Originally written: February 2026

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 Ⅳ: the Planck's constant - $\hbar$

Eran Shimony

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

ABSTRACT

In this paper, we derive Planck's constant **ħ** directly from the **'Theory of Spheres' (ToS)** framework. The calculated value deviates by less than 10% from the officially measured value.

Part A: Introduction

This short paper demonstrates how Planck's constant emerges naturally as an inherent constant within the **Theory of Spheres**. Since the theory defines the 0-dimensional oscillator as a dual **quantum/classical oscillator**, we can apply the Quantum Uncertainty Principle to the universe as a whole.

Chapter 1: Uncertainty principle

We begin with the Quantum Uncertainty Principle applied to the entire universe:

. Eq 1) $\Delta E_{(universe)} \times \Delta t_{(universe)} \geq \hbar_{(universe)} \,/\, 2$

Similarly, we can derive this from the more fundamental momentum uncertainty:

. Eq 2) $\Delta p_{universe} \times \Delta x_{universe} \geq {}^{\hbar_{universe}}/_{2}$

In our zero-dimensional (0-D) harmonic oscillator framework, momentum is defined as mass times velocity (Δp = m x C), and distance is velocity times time (Δx = C x Δt). Thus, both paths (Eq 1 or Eq 2) lead to the same result for the uncertainty principle itself.

. Eq 3) $\mathrm{m}_{universe} \times C^2 \times \Delta t_{universe} \geq {}^{\hbar_{universe}}/_{2}$

To find the value of the constant itself, we consider the limit (the equality).

Chapter 2: Substitution

In this chapter, we substitute the accepted cosmological parameters to calculate the Planck's constant **ħ**:

- **Δt (Age of the Universe):** Approximately 14 billion years ≈ 4.418 x 10^{17}_{seconds}.
- **C (Speed of Light):** ≈ 3 x $10^{8}_{\text{m/sec}}$.
- **m (Mass of the Universe - Matter only):** estimated ≈ 10^{53}_{kg}.

The Cosmic Equation:
Substituting these values into the uncertainty principle (at the limit of equality):

. Eq 4) $\hbar_{universe} \approx 2 \times 10^{53}{}_{kg} \times 9 \times 10^{16}{}_{(m/\text{sec})^2} \times 4.418 \times 10^{17}{}_{sec}$
→
. Eq 4a) $\hbar_{universe} \approx 8 \times 10^{87}{}_{kg \times m^2/\text{sec}} = 8 \times 10^{87}{}_{j \cdot s}$

Transition to the Quantum Scale
According to the **Theory of Spheres**, to transition from the cosmic scale to the quantum scale, we apply the geometric coupling constant **Λ = 1.44 x 10^{-122}** - derived in **Paper II Eq 22**:

Using Λ above, The Final Calculation is:

. Eq 5) $\hbar_{quantum} = \hbar_{universe} \times \Lambda \approx 8 \times 10^{87}{}_{j \cdot s} \times 1.44 \times 10^{-122}$
→
. Eq 5a) $\hbar_{quantum} \approx 1.14 \times 10^{-34}{}_{j \cdot s}$

Comparison with Measured Value
The currently accepted value for the reduced Planck constant is:

. Eq 6) $\hbar_{quantum} \approx 1.054 \times 10^{-34}{}_{j \cdot s}$

Conclusion of Calculation:
The derived result is within a deviation of only **8% to 9%** from the officially measured value. Given the inherent uncertainties in measuring the mass and age of the universe, this level of alignment strongly suggests that Planck's constant is an emergent property of the our zero-dimensional (0-D) harmonic oscillator framework.

For the complete mathematical derivation of the 0-D Oscillator and the Varying Speed of Light (VSL) framework, please refer to Article A (format-pdf), available at:
[www.shimony.co.il/ToS_Final_23_Dec_2025]
And Article B (format-pdf), available at:
[www.shimony.co.il/T.o.S-II_February_01_2026-website]

To the beginning of the paper