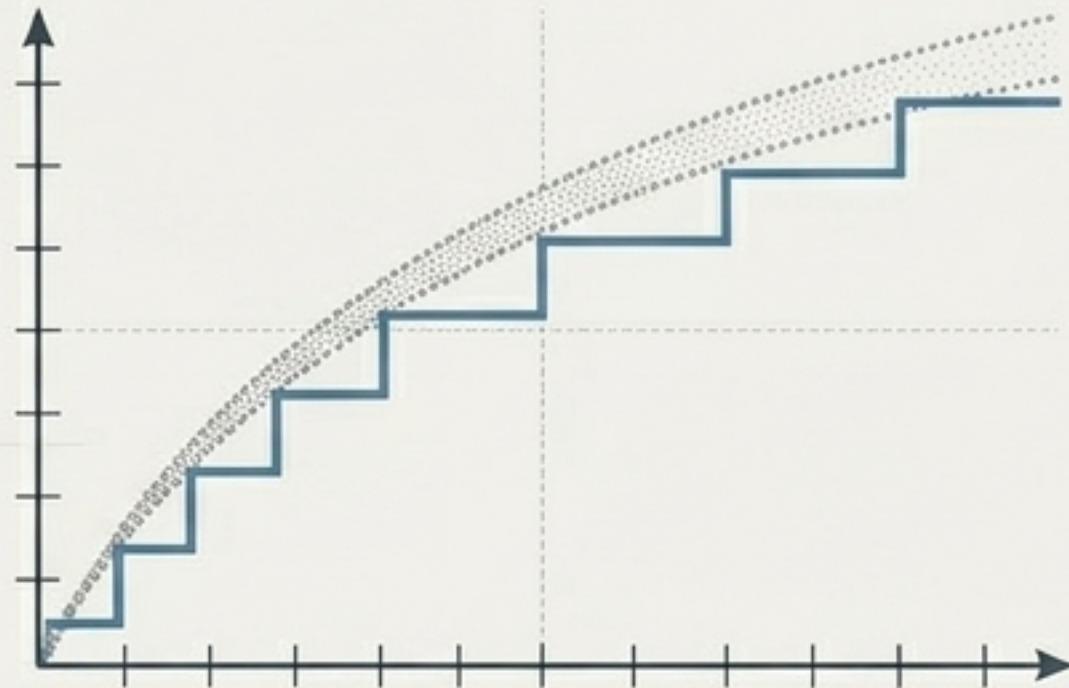
The Computable Universe (Unified Boundary Conditions)

Translating analytical geometry into computable algorithmic architecture via $B = [B_{outer} \mid B_{periphery} \mid B_{inner}]$



Empirical Verifications & Final Synthesis

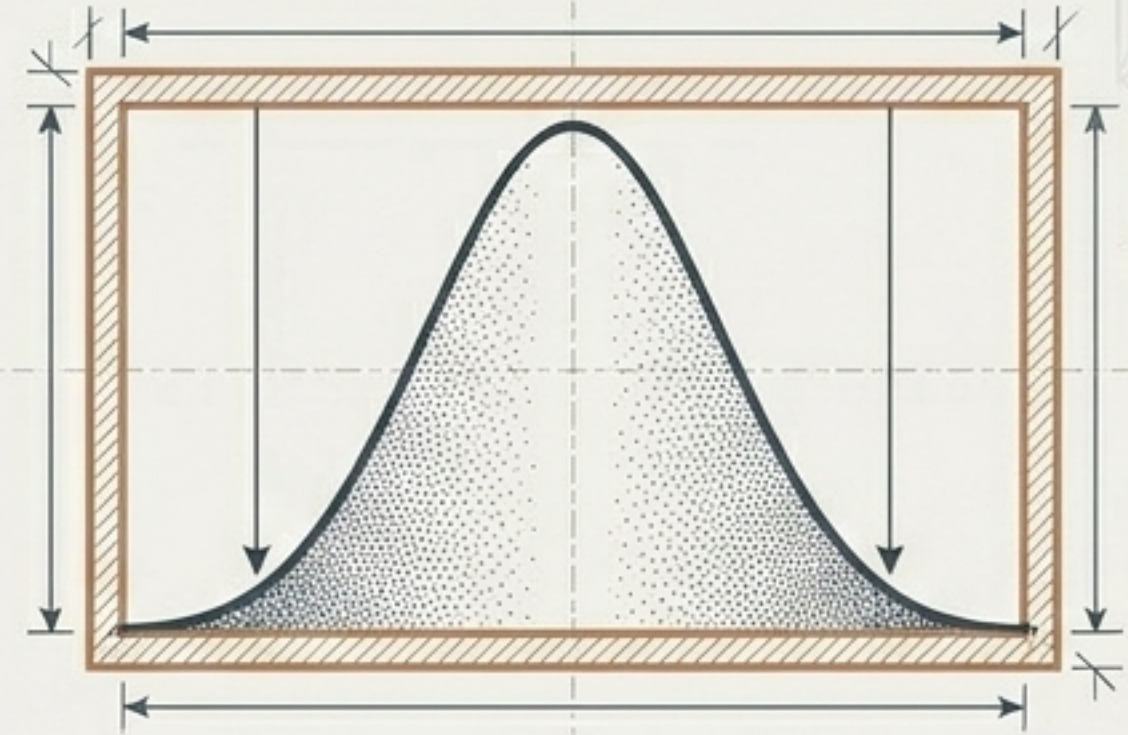
Scale-Dependent Redshift Quantization



Light traversing cosmological distances experiences discrete metric friction across nested enclosure boundaries.

Prediction: Deep-space redshift datasets will reveal a nonlinear, stepped signature, directly refuting a smooth, continuous deceleration curve.

Bounded Probability Envelopes



In high-precision quantum optics, the wave probability cannot spread to infinity.

Prediction: Spatial probability densities ($|\Psi|^2$) will exhibit sharp, non-Gaussian suppression boundaries mapping exactly to local matrix enclosure perimeters.

Final Synthesis: By treating the universe as a recursively nested, scale-dependent geometry, the 0^∞ framework restores determinism, algorithmic computability, and total unification across all physical boundaries.