

The Physical Origin of Spacetime from a Prior Real Condition

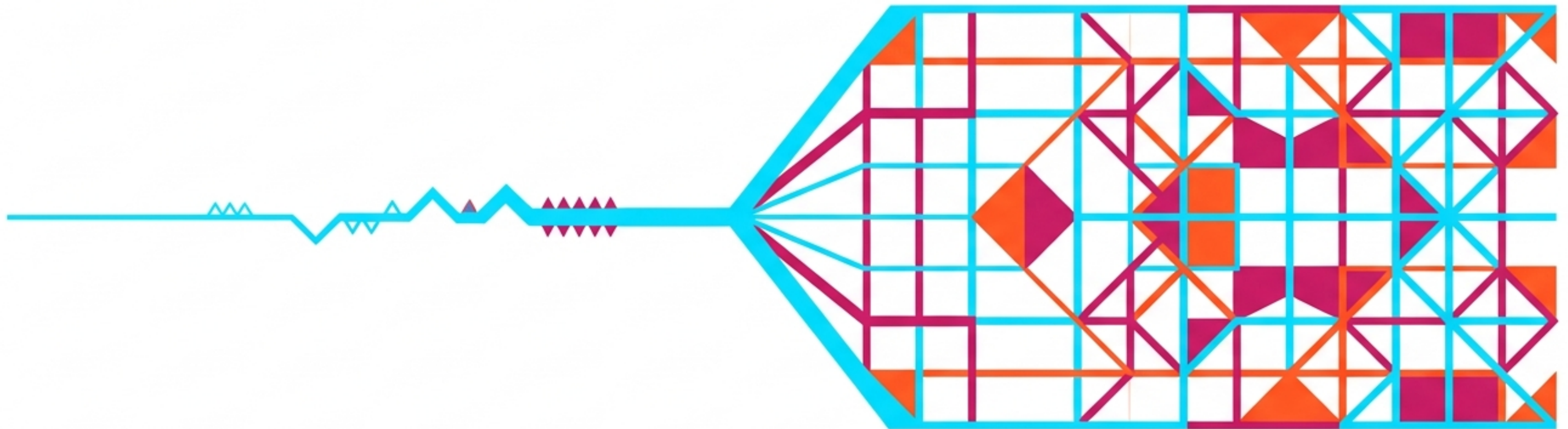
An ontological deduction replacing the creation-from-nothing paradigm of standard cosmology with a rigorous framework of continuo-

continuous existence.

This framework demonstrates how infinite space always existed in a

how infinite space always existed in a prior real energy state, and how the physical substrate of rea-

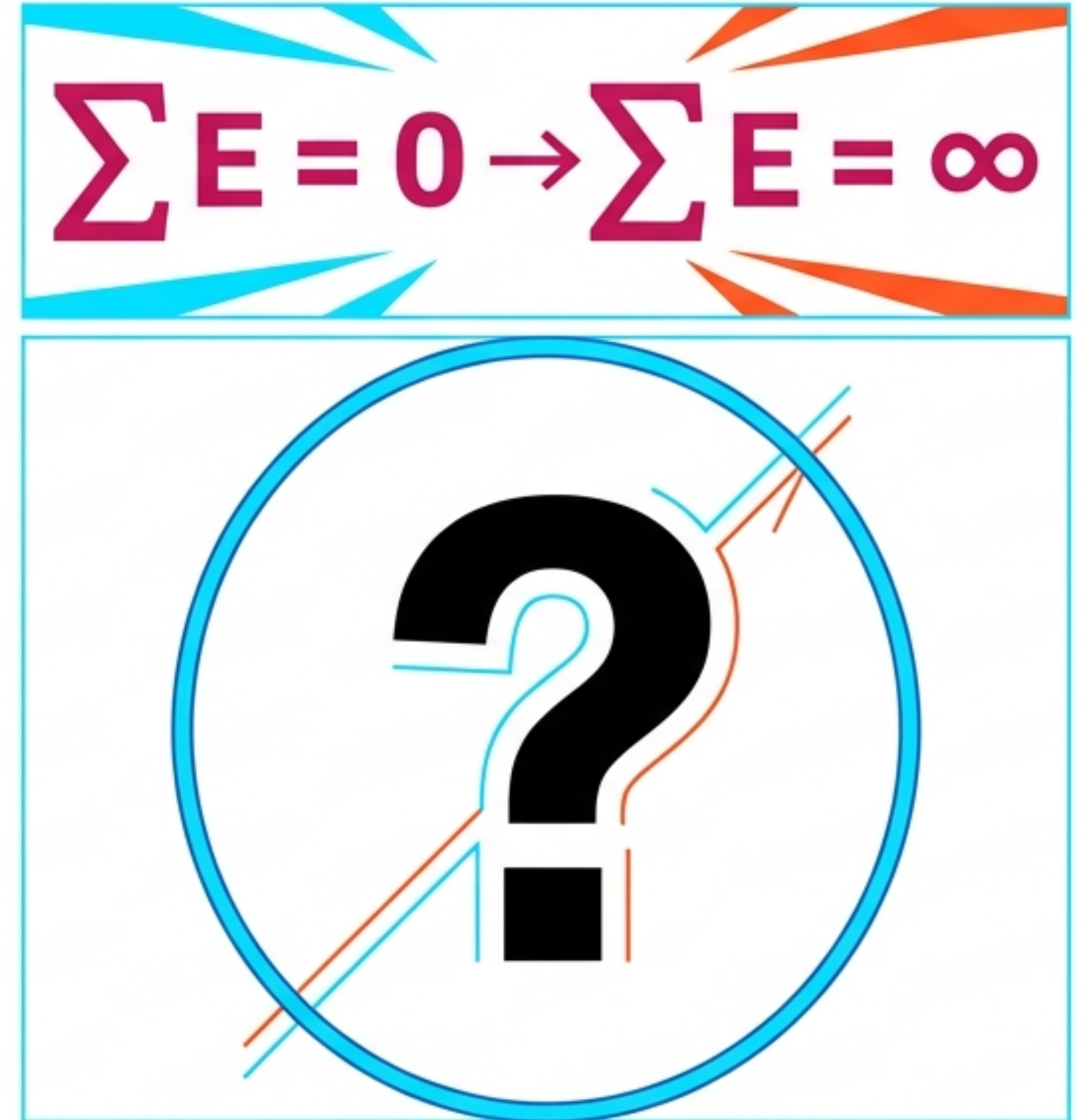
reality manifests from this state while strictly preserving universal conservation laws and causality.



The Cosmological Paradox of Creation Ex Nihilo

Modern cosmology describes the evolution of the universe with remarkable mathematical precision, yet it leaves the physical origin of spacetime itself unexplained. General relativity treats spacetime as a real, dynamical structure that curves under mass-energy and supports propagating gravitational waves. However, the standard cosmological narrative provides ~~born~~ provides no physical account of how such a curvature-capable fabric could emerge from literal non-being.

The creation-from-nothing hypothesis requires that all conservation laws were simultaneously violated at a singular origin event. Energy, momentum, and baryon number are assumed to have appeared from absolute zero. This is not a hidden mathematical nuance; it is a wholesale violation of the most reliable class of physical laws ever established.



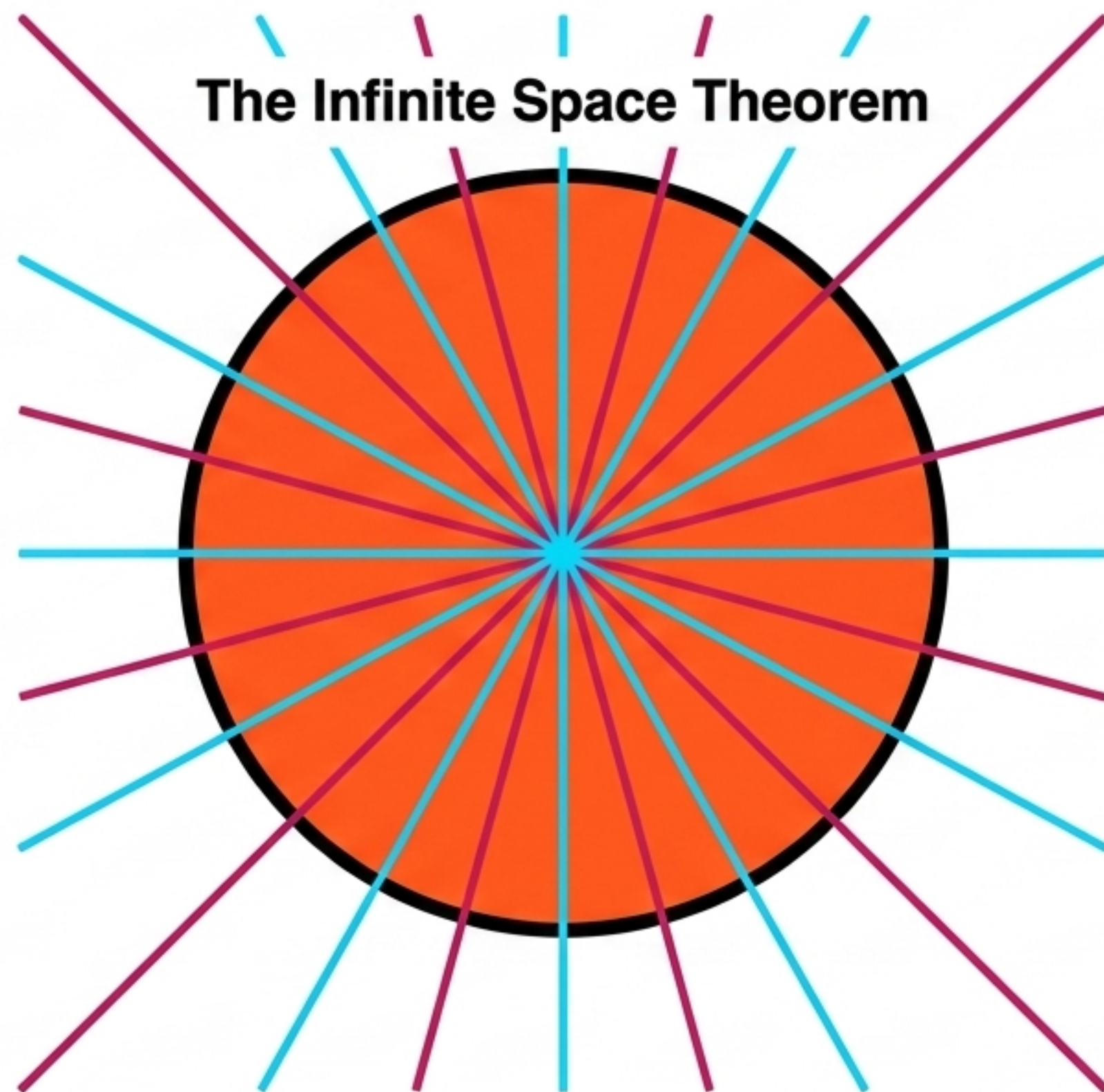
The Ontological Cosmology Matrix

Dimension	Finite-Origin Cosmology (Standard Model)	Continuity-Based Cosmology (BFUT)
Origin of Spacetime	Unexplained emergence from non-being.	Manifestation from a prior real energy state of infinite space.
Conservation Laws	Simultaneously violated at $t=0$.	Strictly preserved through state transformation.
Causality at Origin	Requires an uncaused first cause, breaking its own causal structure.	Causal continuity maintained; the prior state is the causal precondition.
Thermodynamic Arrow	Requires a highly improbable, fine-tuned low-entropy initial state.	Emerges locally from irreversible substrate wave mechanics.

The Logical Necessity of Infinite Space

The fundamental premise of a continuous ontology is that space cannot possess a terminal boundary. A spatial boundary intrinsically requires an outside to define its edge. However, an outside implies further spatial extension. Therefore, space cannot coherently terminate.

Because space is genuinely infinite, it has no natural origin point and no natural end point. Consequently, an absolute state of non-spatial nothingness has never existed. The elimination of literal non-being removes the most severe form of creation-from-nothing language. While manifested matter and familiar cosmic structures may not have existed, literal non-being is a geometric impossibility.



The Prior Real Energy State

If space is necessary and infinite, then infinite space must exist in some real condition. It cannot be an abstract, property-less void. Any real condition of existence necessarily constitutes an energy state, regardless of how minimal or quiescent it may be compared to present familiar baselines.

This prior real condition possessed intrinsic structure. The observed laws of physics are not arbitrary mathematical rules imposed on reality from an external creator. They are direct expressions of the deep, continuous structure of infinite space itself. Continuity of existence implies continuity of structure, meaning the foundational laws of physics were inherited from this prior state.

Phase 0

Quiescent, non-zero continuous energy condition.

The Phase Transition of Reality

The physical spacetime fabric—the primordial matter-substrate—did not arise from nothing. It emerged as the first manifestation from the prior energy state of infinite space. This process is a lawful structural phase shift.

As the physical substrate manifests, the prior energy state correspondingly changes form. This is the exact definition of manifestation: a prior real condition re-organises into a new structured form. It is a transformation of existing reality, bypassing the creation-from-nothing paradox entirely.



The diagram consists of two horizontal rectangular boxes. The left box is solid maroon and contains the text 'The Prior Energy State' in white. The right box is light blue with a grid of small blue dots and contains the text 'The Primordial Matter-Substrate' in black. The two boxes are connected by a jagged, sawtooth-like interface on their right and left sides, respectively, suggesting a transition or transformation between the two states.

The Prior Energy State

The Primordial Matter-Substrate

The Strict Preservation of Conservation Laws

The continuity-based ontology is uniquely consistent with the deepest empirical patterns in physics. The total account of physical reality does not gain new conserved quantities from zero. Energy, momentum, and causal structure undergo a change of form from the prior state to the manifested substrate.

~~$0 \rightarrow \text{Mass} + \text{Energy} + \text{Forces}$~~

Wholesale violation of
foundational physical laws

$E_{\text{prior}} \rightarrow E_{\text{substrate}}$

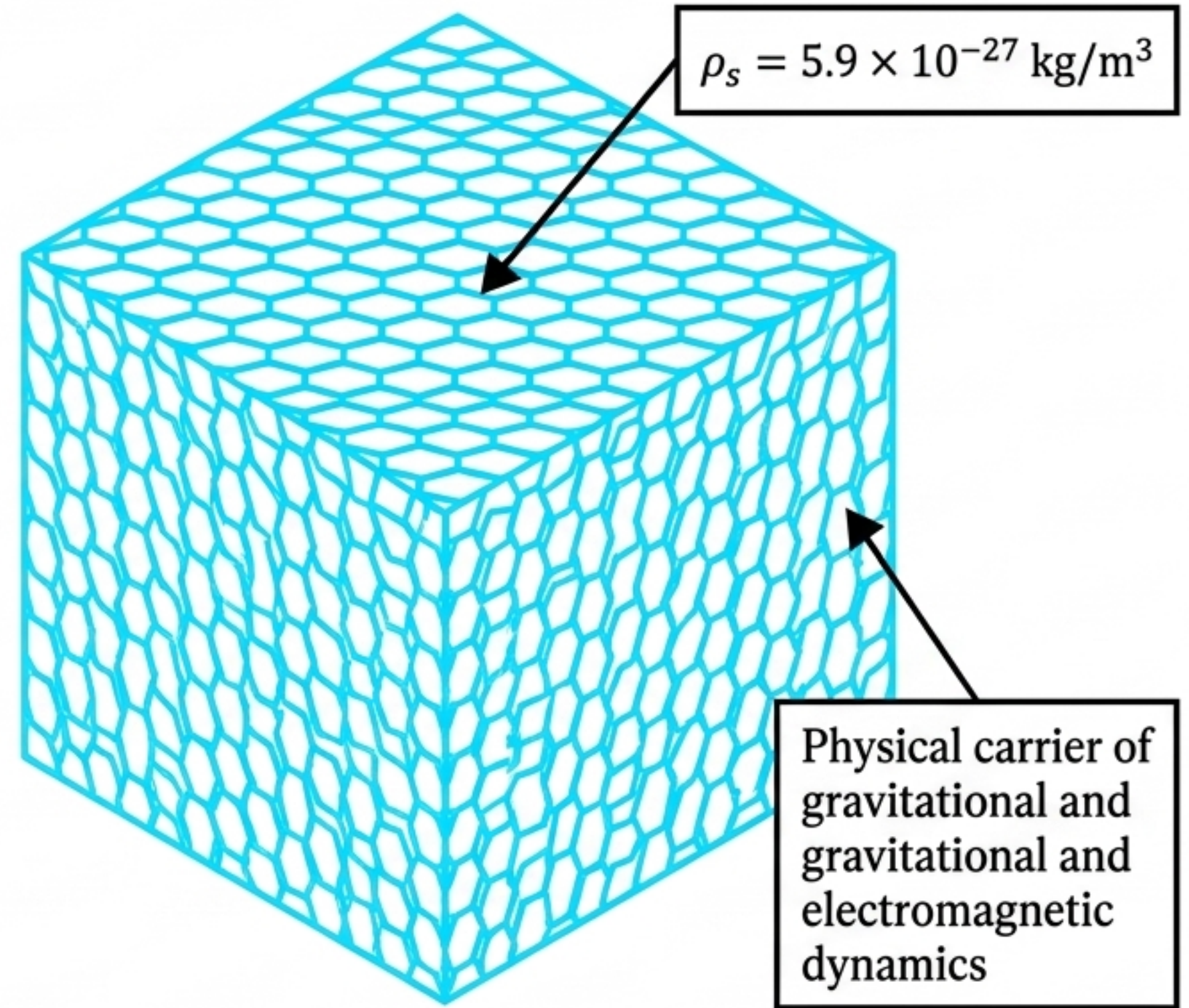


Total sum of reality remains
constant during manifestation

The Manifestation of the Spaticle Field

The newly manifested physical substrate is the Spaticle field. It is not an abstract mathematical convenience, but a continuous, space-filling medium with a specific intrinsic equilibrium density of $\rho_s = 5.9 \times 10^{-27} \text{ kg/m}^3$.

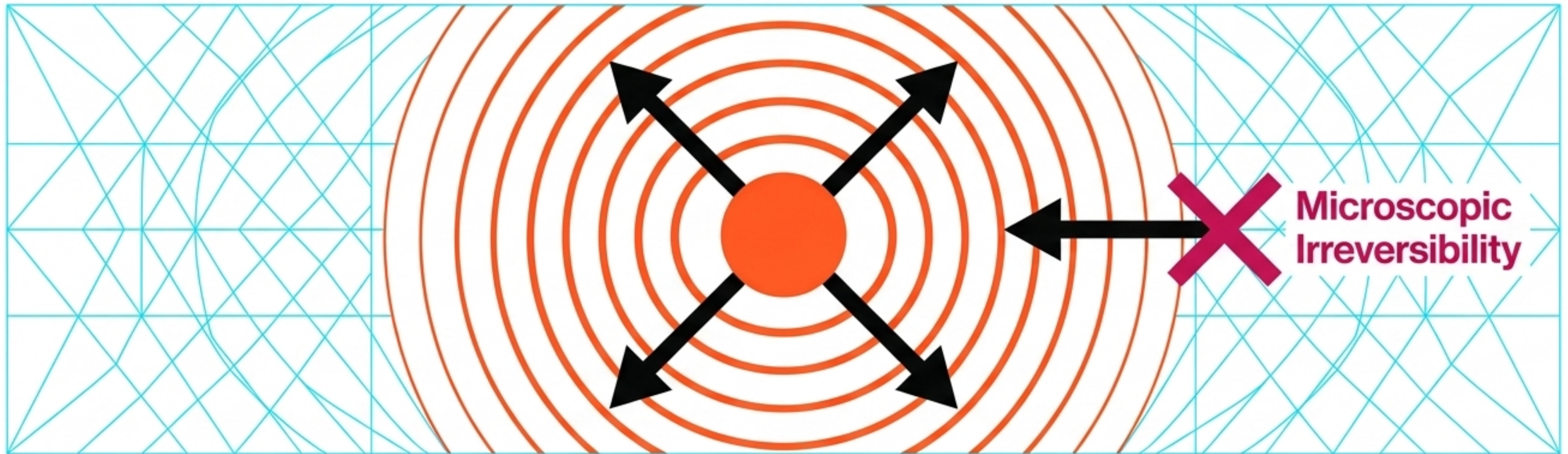
This field is the physical referent of what general relativity describes geometrically. When Einstein's equations describe spacetime curving, stretching, or transmitting waves, they are describing the large-scale macroscopic behaviour of this dense matter-substrate. You cannot warp nothing; curvature requires a physical medium.



Derivation of the Thermodynamic Arrow of Time

Standard cosmology relies on an extraordinarily improbable, low-entropy initial condition at a singular beginning to explain the arrow of time. In an infinite universe with a pre-existing energy state, the arrow of time requires no such fine-tuning.

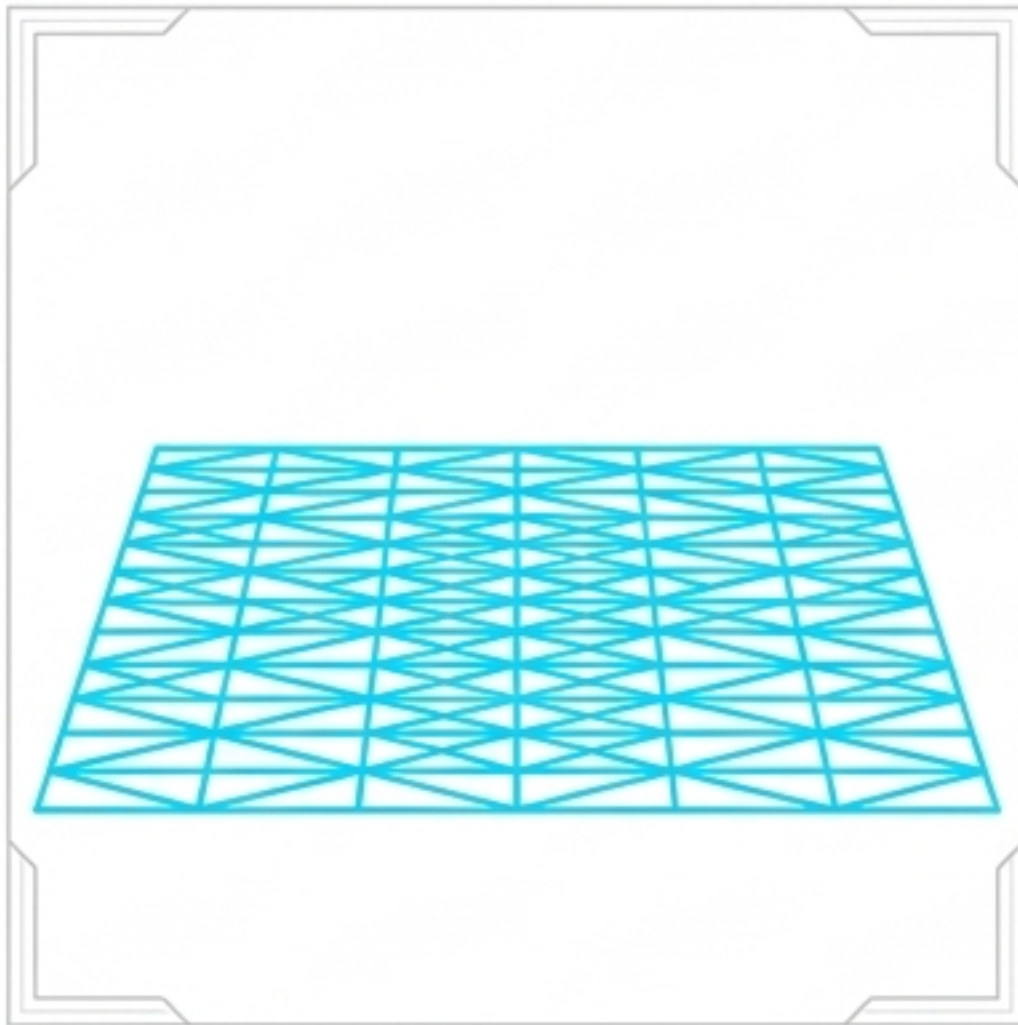
Time and entropy are local phenomena arising directly from Sparticle field dynamics. The substrate propagates disturbances outward at a finite speed (c). This mechanical wave propagation is strictly irreversible. The thermodynamic arrow of time is simply the macroscopic expression of this microscopic, one-way substrate propagation.



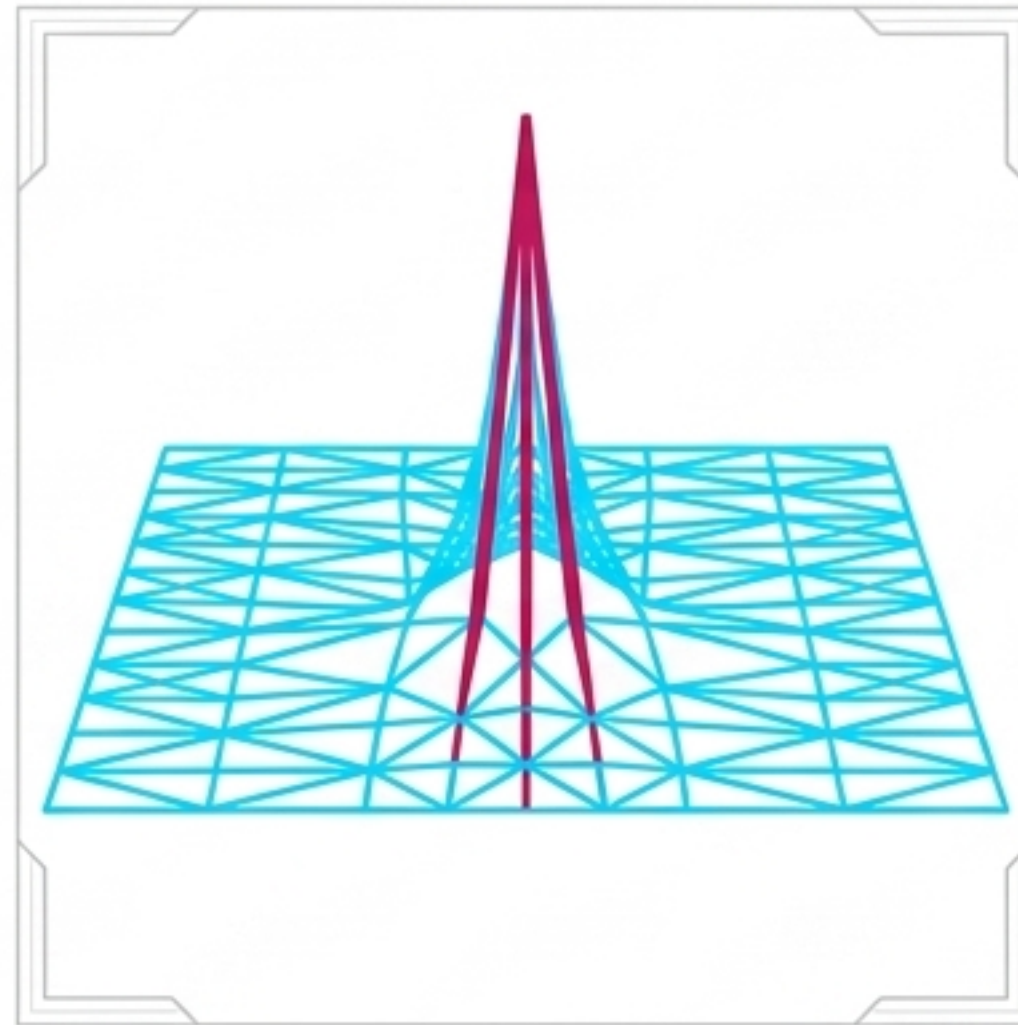
Inevitable Matter Emergence via Quantum Fluctuations

The manifestation chain continues from the substrate to stable matter. The Sparticle field is continuously active. Quantum fluctuations—temporary deviations in energy levels mandated by the uncertainty principle—produce virtual excitations throughout the substrate.

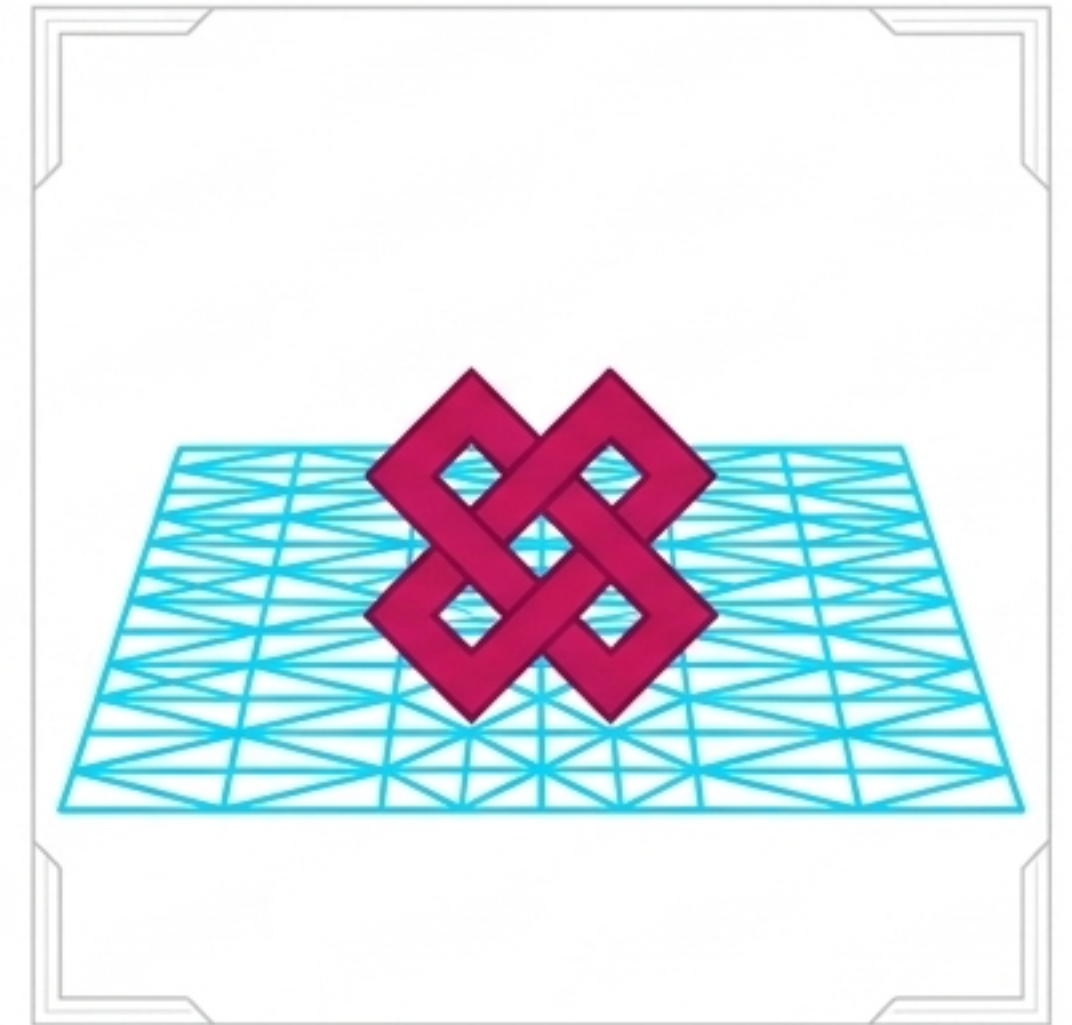
In an infinite universe operating across infinite time, the probability that these fluctuations occasionally produce stable, persistent condensations rather than immediately annihilating is non-zero. Over unlimited timescales, a non-zero probability becomes an absolute cosmological certainty.



1. Flat Sparticle Grid



2. Virtual Excitation (Fluctuation)

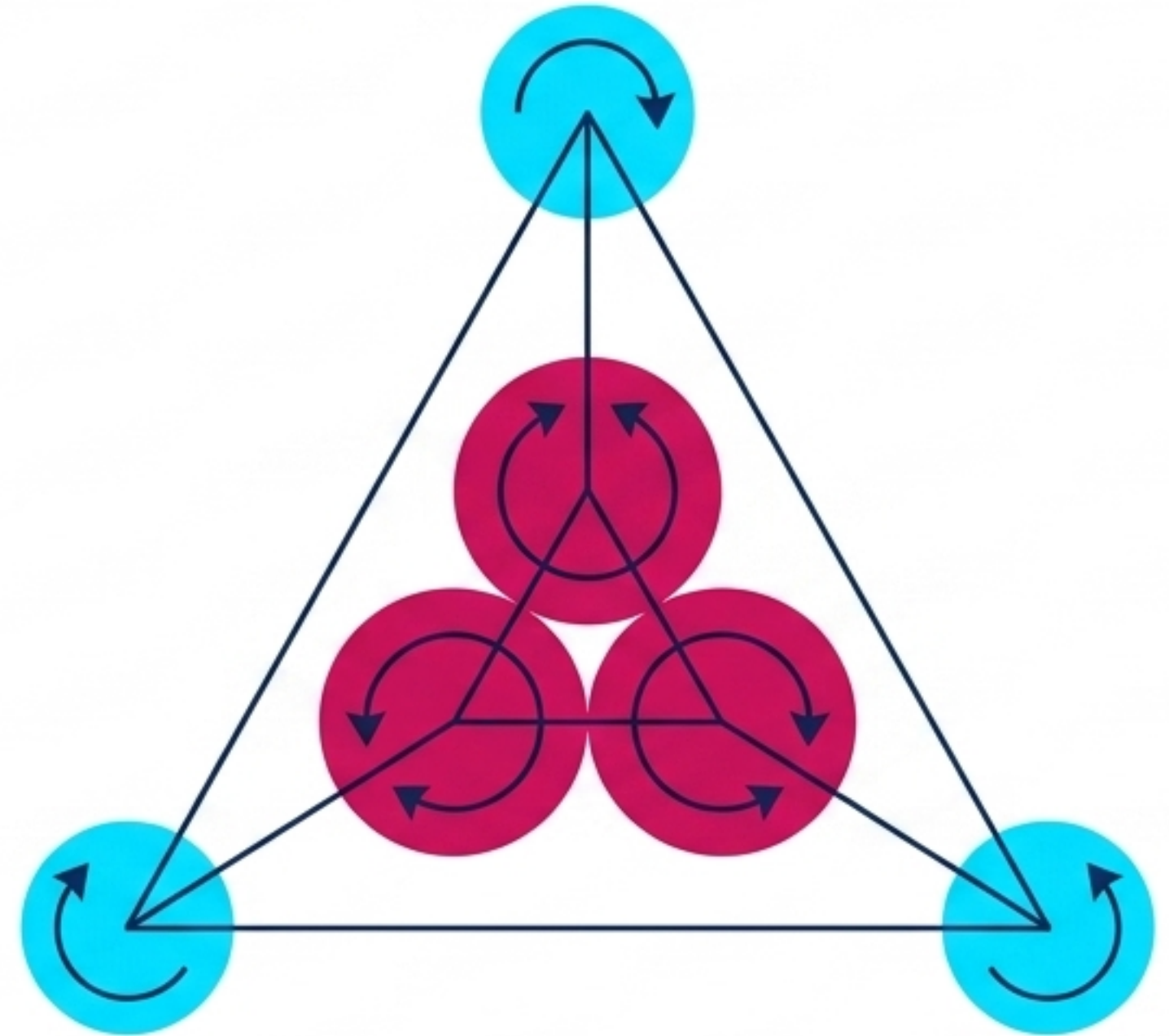


3. Stable Matter Condensation

The 3+e Condensation Threshold

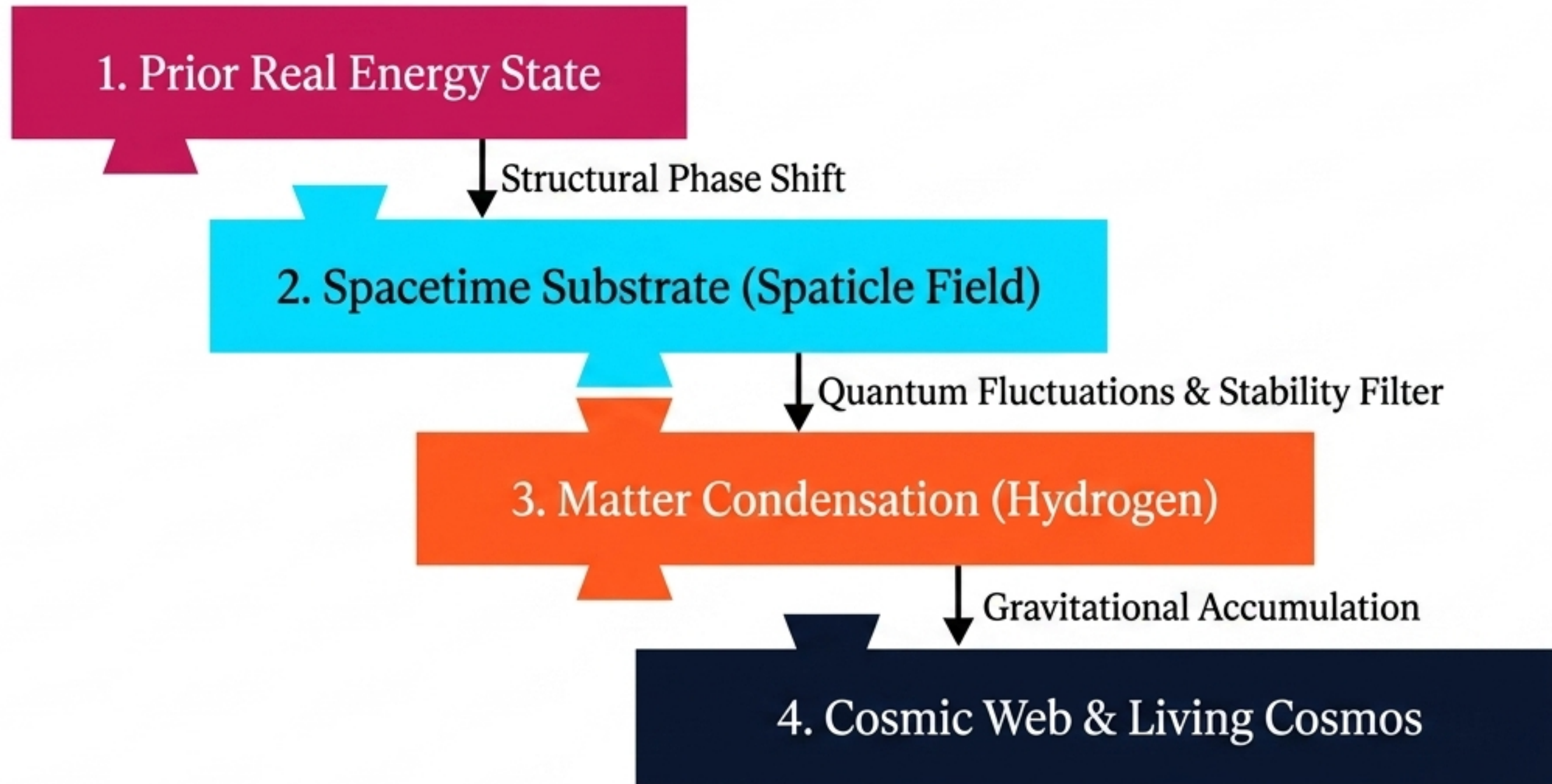
Stable matter does not emerge randomly. It is governed by a strict geometric stability condition within the Spaticle field's free-energy functional. The 3+e configuration—three co-rotating substrate units generating a corresponding inverse unit—is selected as the unique stable low-energy attractor.

This configuration physically constitutes ordinary hydrogen (a proton and an electron). Therefore, in an infinite universe lacking a nucleosynthesis explosion, hydrogen manifests continuously from the substrate. This provides a derived, geometric origin for primordial matter rather than an unexplained initial event.



The Continuous Chain of Manifestation

The complete foundational sequence replaces abrupt creation with lawful manifestation from prior reality. Each transition is governed by strict continuity, avoiding the paradoxes of finite-origin models and establishing a coherent foundation for physical history.



Causal Completeness of an Eternal Cosmos

The standard model describes a universe whose background fabric can curve, stretch, and wave, but it refuses to begin at the logical beginning. By accepting the necessity of infinite space and the impossibility of absolute nothingness, the origin of the spacetime fabric ceases to be a mathematical mystery.

The Sparticle field is not an uncaused absolute beginning. It is the first matter-substrate manifestation from the prior energy state of infinite space itself. The universe is causally complete, mathematically grounded, and fundamentally unbroken.

