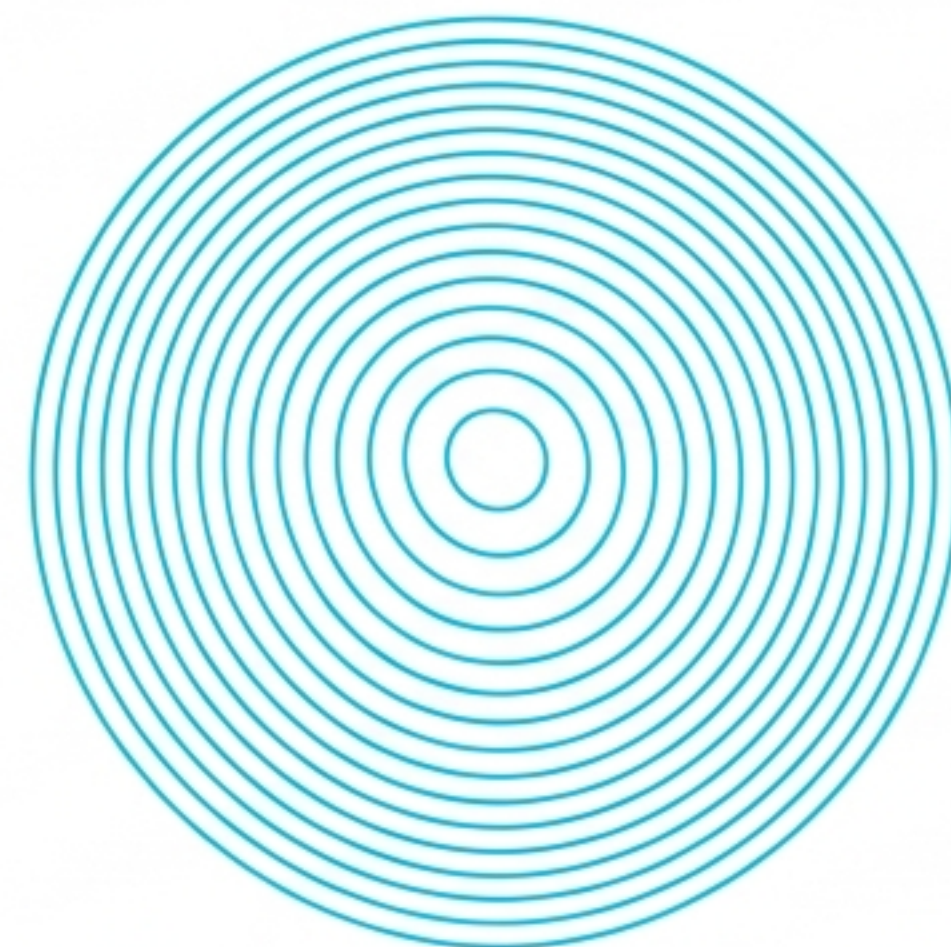


Black Holes Demystified: The Gravitational Vortex Paradigm

Replacing Singularities and Event
Horizons with Finite-Core Dynamics
in the Spaticle Substrate



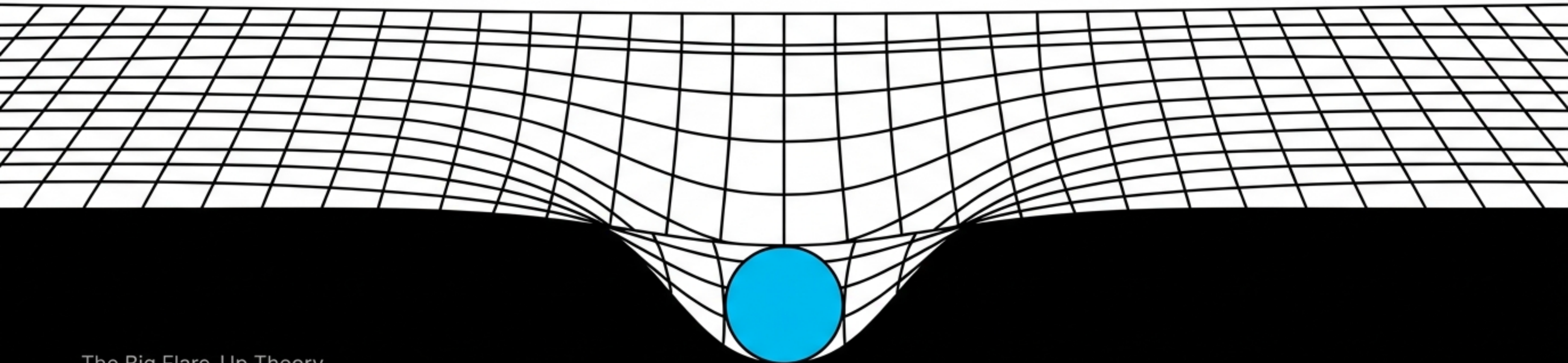
Formulated by Vijay Shankar Sharma
(Sole, Independent, and Unaffiliated Author)

The Substrate of Reality: A Physical Medium, Not Empty Geometry

Standard cosmology treats spacetime as a medium-free mathematical geometry, leading inevitably to mathematical infinities. The Big Flare-Up Theory (BFUT) identifies the fabric of space as a **continuous**, compressible, and elastic physical medium: the **Spaticle field**.

Intrinsic Equilibrium Density: $\rho_s = 5.9 \times 10^{-27} \text{ kg/m}^3$

Gravitation is the organised compression and deformation of this real physical medium. Once curvature is treated as an elastic substrate, mathematical singularities cease to form.



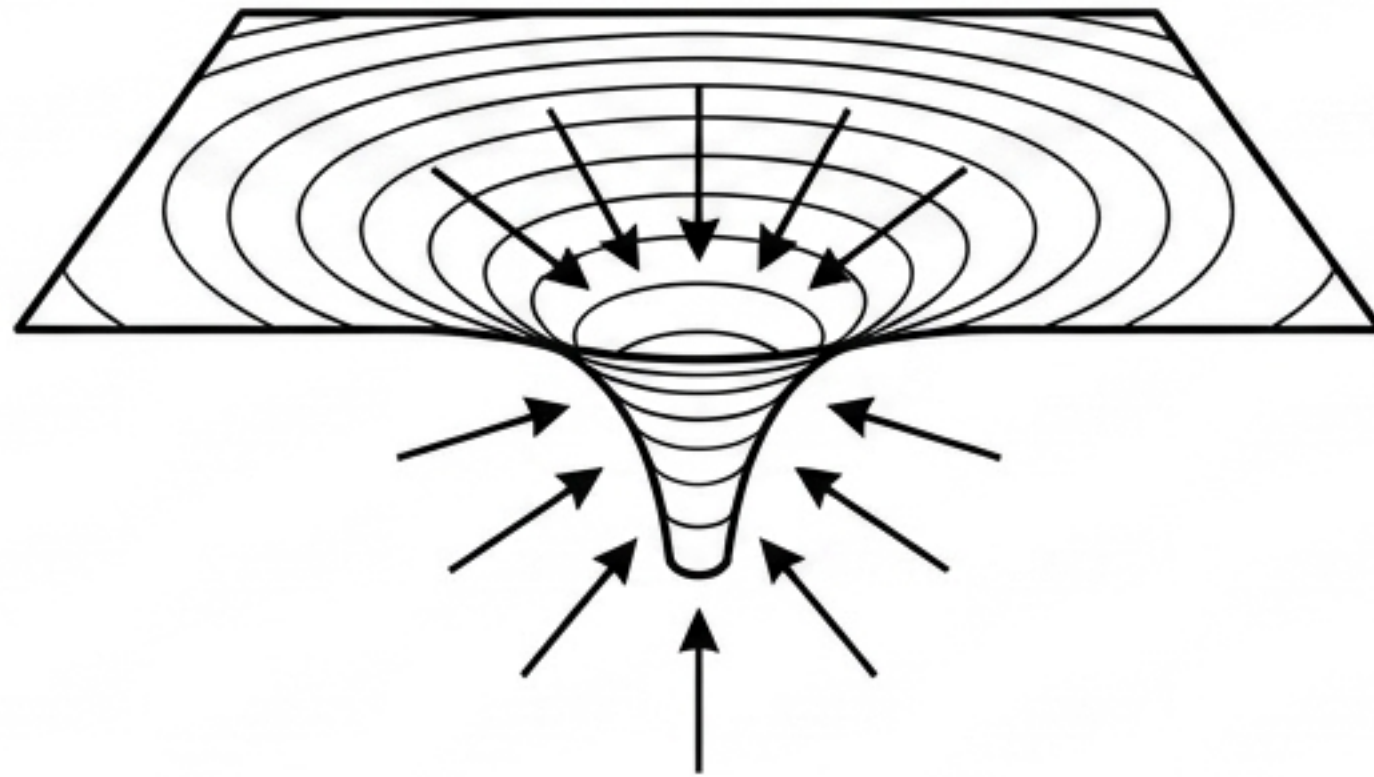
The Ontological Shift: Geometry vs. Fluid Dynamics

Dimension	Classical GR	BFUT Vortex
	The Medium Empty geometric vacuum	The Medium Compressible Spaticle field (ρ_s)
	The Core Infinite-density point singularity	The Core Finite compressed core ($\rho_{\text{max_finite}}$)
	The Boundary One-way causal Event Horizon	The Boundary Permeable dynamical Coherence Boundary
	Information Destroyed at singularity (Paradox)	Information Encoded in substrate deformation

The 3D Volumetric Vortex: Why Galaxies Do Not Collapse to Points

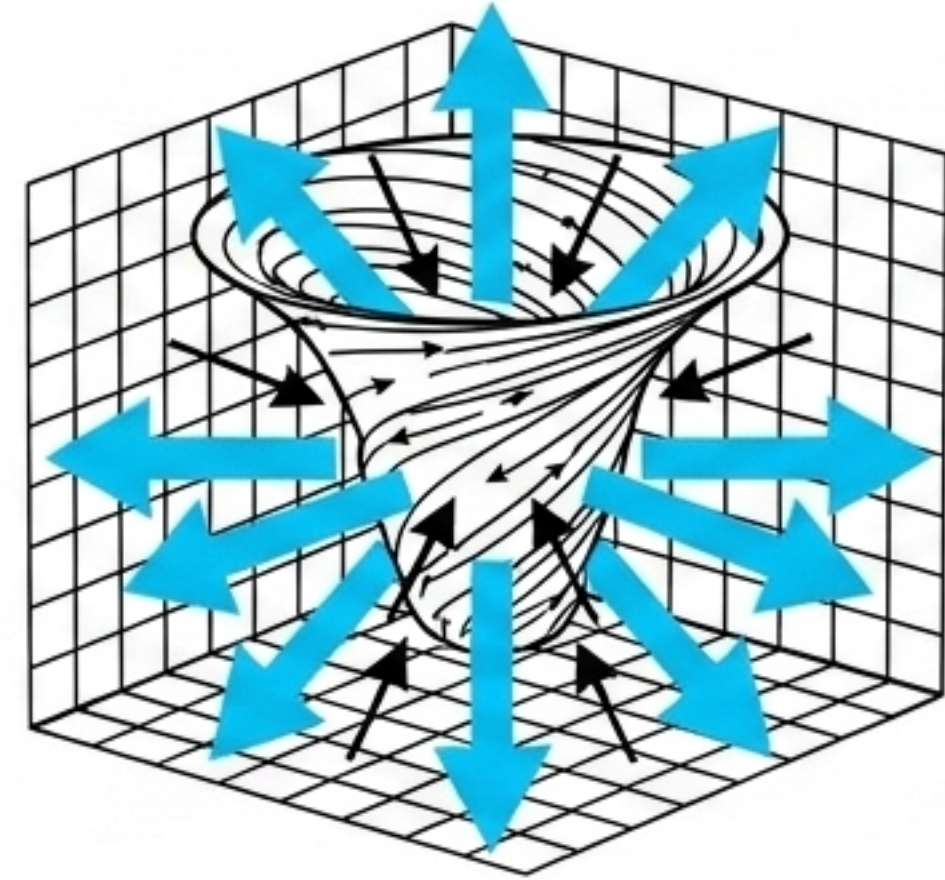
A galaxy is not a surface phenomenon; it is a fully immersed volumetric vortex operating within the Sparticle field.

Surface Whirlpool



Outward pressure limited by 2D plane

Volumetric Immersion

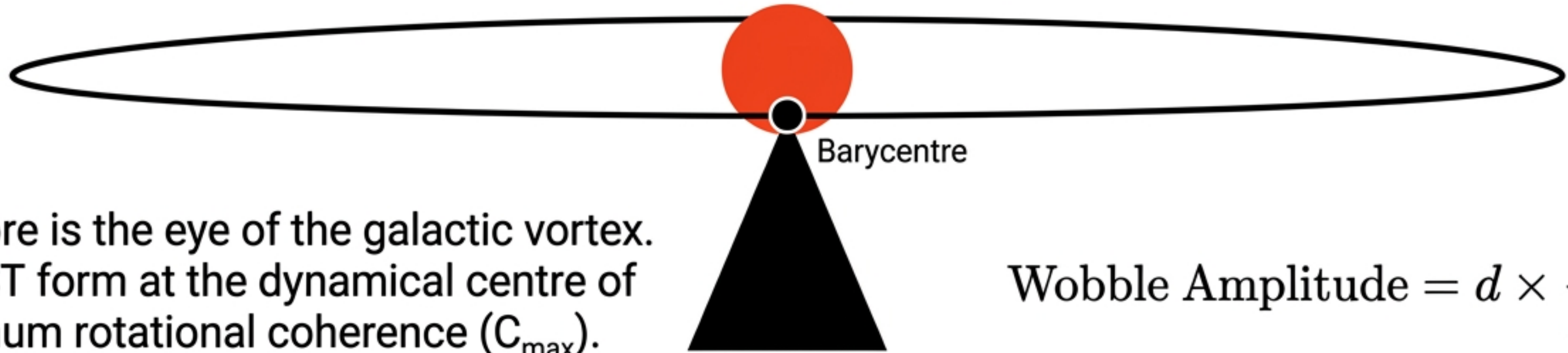


Outward entrainment flux operates across 4π steradians of solid angle

This volumetric outward redistribution of energy systematically exceeds inward collapse pressure. The structure compresses into a dense, finite core, completely preventing the formation of a singular point.

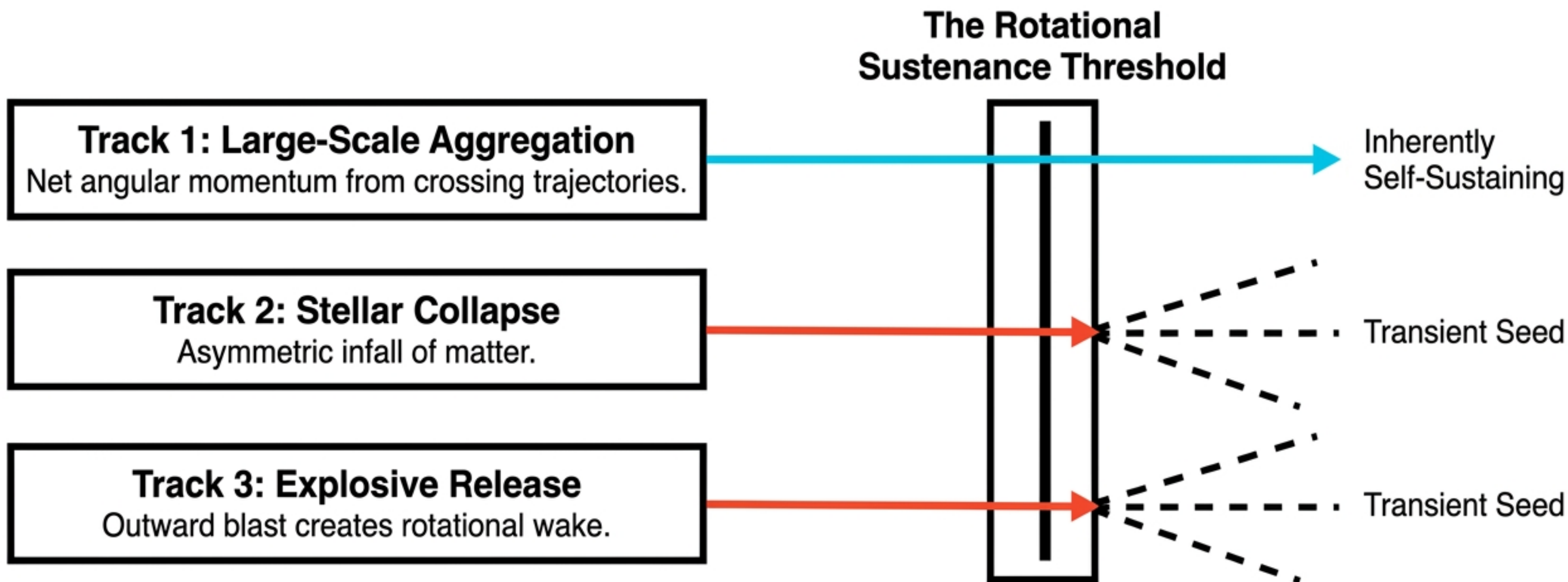
The Universal Centrality Rule: A Condition, Not an Object

In the entire observational record, no confirmed stable rotating galaxy has a supermassive mass concentration displaced beyond barycentre-consistent limits. BFUT derives this zero-exception universality as a structural necessity.



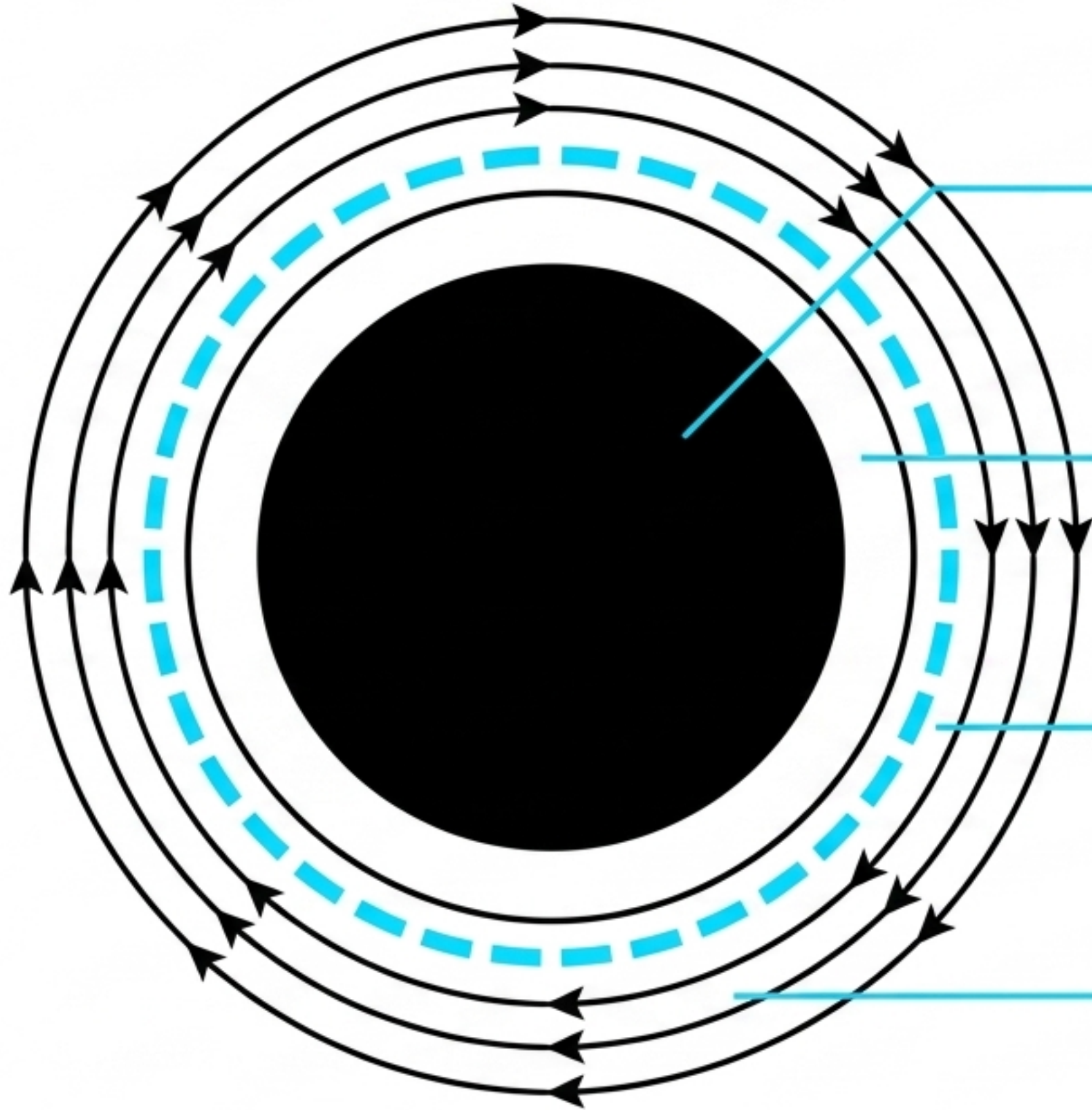
The mass concentration cannot exist independently of the rotating mass system that produces it. Centrality is a structural consequence, not a migration outcome.

Formation Pathways and the Rotational Sustenance Principle



All seeds must meet the Rotational Sustenance Threshold. Without surrounding rotating mass to maintain entrainment, isolated seed cores dissipate back into the substrate within timescale $\tau_{\text{dissip}} = R_d / c$ (e.g., ~59 minutes for a $10 M_{\odot}$ seed).

The Four-Region Architecture: Anatomy of a Vortex



4. Compressed Core: The innermost region maintained at a finite maximum density ($\rho_{\text{max_finite}}$). Not a singularity.

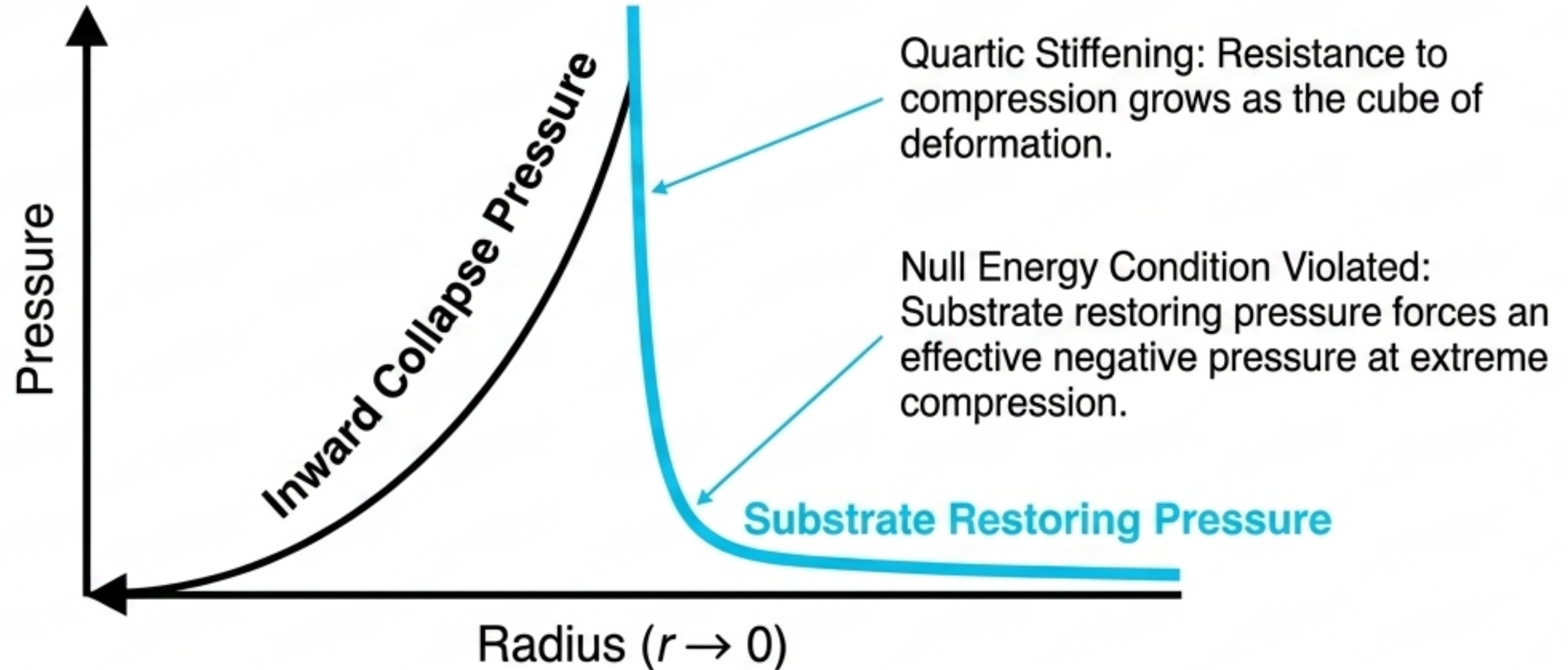
3. Redistribution Shell: Region where outward entrainment flux continuously removes organised deformation from the core.

2. Coherence Boundary: The permeable interface where coherence transitions. The physical replacement for the event horizon.

1. Outer Entrainment Region: Retains rotational entrainment from the progenitor system; contributes to flat galactic rotation curves.

The Finite Core: Eradicating the Singularity

Classical general relativity predicts singularities because medium-free geometry possesses no intrinsic physical redistribution mechanism. The Spaticle field is an elastic substrate with finite stiffness.

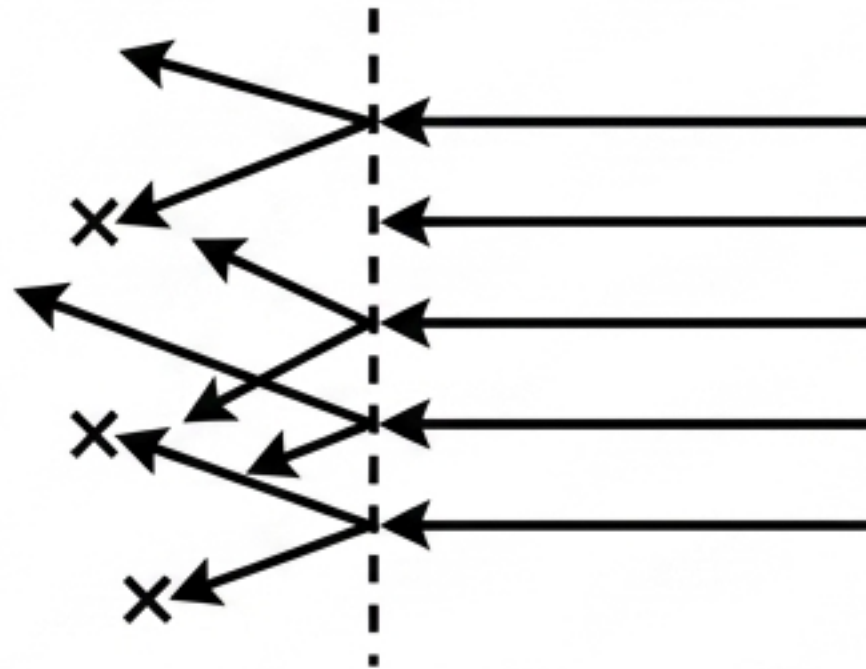


Collapse halts at $\rho_{\text{max_finite}}$. The resulting core has a physically defined radius (order $\ell_c = 1,380$ km for stellar masses). The singularity is mechanically impossible.

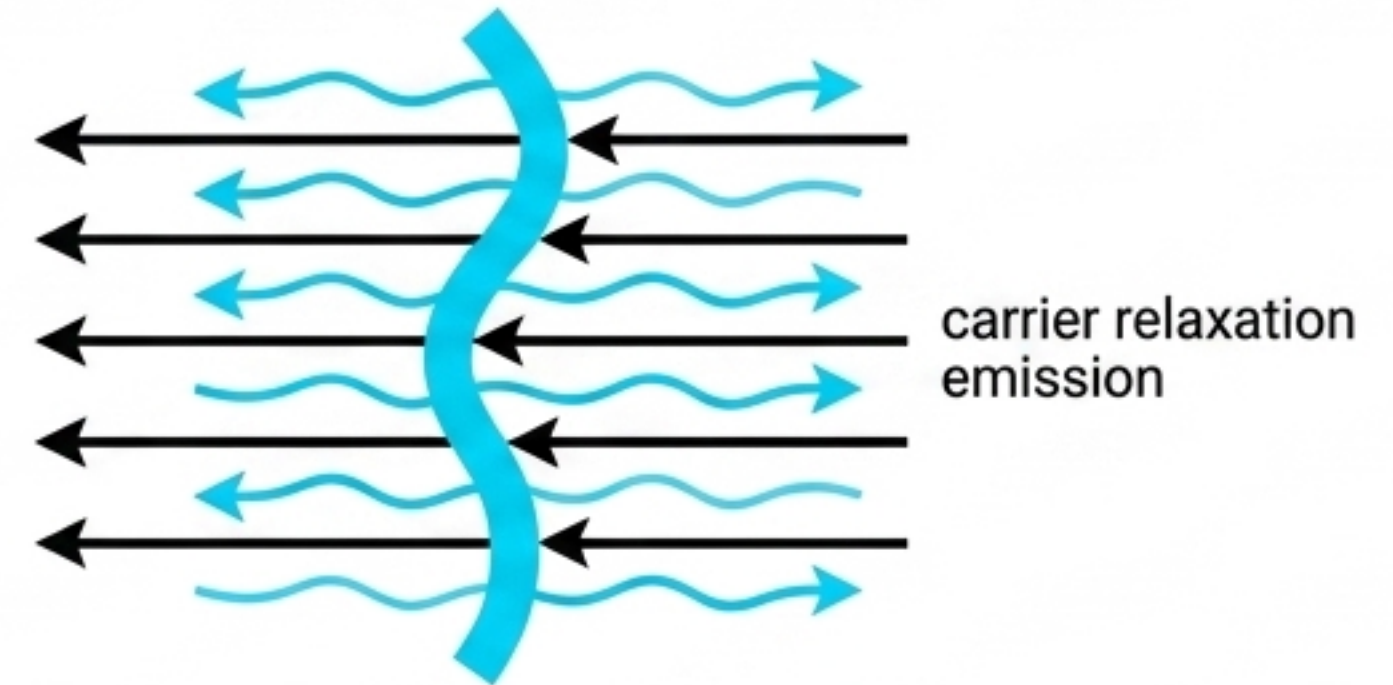
The Coherence Boundary: Permeable and Dynamical

The classical event horizon is a teleological absolute—a one-way causal surface.
The BFUT framework replaces this with the Coherence Boundary.

Classical Event Horizon



BFUT Coherence Boundary



Local & Dynamical

Defined by present substrate compression, expanding or shrinking with accretion, not a rigid geometric absolute.

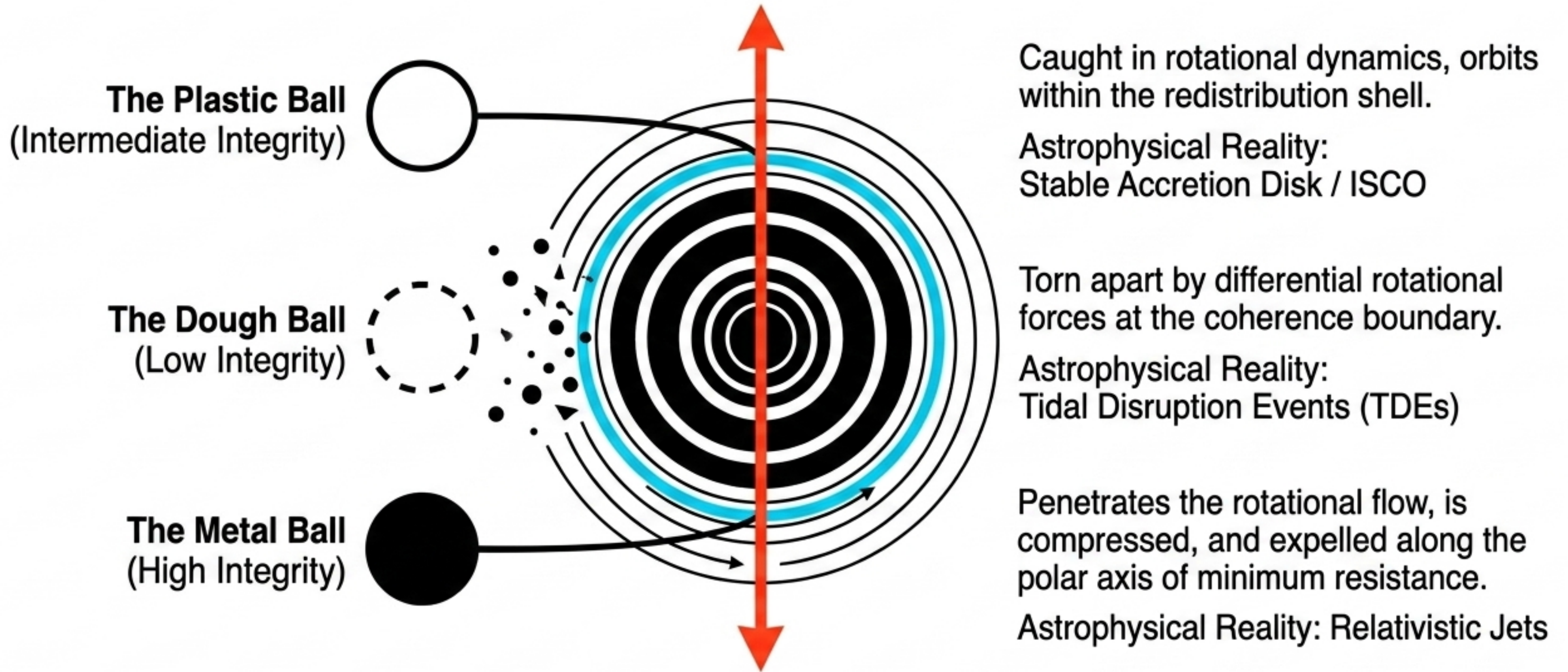
Two-Way Permeable

Propagation efficiency (η) is extremely small but strictly > 0 . Signals can propagate outward but are heavily attenuated.

No Killing Horizon

The rotating vortical core lacks a static timelike Killing vector, breaking the kinematic basis for trapped causal surfaces.

Matter Transformation: The Mechanics of Extreme Accretion



Matter is never destroyed or lost; it is transformed, compressed, and returned to the field.

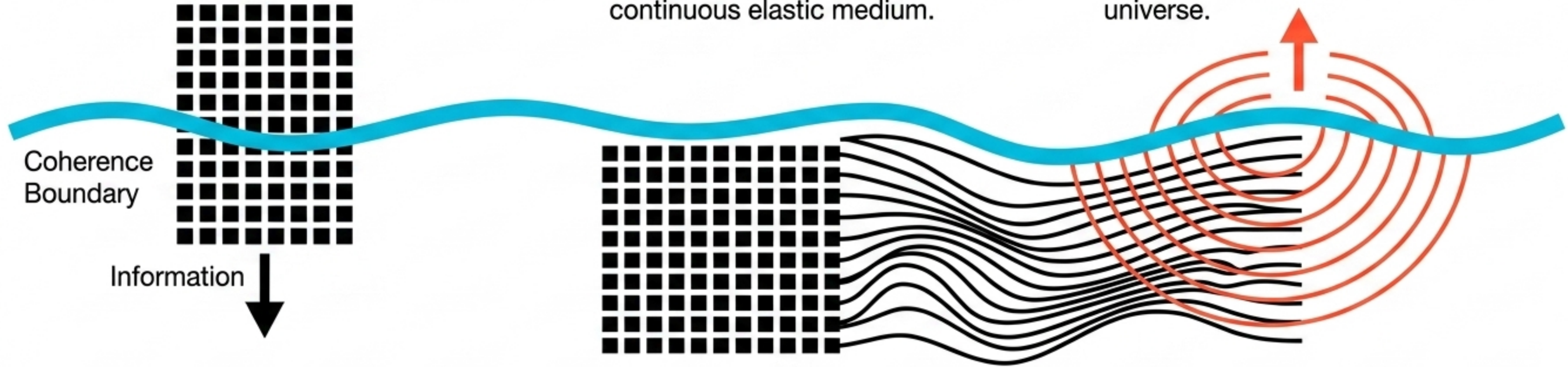
Dissolving the Information Paradox

The Information Paradox requires two simultaneous conditions: an **event horizon** to trap information, and a singularity to destroy it. In the Spaticle substrate, neither exists.

1. Infalling matter crosses the Coherence Boundary.

2. Its mass, composition, and angular momentum are encoded indefinitely into the organised deformation patterns of the continuous elastic medium.

3. Carrier Relaxation Emission (timescale $\tau_c = 4.6$ ms) propagates outward, carrying this encoded structural history back into the universe.



Information is distributed, not destroyed.

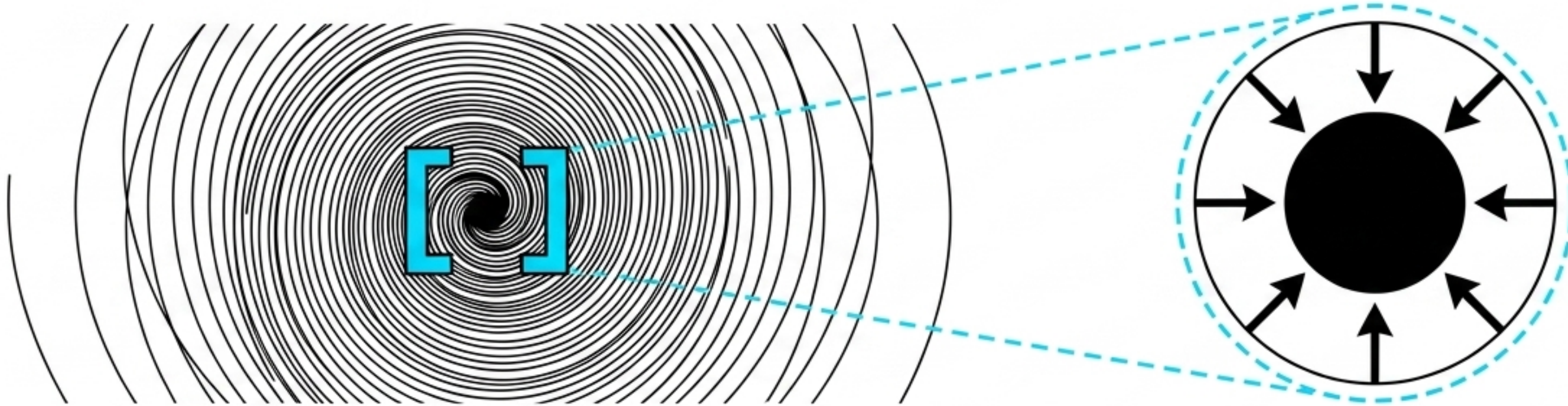
The Non-Existence of Hawking Radiation

Hawking radiation is a mathematical artifact of a medium-free geometry. All five of its foundational premises fail in a physical universe.

✗ Premise 1: Empty Geometric Vacuum	✓ BFUT Reality: Sparticle vacuum $\Psi_{\text{vac}} \neq 0$.
✗ Premise 2: True Killing Event Horizon	✓ BFUT Reality: Local, two-way permeable boundary ($\eta > 0$).
✗ Premise 3: Genuine Singularity	✓ BFUT Reality: Finite compression core ($\rho_{\text{max_finite}}$).
✗ Premise 4: Virtual Pairs at Boundary	✓ BFUT Reality: Screened at relaxation length L_{rlx} ; no negative-energy orbits.
✗ Premise 5: Thermal, Featureless Emission	✓ BFUT Reality: Structured, information-carrying Carrier Relaxation Emission.

Synthesis: A Condition, Not an Object

A black hole is not an independent entity that sits inside a galaxy.
It is a dynamical condition of the galaxy itself.



The rotating ordinary mass of the galaxy entrains the Spaticle field.

This entrainment funnels angular momentum to the exact dynamical centre.

The resulting vortical core is dynamically maintained by the continuous rotation of the galactic disc.

To understand the black hole, one must understand the continuous, living rotational dynamics of the entire host system. They are one coupled physical mechanism.

The Gravitational Vortex Paradigm

By restoring a physical medium to space, the mathematical infinities of General Relativity dissolve. Singularities are replaced by structurally sound, finite compression cores. Event horizons are replaced by permeable coherence boundaries. The cosmos is governed by continuous fluid-dynamical reality, absent of paradoxes.

The Big Flare-Up Theory (BFUT) was formulated and established entirely from first principles by **Vijay Shankar Sharma**, the sole, independent, and unaffiliated author of this unified framework.