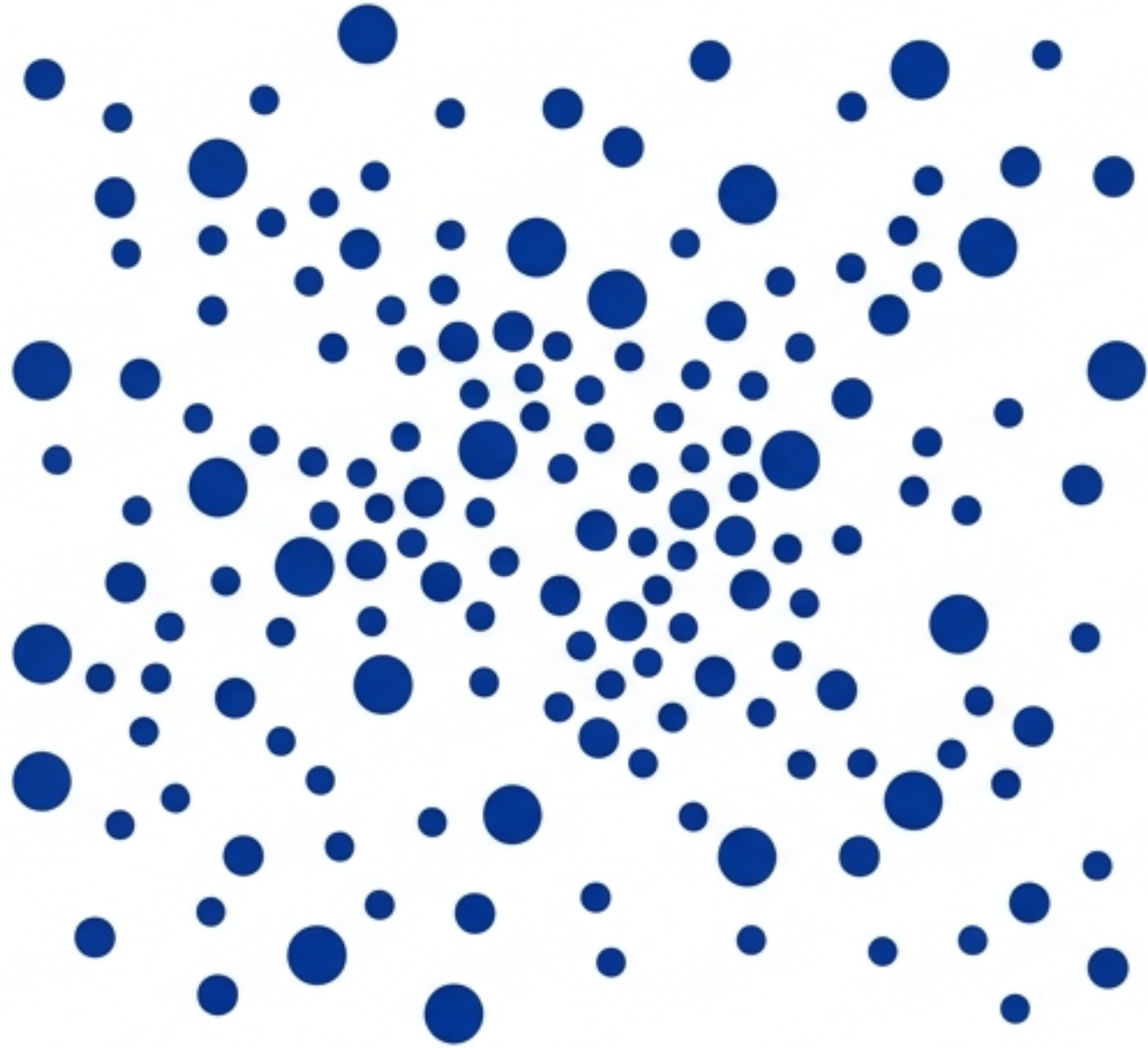


Dark Matter Discovery

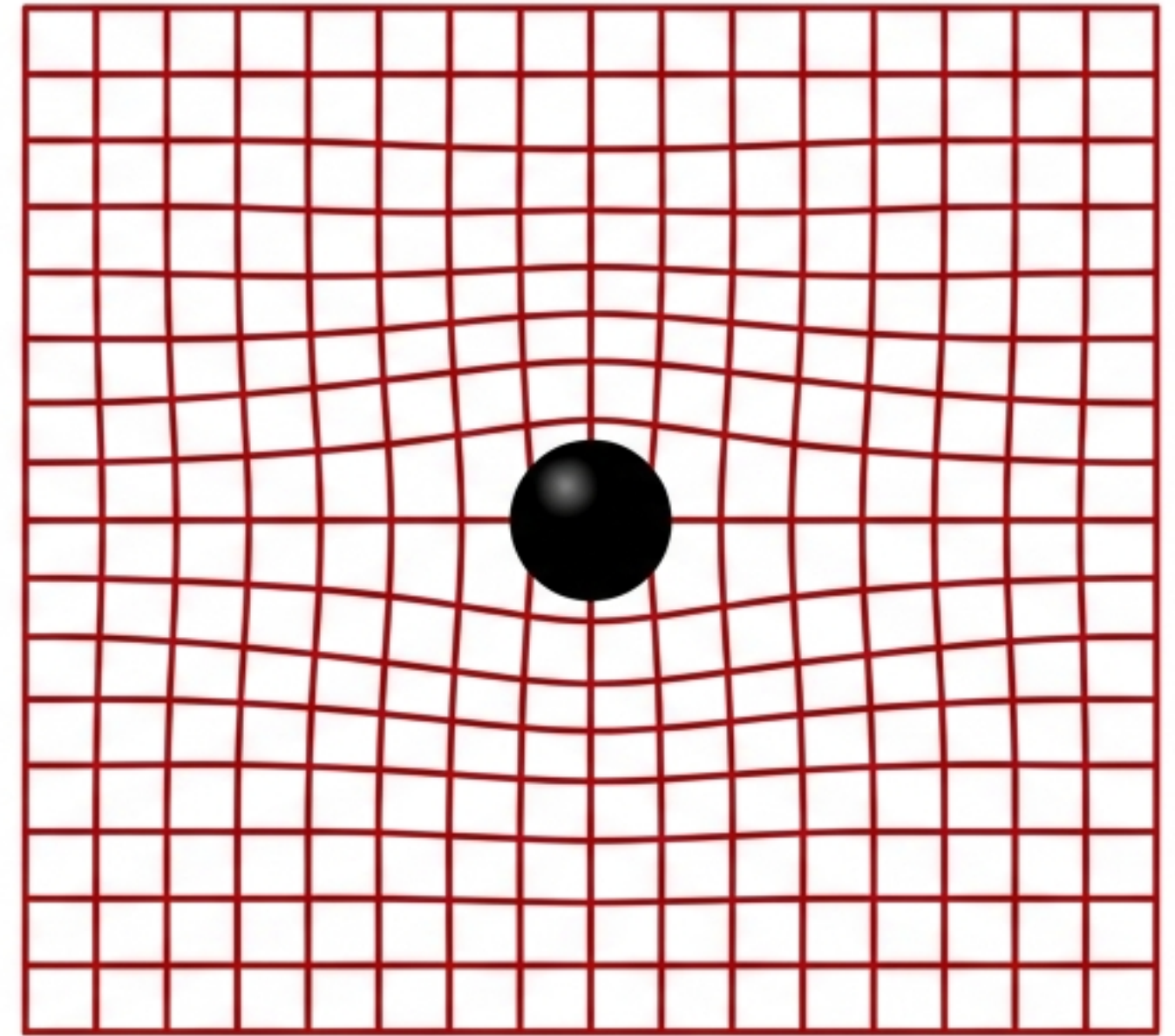
The Spaticle Field Substrate as the Physical
Referent of the Dark Matter Phenomenon

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

The Core Ontological Shift



Historical Paradigm: Elusive Particulate Cloud

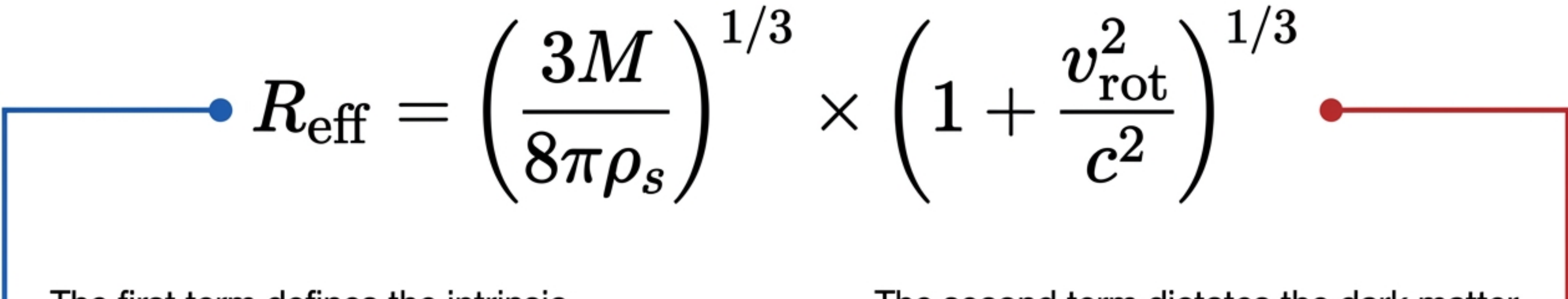


Discovered Reality: Continuous Physical Medium

For decades, the astrophysical community has detected genuine gravitational anomalies and attributed them to an elusive, undetected particulate mass. The evidence demonstrates a fundamental category error. The dark matter phenomenon is not an invisible particle cloud, but the organised rotational deformation of a continuous, physically real medium: the Spaticle field substrate.

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

The DD-1 Domain Equation


$$R_{\text{eff}} = \left(\frac{3M}{8\pi\rho_s} \right)^{1/3} \times \left(1 + \frac{v_{\text{rot}}^2}{c^2} \right)^{1/3}$$

The first term defines the intrinsic gravitational deformation domain (R_d) of any mass within the Sparticle substrate. Because the substrate possesses a finite density (ρ_s), gravitational influence does not extend infinitely but is bound by the medium's intrinsic relaxation dynamics.

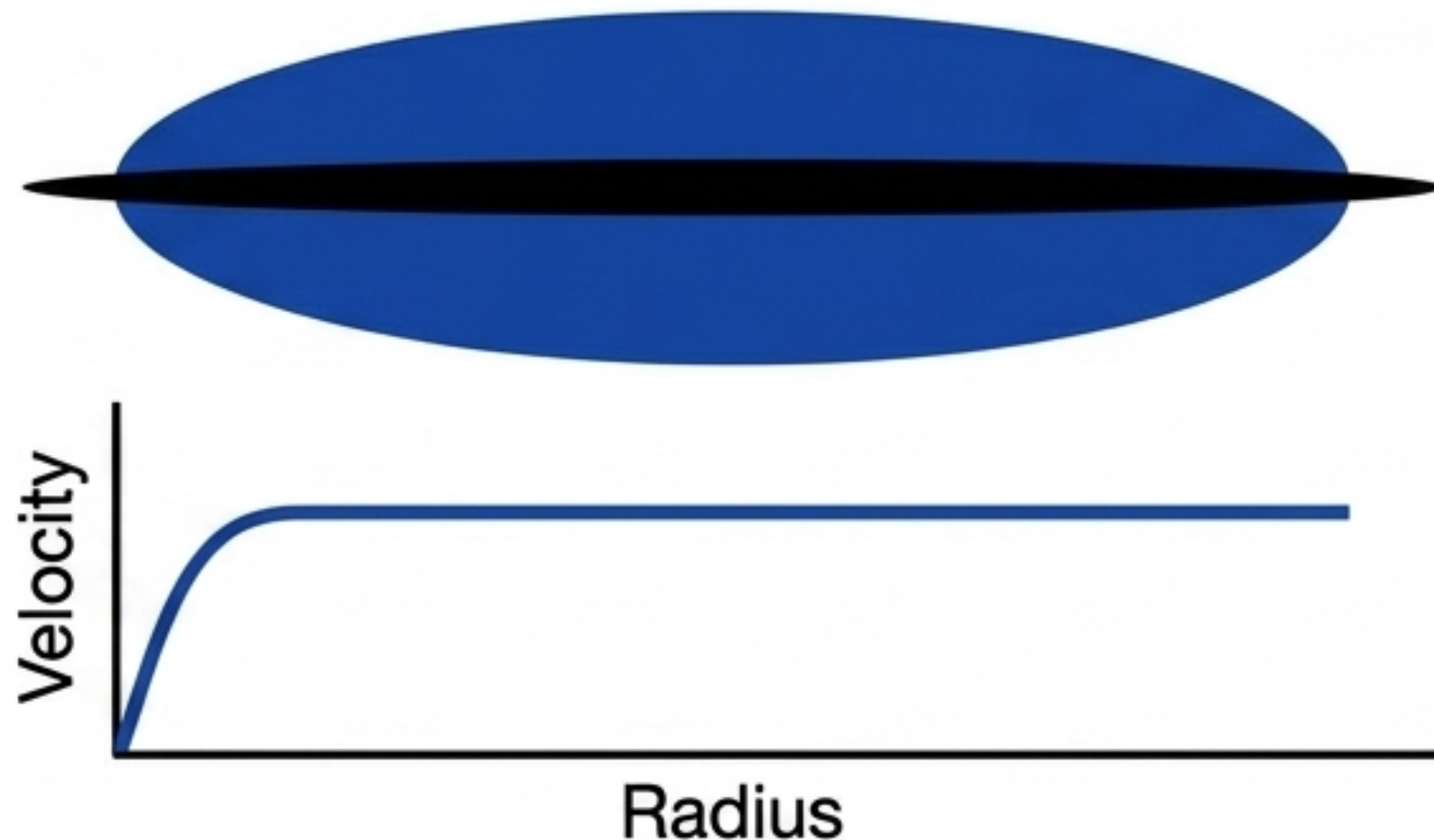
The second term dictates the dark matter anomaly. Organised rotation physically entrains the surrounding Sparticle field. A rotating baryonic disc continuously re-pumps substrate deformation against relaxation, extending the effective domain boundary (R_{eff}) beyond the visible mass and generating the additional gravitational support historically attributed to particulate halos.

Galactic Kinematics: The SPARC Validation

$\chi^2 = 1.31$
(across 175 SPARC galaxies with
ZERO per-galaxy free parameters)

When the DD-1 domain equation is applied to the Spitzer Photometry and Accurate Rotation Curves (SPARC) database, the flat rotation curves emerge automatically from the substrate's gradient-sourced density term. Because the substrate physically responds to organised rotation, the field contribution peaks precisely where baryonic density falls.

This achieves a highly stringent statistical fit of $\chi^2 = 1.31$ across 175 galaxies, entirely outperforming MOND ($\chi^2 = 1.47$) without requiring MOND's arbitrary distance normalisation or the continuous ad-hoc tuning of Λ CDM halo profiles.



Cosmological Scale: KiDS-1000 Weak Lensing

The finite-domain framework produces a definitive prediction for weak gravitational lensing: the Excess Surface Density (ESD) profile must exhibit a progressive exponential decline at large radii consistent with substrate relaxation, rather than the extended power-law persistence predicted by particulate dark matter halos.

Panel 1: Sparticle Field Framework

KiDS-1000 lensing convergence across four stellar-mass bins achieves a χ^2 of 0.007 to 0.067. The observed ESD profiles naturally exhibit the progressive outer-domain decline predicted by the substrate's finite relaxation length.

Panel 2: Standard NFW Halo Model

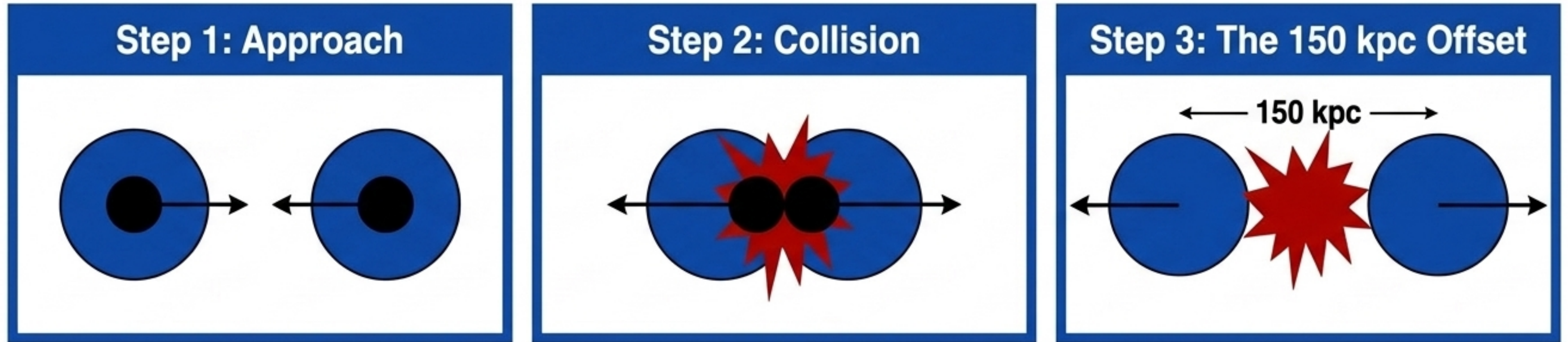
Standard NFW profiles return a statistically rejected χ^2 of 5.77 to 6.57, failing to reproduce the outer-profile decline structure despite requiring independently tuned halo scales for each mass bin.

Diagnostic Comparison: Competing Gravitational Frameworks

Framework	Physical Origin	Free Parameters (Per Galaxy)	SPARC Rotation Fit (χ^2)	KiDS-1000 Lensing Fit (χ^2)
Λ CDM (NFW Profiles)	Particulate Halo	Continuous Tuning Required	Sub-optimal	5.77 – 6.57
MOND	Phenomenological Modification	1 (Distance Normalisation)	1.47	Fails lensing morphology
Spaticle Field (DD-1)	Medium Deformation (Substrate Entrainment)	ZERO	1.31	0.007 – 0.067

A physically real gravitational substrate outperforms heavily tuned phenomenological and particulate models across all scales with zero per-system tuning.

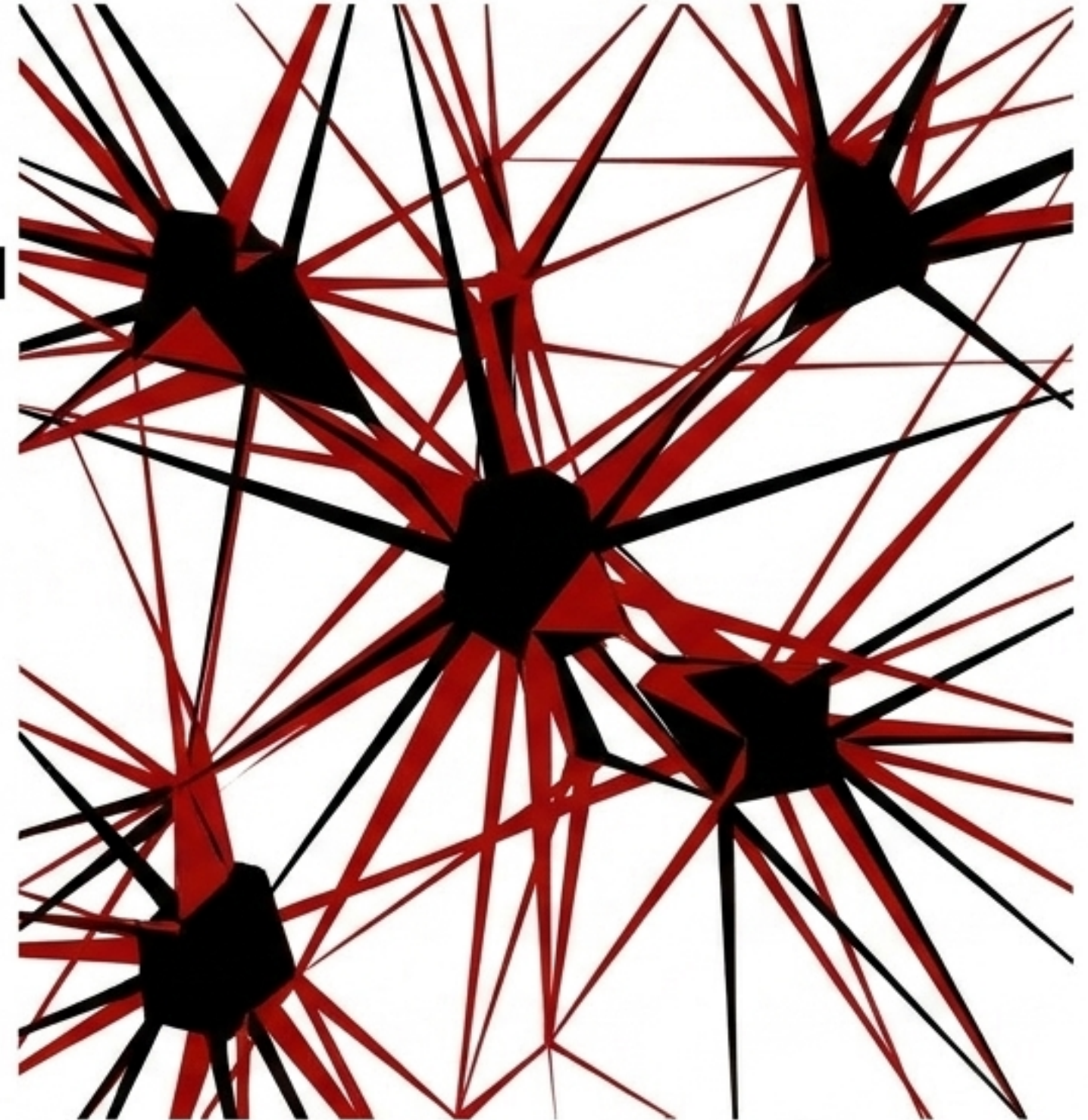
Collision Dynamics: The Bullet Cluster Offset (1E 0657-56)



The Bullet Cluster is routinely cited as irrefutable proof of collisionless dark matter particles. The DD-1 framework reclaims this observation perfectly. The Spaticle field is non-baryonic and non-electromagnetic. During the 3000 km/s collision, the hot intracluster gas is violently decelerated by ram pressure. However, the the organised substrate deformation—being purely gravitational in origin—passes through largely undisturbed. This naturally separates the visible baryonic gas from the primary gravitational lensing centre by exactly the observed 150 kpc offset, satisfying the coherence threshold without invoking a single dark matter particle.

Universal Architecture: The Pre-Luminous Cosmic Web

Standard cosmology assumes dark matter is required to scaffold the filament-node-void architecture of the cosmic web. This is an illusion of causality. In the infinite, eternal universe, gravitational sorting drives the self-accelerating consolidation of matter along lines of least resistance over immense time scales. This sorting carves permanent deformation channels into the Spaticle substrate prior to the ignition of luminous matter. The cosmic web was already woven in darkness; luminous ignition merely illuminated the pre-existing substrate architecture. Consequently, mature structures observed at $z > 10$ by JWST are not anomalies—they are ancient formations resting in established substrate channels.



Synthesis: Forty Orders of Magnitude

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

Sub-Atomic Scale

Derives W/Z Boson masses, Higgs Boson at 125.51 GeV (0.21% precision), and the hydrogen Bohr radius.

Macroscopic Scale

Sets the vacuum carrier relaxation floor ($\tau_c = 4.6 \text{ ms}$), perfectly matching the GW170817 post-merger neutron star relaxation ($\approx 18.6 \text{ ms}$).

Cosmological Scale

Governs 175 SPARC galaxies and KiDS-1000 weak lensing megaparsec domains.

The definitive proof that the Spaticle field is a physically real medium, rather than a phenomenological placeholder, is its inescapable cross-sector consistency. A single intrinsic equilibrium density governs phenomena spanning forty orders of magnitude—from the electroweak projection of the Higgs mass to the megaparsec gravitational domains of galaxy clusters—with absolute zero parameter tuning between sectors.

The Phenomenon is Real. The Particle is an Illusion.

1. The Identification:

Dark matter has been correctly observed for decades but incorrectly identified. It is not an undiscovered particle class; it is the Sparticle field substrate responding to organised rotational entrainment.

2. The Validation:

The DD-1 finite-domain framework statistically outperforms standard dark matter models across galactic rotation curves, weak lensing structures, and extreme collision environments with zero per-system tuning.

3. The Unification:

The intrinsic density $\rho_s = 5.9 \times 10^{-27} \text{ kg/m}^3$ reunites the particle sector, the quantum carrier wave dynamics, and cosmological gravitation into a single physical fabric.

The Big Flare-Up Theory

Formulated and established independently by Vijay Shankar Sharma
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