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Theory of Spheres ('Quantum Gravity')

or

Empty Spheres in 'Dimensionless Space' – The 'Fundamental Force' Behind Everything

(Quantum–Gravitational Force, 'Dark Matter' / 'Dark Energy', etc.)

Paper IX: M_{D0}^I - The 0-D Light-Mass as the Oscillator Engine: Quantum/Macroscopic Coupling Between Universes

Eran Shimony

Physicist (B.Sc.), MBA, and Certified Real Estate Appraiser

ABSTRACT

This paper reveals the direct mathematical and structural link between the total oscillator mass ($4 \times$ baryonic mass of our universe) and the zero-dimensional (0-D) cosmic light-mass - M_{D0}^I . Instead of summing discrete resonant particles, we integrate the entire continuous frequency spectrum of the **0-D oscillator engine**. Correcting the **SI unit** dimensions demonstrates that the fundamental oscillator integral yields a continuous dynamic action flow rate: ($M_{D0}^{AF} = \pi \times \hbar_{\text{universe}} \approx 2.51 \times 10^{88} \text{ kg/s}$) rather than a static inertial mass.

Integrating this flow rate over the complete cosmic cycle ($T_{\text{full-cycle}} \approx 1.44$ trillion years; see paper V chapter 1) produces the total accumulated **0-D** isotropic quadratic action ($(M_{D0}^I)^2 \approx 1.14 \times 10^{108} \text{ kg}^2$).

To project this localized potential into our macroscopic **3-Dimensional** spatial environment (**X, Y, Z**), we apply a dual geometric transformation: square root extraction to recover linear mass (**kg**), combined with 3D spatial equipartition ($\sqrt{1/3}$). This rigorously yields an observable cosmic mass of $M_{\text{obs-total-oscillator}} \approx 6.16 \times 10^{53} \text{ kg}$.

Furthermore, operating within a symmetric ($4 \cdot \pi$) topology split into an entangled quartet of cosmic quarters, our observable baryonic universe constitutes precisely one quarter (**25%**, $1.54 \times 10^{53} \text{ kg}$). This exact result lands directly within the observed cosmological range mass of (10^{53} - 10^{54} kg), with exact **SI unit** compliance without requiring dark energy (for the derivation of the intertwined quartet topology, see Paper I, Chapter 39, and throughout the series).

Part A: Introduction

In Paper VII, we began building a new quantum framework. Our original plan for Paper IX was to sum up discrete particles (leptons, quarks, and bosons) to find the engine's mass. However, we realized that particles are only secondary resonances - like notes on a guitar string - and not a part of the engine itself.

To find the true cosmic engine mass itself - M'_{D0} , we changed our approach: we replaced the sum of separate particles with a continuous integral over the whole **0-D oscillator spectrum**.

As derived in Chapter 1, this single shift accomplishes three major theoretical breakthroughs:

- It resolves dimensional inconsistencies by revealing that the **0-D engine** operates as a continuous mass-energy action flow rate (M'_{D0} in kg/s) rather than a static inertial mass. Accumulating this flow over a cosmic cycle yields the **0-D isotropic quadratic action potential** ($(M'_{D0})^2$ in kg²).
- It establishes that physical observable mass represents a **3-Dimensional geometric projection** of the 0-D potential, where square root phase extraction recovers linear mass (kg) alongside a **3D spatial** equipartition factor $\sqrt{1/3}$.
- It establishes a symmetric ($4 \cdot \pi$) topology split into an entangled quartet, where our observable universe constitutes precisely a single quarter (25% baryonic mass) without requiring dark energy.

Through this framework, we provide a simple geometric link between universe Planck's constant (h_{universe}), the 0-D cosmic light-mass M'_{D0} , and the total mass of the universe.

Chapter 1: Mathematical & Physical Derivation

To determine the total cosmic output, we transition from discrete particle summations to a single continuous integral over the 0D oscillator spectrum.

The Continuous Action Integral and Dynamic Flow Rate

Using Planck's relation ($E = h \times f$), we define the continuous action across the frequency spectrum of the 0D oscillator from zero to its maximum limit $C_{\max}$:

$$\int_0^{C_{\max}} h_{\text{universe}} \cdot f_{(C(t))} df = \left| \frac{h_{\text{universe}} \cdot f_{(C(t))}}{2} \right|_0^{C_{\max}} = \frac{h_{\text{universe}} \cdot C_{\max}^2}{2}$$

where (f) represents the continuous oscillation frequency. Applying mass-energy equivalence ($E = M_{D0}^{AF} \times C_{\max}^2$), we equate both representations:

$$M_{D0}^{AF} \cdot C_{\max}^2 = \frac{h_{\text{universe}} \cdot C_{\max}^2}{2}$$

Dividing by $C_{\max}$ isolates the fundamental dynamic mass flow rate M_{D0}^{AF} , and using: $\hbar \approx 8 \times 10^{87} \text{ kg} \cdot \text{m}^2/\text{sec}$ (paper IV chapter 2, eq 4-5), spatially normalizing across the cosmic unit cross-section ($L_{\text{ref}}^2 = 1 \cdot \text{m}^2$) under zero-dimensional unit-circle projection yields the continuous mass-action flow rate in standard SI units:

$$M_{D0}^{AF} = \frac{2 \times \pi \times \hbar_{\text{universe}}}{2 \times L_{\text{ref}}^2} \approx \pi \times 8 \times 10^{87} = 2.51 \times 10^{88} \text{ kg/s}$$

This confirms that M_{D0}^{AF} is a continuous mass-energy flow rate in kg/s.

Cosmic Time Integration & 0-D to 3-D Geometric Projection

To calculate the total 0-D cosmic light-mass potential (M_{D0}^I)² we integrate M_{D0}^{AF} over the entire cosmic cycle duration ($T_{\text{full-cycle}} = 1.44 \times 10^{12} \text{ years} \approx 4.54 \times 10^{19} \text{ seconds}$): $(M_{D0}^I)^2 = M_{D0}^{AF} \times T_{\text{full-cycle}} \times 1 \text{ kg} = 2.51 \times 10^{88} \text{ kg/s} \times 4.54 \times 10^{19} \text{ s} \times 1 \text{ kg} \approx 1.14 \times 10^{108} \text{ kg}^2$

The accumulated potential (M_{D0}^I)² represents the isotropic spatial diagonal squared of the 0-D oscillator field (vector 3-D view). To extract the observable linear **scalar mass quantity** ($M_{\text{obs-total-oscillator}}$) projected into our macroscopic 3-Dimensional space (X, Y, Z), we apply phase amplitude extraction combined with 3D spatial equipartition ($\sqrt{1/3}$ factor):

$$M_{\text{obs-total-oscillator}} = \sqrt{(M_{D0}^I)^2 / 3} = \sqrt{(1.14 \times 10^{108} \text{ kg}^2) / 3} = (1.0677 \times 10^{54} \text{ kg}) / \sqrt{3} = (1.0677 \times 10^{54} \text{ kg}) / 1.732 \approx 6.16 \times 10^{53} \text{ kg}$$

The Four-Quarter Cosmic Structure (Baryonic Component)

In our framework, the cosmos consists of four symmetric entangled quarters ($4 \cdot \pi$) topology, where our observable universe constitutes a single quarter (25%-baryonic matter):

$$M_{\text{baryonic}} = M_{\text{obs-total-oscillator}} / 4 = (6.16 \times 10^{53}) / 4 = 1.54 \times 10^{53} \text{ kg}$$

This exact result matches astronomical observations of the total baryonic matter in the observable universe ($10^{53} - 10^{54} \text{ kg}$), validating the 0D oscillator engine

CONCLUSION

Paper IX completes a critical transition in our cosmological framework:

- **Dimensional Clarification:** Correcting SI unit interpretation reveals that the 0-D oscillator engine operates as a dynamic mass-energy action flow rate ($M_{D0}^{AF} = 2.51 \times 10^{88} \text{ kg/s}$), accumulating over the cosmic cycle into an isotropic quadratic action potential ($(M_{D0}^I)^2 \approx 1.14 \times 10^{108} \text{ kg}^2$).
- **Geometric 0-D to 3-D Scaling:** The observable universe ($1.54 \times 10^{53} \text{ kg}$ for a single baryonic quarter) is derived via 3D spatial equipartition ($\sqrt{1/3}$) combined with square root phase extraction from the underlying 0-D potential $((M_{D0}^I)^2)$.
- **Instantaneous Multi-Universe Coupling:** Driven by $(4 \cdot \pi)$ phase interference across four entangled spatial quarters, mass-energy balance is maintained instantaneously via the zero-dimensional origin, requiring no physical travel across spatial coordinates.
- **Remote Spectral Analysis & Parallel Cosmology:** The theoretical framework allows determining the total mass of any additional closed, completely independent **cosmic 0-D harmonic oscillator**, and deriving its maximum speed of light, quantum energy levels, particle spectra, masses, and complete physical-chemical laws - all without requiring physical access. This is succinctly captured by the general cosmic projection relation:

$$(M_{D0}^I)^2 = 16 \times n \times M_{\text{baryonic}}^2$$

Where n is the number of spatial coordinate dimensions of the observer ($(n = 3)$ for our universe).

Numerically only, this translates directly to the linear extracted form:

$$M_{D0}^I = 4 \sqrt{n} \times M_{\text{baryonic}}$$

By unifying Planck-scale action with cosmic-scale mass distribution, this short paper provides a direct, elegant foundation for unified quantum cosmology - forming the underlying 'physics beneath physics'.

[*To the beginning of the paper*](#)

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