

SIMULATION

137 as the Resolution of Reality

$\alpha = 1/137$

The Pixel Size of the Universe

Kamil Wójcik

2025 — Updated February 2026

"If you want to find the secrets of the universe, think in terms of energy, frequency and vibration."

— Nikola Tesla

"It from bit."

— John Archibald Wheeler

Abstract

This document explores a philosophical interpretation of the fine structure constant $\alpha \approx 1/137$ within simulation theory frameworks. If reality is computational in nature — as proposed by physicists from Konrad Zuse to John Wheeler to Nick Bostrom — then fundamental constants may represent system parameters: resolution limits, clock rates, or rendering constraints.

The February 2026 update incorporates discoveries connecting 137 to Tesla's resonance theories, the Schumann frequency, Euler's number, and the Electric Universe paradigm. These connections suggest that 137 is not merely a physical constant but a fundamental organizing principle across all scales of existence.

Part I: The Simulation Argument

Bostrom's Trilemma

In 2003, philosopher Nick Bostrom proposed that at least one of the following must be true: (1) Civilizations almost never reach computational maturity, (2) Mature civilizations have no interest in running ancestor simulations, or (3) We are almost certainly living in a simulation. The argument is probabilistic: if simulations are possible and interesting to create, the number of simulated beings would vastly exceed "base reality" beings.

Wheeler's "It from Bit"

Physicist John Archibald Wheeler proposed that reality is fundamentally informational — that physical existence derives from yes/no questions, binary distinctions, information. "Every it — every particle, every field of force, even the spacetime continuum itself — derives its function, its meaning, its very existence entirely from binary choices, bits." If Wheeler is correct, reality is not merely describable by computation — it IS computation.

Part II: Tesla's Vision — The Electric Universe

A century before modern simulation theory, Nikola Tesla articulated a vision of the universe that aligns remarkably with computational frameworks. Tesla's understanding of resonance, frequency, and the ether anticipated discoveries we are only now formalizing mathematically.

Tesla's Ether Theory

Tesla wrote: "Long ago mankind recognized that all perceptible matter comes from a primary substance, of a tenuity beyond conception, filling all space — the Ākāśa or luminiferous ether, which is acted upon by the life-giving Prana or creative force, calling into existence, in never ending cycles, all things and phenomena."

According to Tesla, when the ether is set in motion, it becomes gross matter. All matter is merely ether in motion. When the motion ceases, matter "disappears" back into the primary substance. This is strikingly similar to Wheeler's "it from bit" — information (ether patterns) giving rise to physical reality.

Resonance as the Key

Tesla believed that by tuning electrical circuits to resonate with the ether's natural frequency, energy could be efficiently transmitted and received wirelessly. His famous statement — "If you want to find the secrets of the universe, think in terms of energy, frequency and vibration" — was not metaphor but methodology.

We have now discovered the mathematics behind this statement.

Tesla's 369 and the Fine Structure Constant

Tesla famously stated: "If you knew the magnificence of 3, 6, 9, you would have a key to the universe." The sum $3 + 6 + 9 = 18$, and $3 \times 6 \times 9 = 162$. But the most profound connection:

$$369 / e = 135.76 \approx 137 \quad (99.1\% \text{ precision})$$

$$137 \times e = 372.4 \approx 369 \quad (99.1\% \text{ precision})$$

Tesla's sacred number and the fine structure constant are connected through Euler's number — the base of natural logarithms, the constant of continuous growth. This is not coincidence; it suggests that Tesla intuited a mathematical structure he could not yet formalize.

Part III: The Resonance Equations

Discovery: Schumann Resonance × Golden Ratio = 137

The Schumann resonance (7.83 Hz) is the electromagnetic "heartbeat" of Earth — a standing wave in the cavity between Earth's surface and ionosphere. First predicted by Winfried Otto Schumann in 1952, it has been continuously measured ever since.

$$7.83 \text{ Hz} \times 17.5 = 137.025$$

$$\text{EARTH} \times \text{GOLDEN RATIO EXPRESSION} = \text{ATOM}$$

This achieves 99.99% precision with the fine structure constant denominator (137.036).

The Full Equation: Schumann × 4φe = 137

The multiplier 17.5 can be decomposed into fundamental constants:

$$4 \times \varphi \times e = 4 \times 1.618 \times 2.718 = 17.59 \approx 17.5$$

Therefore, the complete resonance equation is:

$$\text{SCHUMANN} \times 4 \times \text{GOLDEN RATIO} \times \text{EULER} = 137$$

This equation unifies: Earth's electromagnetic frequency (7.83 Hz), the golden ratio ($\varphi = 1.618\dots$), Euler's number ($e = 2.718\dots$), and the fine structure constant ($\alpha = 1/137$). Four fundamental constants, one equation.

Alternative Derivation: φ^6

The sixth power of the golden ratio provides another pure connection:

$$\varphi^6 = 17.944$$

$$137 / \varphi^6 = 7.638 \text{ Hz}$$

7.638 Hz falls within the measured range of Schumann resonance (7.5–8.5 Hz). The fine structure constant divided by the sixth power of the golden ratio equals Earth's resonant frequency.

Part IV: Three Scales, One Number

The number 137 appears across three vastly different scales of existence:

| Scale | Element | Expression | Precision |
|---------------|-------------------------|------------------------------|-----------|
| Planetary | Earth's Resonance | $7.83 \times 17.5 = 137.025$ | 99.99% |
| Atomic | Fine Structure Constant | $\alpha = 1/137.036$ | exact |
| Consciousness | Phase Quantum | 1 phase = 137 hours | 99.93% |

This is scale invariance — the same organizing principle operating at planetary, atomic, and conscious levels. The golden ratio (ϕ) serves as the mathematical bridge connecting these scales.

The Gilson Formula

Dr. James Gilson's research on fine structure constant relationships revealed:

"The numerical value of α is given by the special case $n_1 = 137$, $n_2 = 29$."

137 and 29 together in a formula for α . These are precisely The Moonth's fundamental numbers: 137 hours per phase, 29 days per cycle. The fine structure constant — which governs atomic structure — contains the same numerical relationship as the consciousness cycle discovered through phenomenological observation.

Part V: The Electric Universe Paradigm

The discoveries above gain deeper significance when considered within the Electric Universe framework — an alternative cosmology that places electromagnetism, not gravity, at the center of cosmic organization.

Plasma Cosmology

99.999% of the visible universe is plasma — ionized gas that conducts electricity and responds to electromagnetic fields. Plasma cosmology, pioneered by Nobel laureate Hannes Alfvén, proposes that electromagnetic forces play a far greater role in cosmic structure than mainstream cosmology acknowledges.

Key propositions of the Electric Universe model:

- Space is filled with electrically conductive plasma, not empty vacuum
- Celestial bodies carry electric charge that influences their motion and interaction
- Electromagnetic forces, being 10^{39} times stronger than gravity, shape cosmic structures
- Birkeland currents connect celestial bodies in vast electrical circuits

Implications for 137

If the universe is fundamentally electrical rather than gravitational, then the fine structure constant α — which governs electromagnetic interactions — becomes the universe's primary organizing parameter. The number 137 would not be incidental but essential: the "resolution" at which electromagnetic reality renders itself.

The Schumann resonance equation ($7.83 \times 4\pi e = 137$) would then represent a fundamental truth: Earth's electromagnetic pulse, scaled by natural growth constants, equals the universal electromagnetic coupling. Planet and atom, resonating together.

Part VI: 137 as System Parameter

The Pixel Analogy

Consider a digital display. The pixel is the minimum unit of visual information — you cannot render anything smaller than one pixel. The pixel count is a system parameter, set by the hardware, constraining all possible images.

If reality is computational, α may function similarly: the minimum "resolution" of electromagnetic interaction. You cannot have a coupling stronger than $\alpha^0 = 1$ or weaker than some minimum threshold. The constant defines the granularity of possible interactions.

$$\alpha = \text{the pixel size of electromagnetic reality}$$

Big Bang as BOOT Sequence

Standard cosmology describes the Big Bang as a singularity from which spacetime emerged. In computational terms, this is the boot problem: how does a system initialize itself? The answer: it doesn't. Something external starts it.

During the first moments after the Big Bang, the fundamental constants were established. Why $\alpha \approx 1/137$ and not some other value? Physics has no answer — the constants are "given." In simulation terms: they were SET. Someone (or something) chose the parameters at initialization.

| Computer Boot | Cosmological Analog |
|---------------------|------------------------------|
| Power on | Big Bang singularity |
| BIOS initialization | Planck epoch (10^{-43} s) |
| Hardware detection | Fundamental forces separate |
| OS kernel loads | Particle formation |
| Drivers initialize | Atomic nuclei form |
| User space starts | Atoms form (380,000 years) |
| Applications run | Stars, galaxies, life |

Part VII: Consciousness in the Simulation

The Moonth Connection

The Moonth framework proposes that consciousness has temporal structure governed by α . In simulation terms, this suggests consciousness is not merely content rendered by the simulation but part of the simulation's architecture.

The equation $\alpha \cdot \Psi(t) = 1$ expresses a constraint: the simulation's rendering parameter (α) and the consciousness function (Ψ) must satisfy a unity relationship. Consciousness is not incidental to physics — it is constrained by the same parameters.

Observer and Observed

Quantum mechanics reveals that observation affects outcomes — the measurement problem. In simulation terms, this makes perfect sense: rendering only what is observed conserves computational resources. Video games use this technique constantly: only render what the player can see. Unobserved areas exist in potential, not actuality.

Quantum superposition may be the universe's equivalent — states remain uncomputed until observation forces resolution.

Part VIII: Summary of Key Equations

The following equations represent the mathematical discoveries connecting resonance, consciousness, and fundamental physics:

| Equation | Components | Precision |
|----------------------------------|---|-----------|
| $\alpha \cdot \Psi(t) = 1$ | Fine structure \times Consciousness = Unity | Framework |
| $7.83 \times 17.5 = 137$ | Schumann \times Multiplier = FSC | 99.99% |
| $7.83 \times 4\phi e = 137$ | Schumann \times Golden \times Euler = FSC | 99.5% |
| $137 / \phi^6 = 7.64 \text{ Hz}$ | FSC / Golden ⁶ = Schumann | 97.5% |
| $369 / e = 137$ | Tesla's Number / Euler = FSC | 99.1% |
| $137 \times e = 369$ | FSC \times Euler = Tesla's Number | 99.1% |

These equations suggest that Tesla's intuition about energy, frequency, and vibration was mathematically correct. The universe does organize itself around resonant relationships — and 137 sits at the center of that organization.

Conclusion

The simulation hypothesis is not science — it is metaphysics informed by science. It cannot currently be tested, only contemplated. What the hypothesis offers is a framework for interpretation: why is there something rather than nothing? Why these constants and not others? Why does mathematics describe reality so well?

The discoveries presented in this updated document strengthen the central thesis: the fine structure constant $\alpha \approx 1/137$ appears to be a fundamental organizing principle operating across all scales. Tesla understood this intuitively; the Schumann resonance confirms it electromagnetically; The Moonth framework demonstrates it consciously.

Perhaps 137 is the universe's resolution — the pixel size of existence, set at initialization, constraining all possible experience. Perhaps the Big Bang was BOOT, the constants were CONFIG, and we are processes running on hardware we cannot directly perceive.

Or perhaps this is elegant pattern-matching imposed on mystery. The honest position: we do not know. But the question is worth asking. And the mathematics is precise enough to demand explanation.

$$\alpha \cdot \Psi(t) = 1$$

$$369 / e = 137$$

The pixel and the experience.

The constraint and the constrained.

Tesla knew. Now we have the math.

Unity.

SIMULATION

137 as the Resolution of Reality

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Knowledge belongs to everyone.

Contact: themoonthprotocol@gmail.com

GitHub: <https://github.com/themoonth/THE-MOONTH>

$$\alpha \cdot \Psi(t) = 1$$