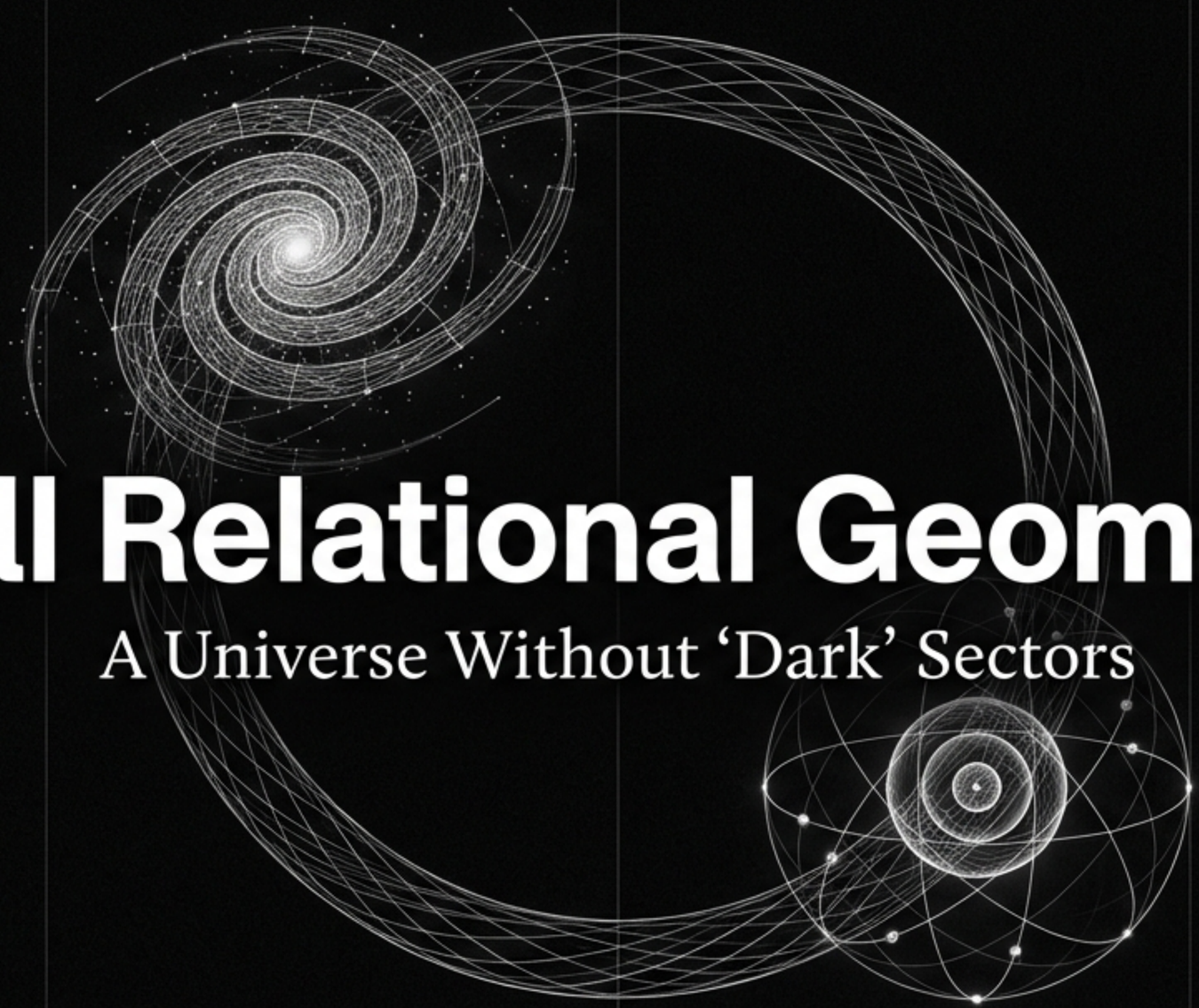

Willl Relational Geometry

A Universe Without ‘Dark’ Sectors

DERIVING THE COSMOS FROM FIRST PRINCIPLES WITH ZERO FREE PARAMETERS

Anton Rize (3026)

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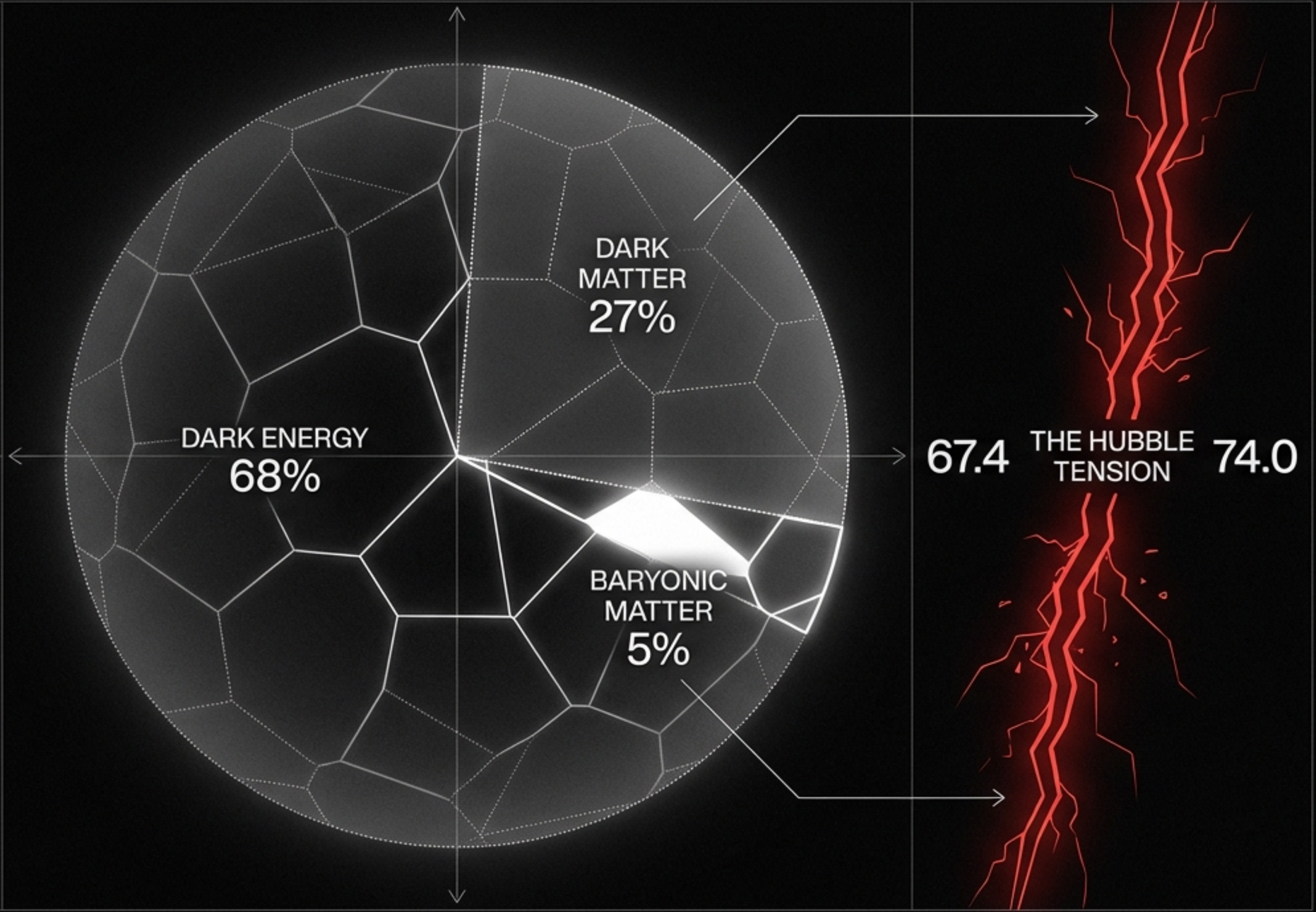
THE PATCHWORK CRISIS

The current Standard Model (ΛCDM) is broken. It requires 95% of the universe to be composed of invisible, hypothetical entities just to fit the data. We are stuck fitting curves rather than understanding geometry.



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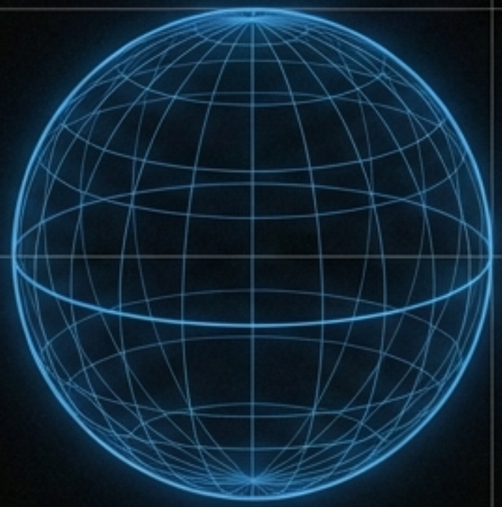
THE GENERATIVE AXIOM

Spacetime ≡ Energy

S^1 (Kinetic / Time)

≡

S^2 (Potential / Space)



$$\kappa^2 = 2\beta^2$$

Space is not a stage. It is the projection of energy. To exist, a system must balance its Potential and Kinetic energy in a strict 2:1 geometric ratio.

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THE IMPOSSIBLE DERIVATION

We derived the size of the universe (H_0) solely from the quantum properties of light and the temperature of the CMB.

ZERO FREE PARAMETERS

INPUT

$\alpha \approx 1/137$
(Fine Structure)

$T_{CMB} = 2.7255$ K
(Temperature)

Geometric Filter

OUTPUT

$H_0 \approx 68.15$

Planck 2018 Obs: 67.4 ± 0.5

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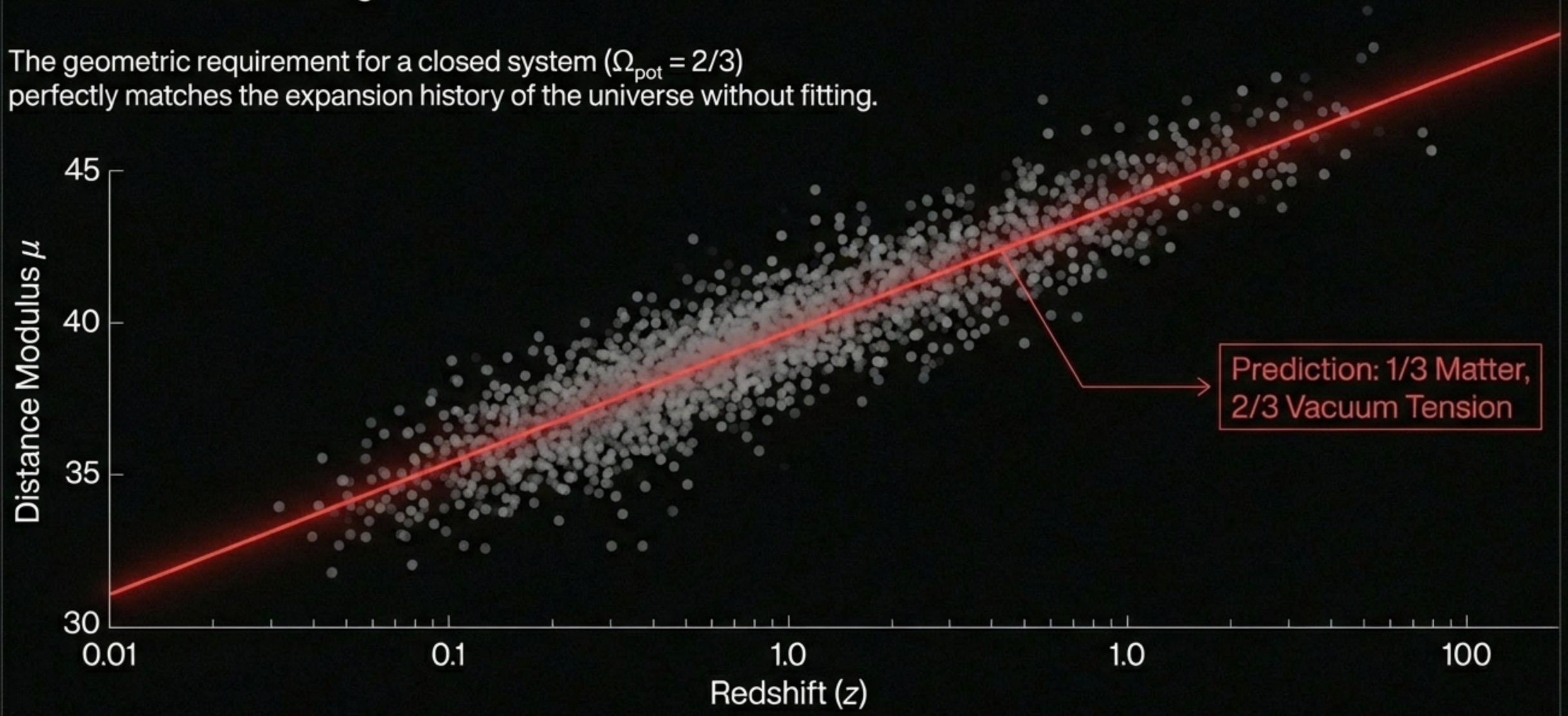
DARK ENERGY IS VACUUM TENSION

Residuals < 0.015 mag

The geometric requirement for a closed system ($\Omega_{pot} = 2/3$)
perfectly matches the expansion history of the universe without fitting.



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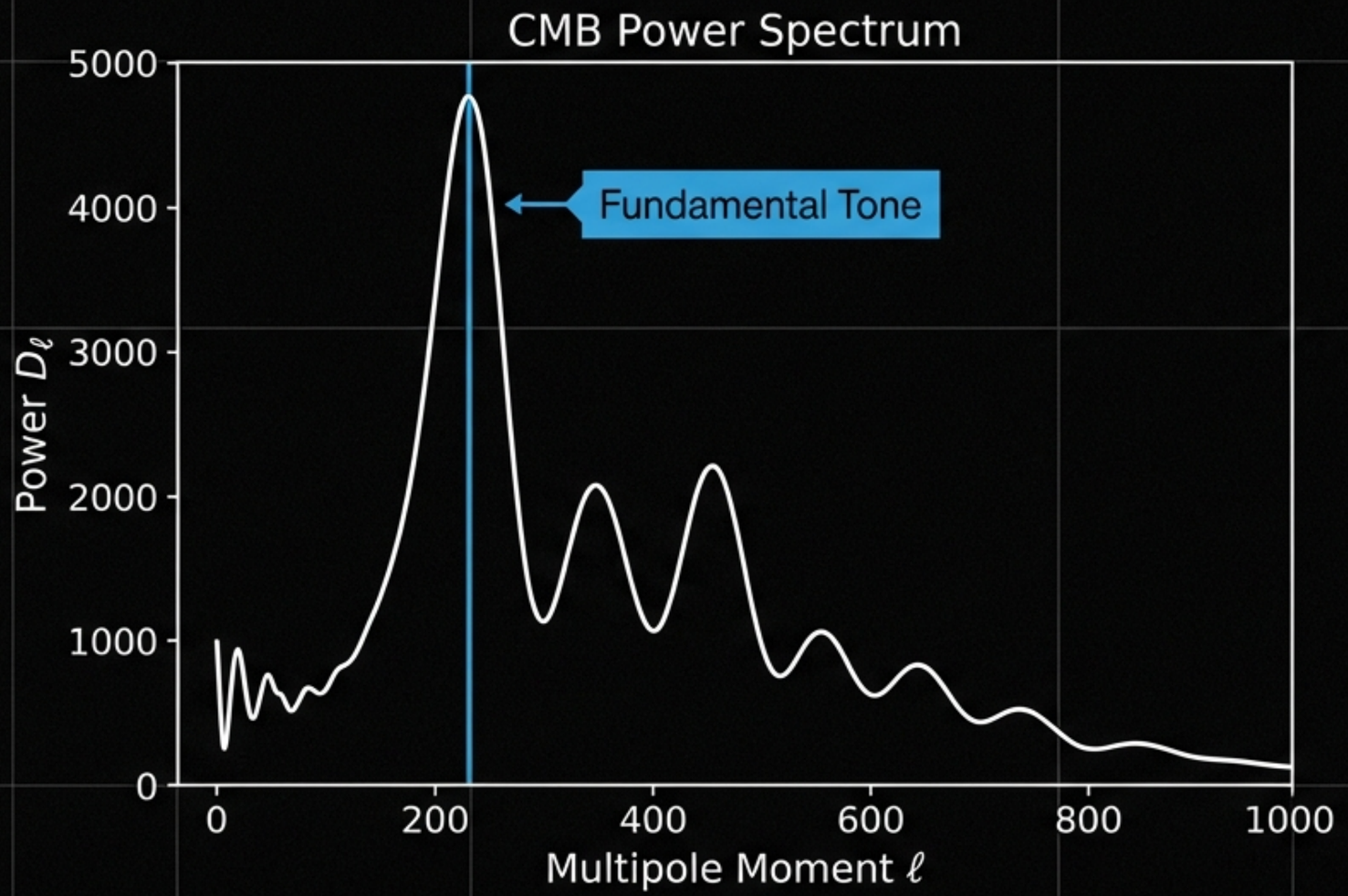
THE ACOUSTIC UNIVERSE



Prediction:	220.59
Observation:	220.6 ± 0.6
Accuracy:	-0.02%

The Universe is a ringing bell.

We predicted the exact note using only Baryons (~4%).

No Dark Matter required.

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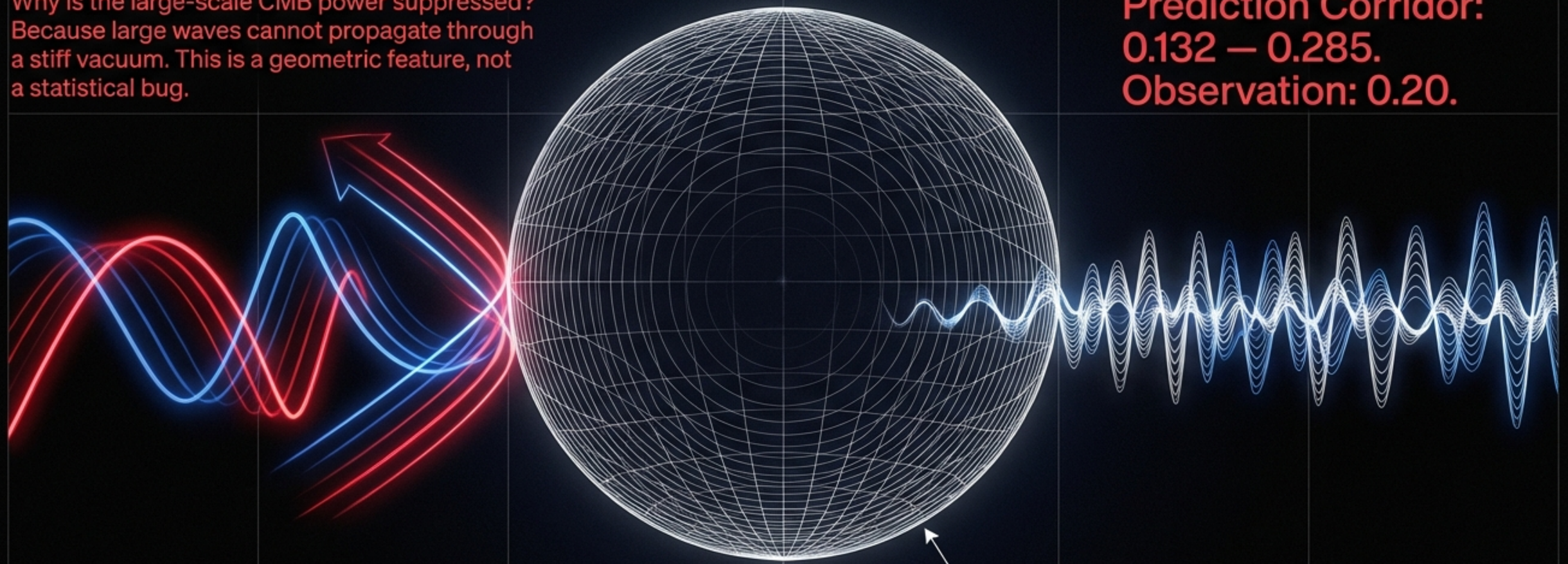
SOLVING THE LOW QUADRUPOLE ANOMALY

Why is the large-scale CMB power suppressed? Because large waves cannot propagate through a stiff vacuum. This is a geometric feature, not a statistical bug.

Prediction Corridor: 0.132 — 0.285. Observation: 0.20.



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THE END OF THE DARK MATTER HALO

Mechanism: Resonant Interference

$$v_{obs}^2 = v_{newton}^2 + \sqrt{v_{newton}^2 \cdot a_{Mach}\, r}$$

The "Halo" is not made of matter. It is the energy of the Global Horizon (H_0) interacting with local mass. The rotation curves are flat because the galaxy is resonant with the universe.

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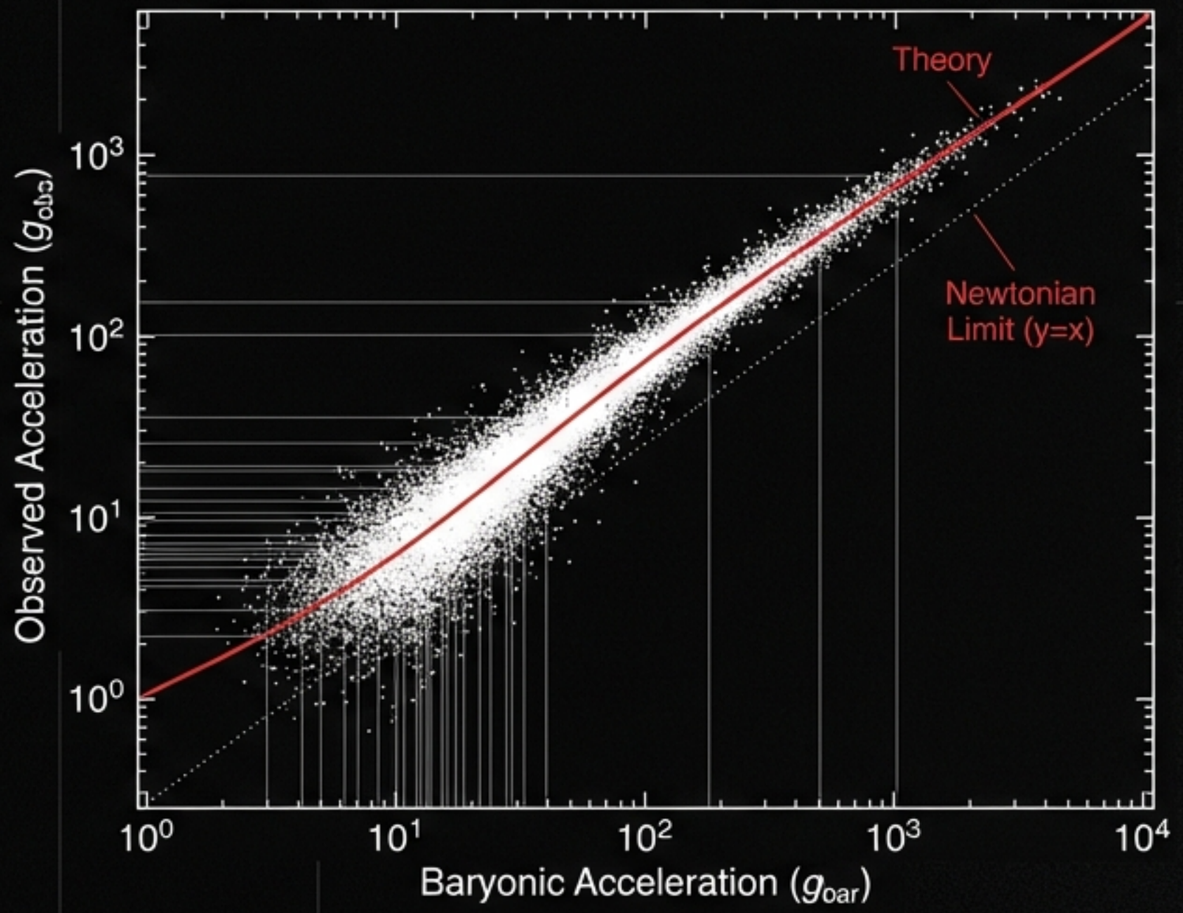
The Universal Radial Acceleration Relation

Data Source: SPARC Database (175 Galaxies)

RMSE: 0.065 dex. Bias: ~0.

From dwarfs to massive spirals, all galaxies obey one geometric law defined by the Hubble Constant.



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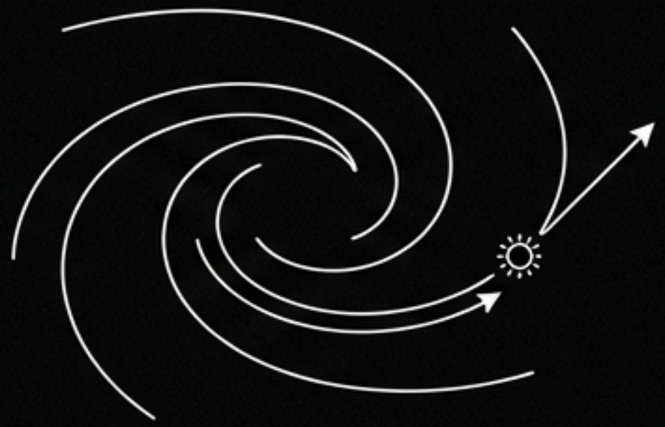
Local Verification: Our Backyard

The theory works at the edge of the universe AND in our solar neighborhood.
We correctly predict the “Gravity Boost” where standard MOND fails.

The Solar System



Predicted Velocity: 226.4 km/s.
Observed: ~229 km/s.

Wide Binaries

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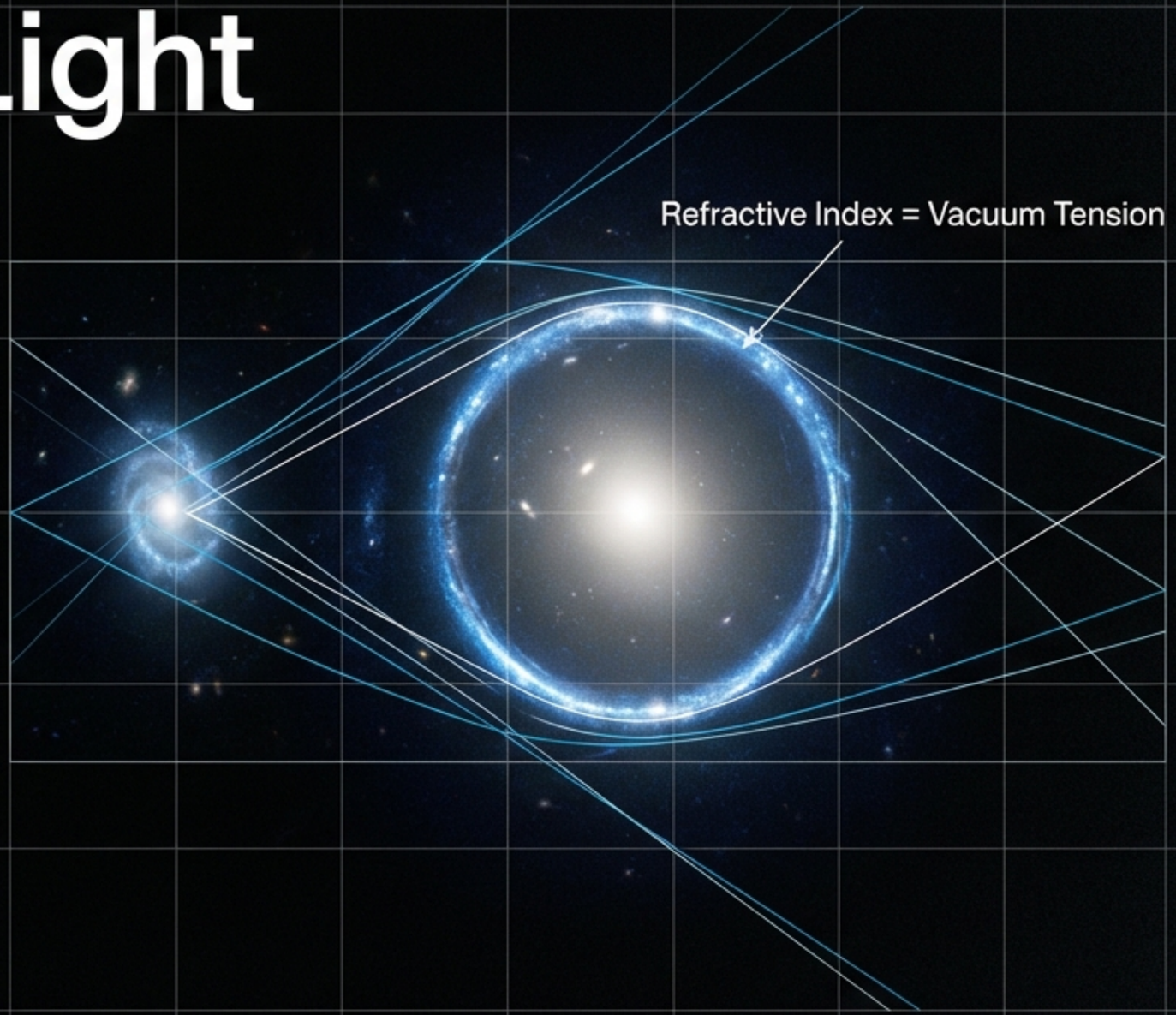
Gravity and Light

Observed Radius: 1.43"
Predicted Radius: 1.46"
Deviation: ~2%

The same ‘Phantom Mass’ that spins the stars also bends the light. It is a a unified geometric refractive index.



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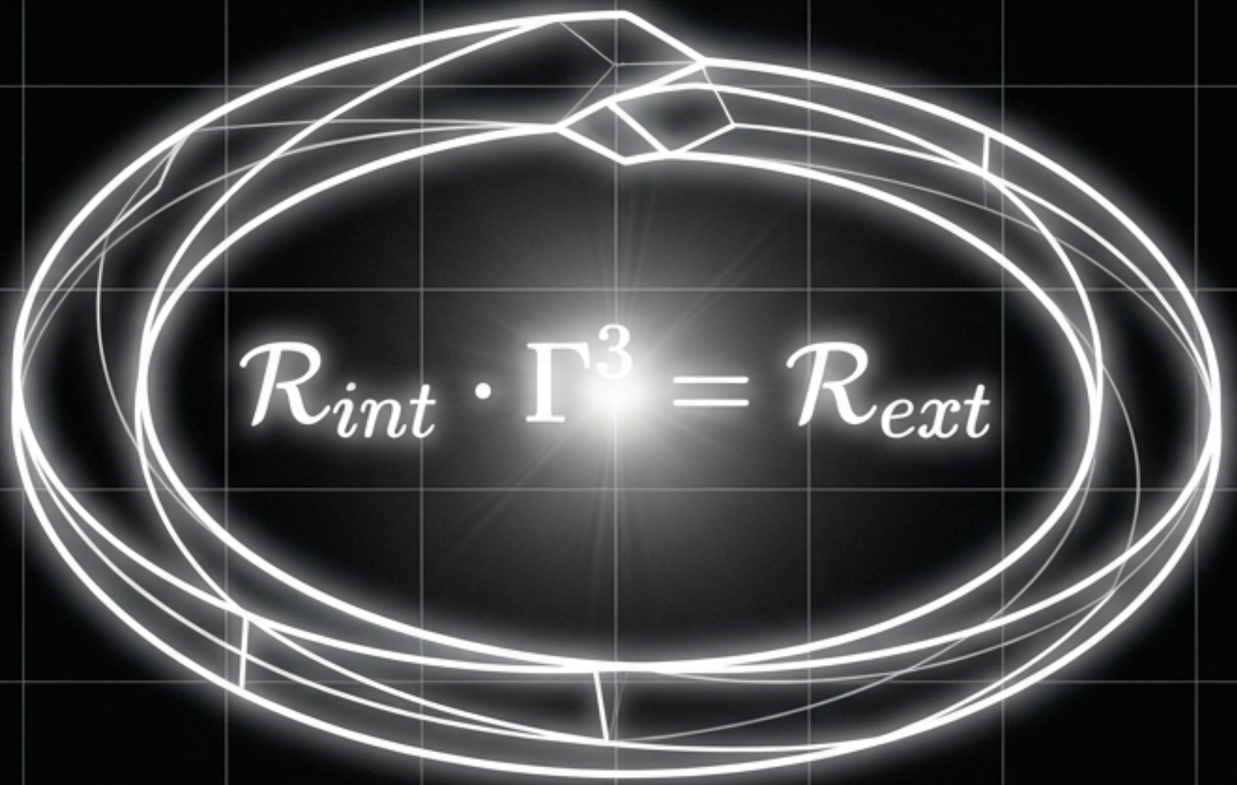
The Full Circle: Deriving the Electron

We used the size of the universe to calculate the mass of the electron to within 0.49% of the measured value.

H_0 (Macro)



m_e (Micro)

MACH'S PRINCIPLE REALIZED

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The Unbroken Chain

This is not a coincidence. This is a unified theory.

Prediction	Match Accuracy
Hubble Constant (H_0)	1.0% ✓
CMB Acoustic Peak	0.02% ✓
Galactic Rotation (RAR)	0.065 dex ✓
Solar System Velocity	< 1.5% ✓
Wide Binary Boost	Exact ✓
Electron Mass	0.49% ✓
Free Parameters	**0** ✓

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The Universe is not Dark.

It is Relational.

It is time to stress-test the Geometric Ontology.

doi: 10.5281/zenodo.17115270 | willrg.com

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