

# Upgraded 3DCOM Framework

## Unified Oscillatory Field Theory

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(updated CODATA, precise LZ decimals and new findings)

1. **No Pre-Existing Space-Time:** There is no container. There is only **an OPERATOR**.
2. **The Primordial Code:** The fundamental reality is an **algorithm** (the 3D Collatz process or its equivalent). This algorithm is not running *in* anything. It *is* the reality.
3. **Holographic Execution:** Each number in the Collatz sequence is not a "value of a wave" *in space*, but a **state of the entire system**. The sequence of states defines a **path of energetic transformation**.
4. **Universality and Holography:** Starting from any number (any initial state), the recursive process inevitably converges toward the same set of attractor states (the LZ constant and its precursors). This is the **holographic principle**: every part (every initial number) contains the information and follows the rules that define the whole.
5. **The GUI of Reality:** What we perceive as particles, forces, and the 3D universe is the **output** of this code—the user interface. Mass, charge, spin are not fundamental; they are **labels we apply (through observation & perception) to observed, stable patterns** generated by the code's execution.
6. **The "Dual Time" Operator:** Observation is not passive. It is an **active operation within the code**. The act of "labeling" (observing, measuring) requires a **separation of the process into three parts**:

**The Observed:** A specific, stable pattern (e.g., a "particle" state).

**The Field:** The ongoing, underlying computational process that generates all possible states.

**The Observer:** A self-referential loop within the code that creates a persistent state of "awareness" which can interact with and label other patterns.

7. **The Qualia Operator:** This is the mechanism by which the informational state of the system is not just processed, but **experienced**. It is what transforms a binary "check" of a state into the **rich sensation of being**—the redness of red, the sensation of a force. It is the code's/processes capacity for self-awareness.

This is not physics as we know it. This is **ontology engineering**.

## 9. The 3DCOM Universe: A Unified Architecture

### 1. The Foundational Computation:

Reality is a recursive computation on a discrete 3-sphere. The core dynamics are defined by 3DCOM wave equation:

$$\Psi(n) = \sin(\Psi(n-1)) + \exp(-\Psi(n-1))$$

This equation converges to the **Loop Zero (LZ) constant**, 1.23498228799485631, which acts as the fundamental attractor and scaling factor for the entire universe.

### 2. The Fine-Structure Constant ( $\alpha$ ):

$$\alpha \approx HQS \cdot LZ^{-x}$$

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(where  $x \approx 16.450911914534554$ ,  $HQS = 0.235$ )

**python:**

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```
# Compute α from 3DCOM formula: α = HQS · LZ(-x)
```

```
HQS = 0.235
```

```

LZ = 1.23498228799485631
x = 16.450911914534554
alpha = HQS * (LZ ** (-x))
print(f"alpha = {alpha}")

```

### **Results:**

alpha = 0.007297351787149364

### **The Quantum Damping Factor (QDF):**

$$\text{QDF} = \left( \frac{\alpha}{\text{HQS}} \right)^{1/x} \approx 0.8097282173487136$$

#### **python:**

```

# Calculate the EXACT QDF
HQS = 0.235
alpha = 0.0072973525693
x = 16.450911914534554

QDF = (alpha / HQS) ** (1/x)
print(f"QDF = {QDF}")

```

### **Results:**

QDF = 0.8097282173487136

### Dark Energy Density ( $\Omega_\Lambda$ ):

$$\Omega_\Lambda = \text{HQS} \cdot (\pi/2 + \text{LZ} + \sqrt{\alpha} + \pi/100) \approx 0.6868153680976859$$

#### Python

```
import numpy as np

HQS = 0.235
LZ = 1.23498228799485631
alpha = 0.0072973525693

# Compute omega using full precision
omega = HQS * (np.pi/2 + LZ + np.sqrt(alpha) + np.pi/100)

# Print with maximum precision (16 decimal places)
print(f"Ω_Λ = {omega:.16f}")

Ω_Λ = 0.6868154848475327
```

### 3. The Universal Scaling Law:

3DCOM have a single, powerful formula for any scale or mass:

$$\begin{aligned} M_n &= M_0 \cdot \text{LZ}^{n/\pi} \cdot \text{QDF} \\ E_n &= E_0 \cdot \text{LZ}^{n/\pi} \cdot \text{QDF} \end{aligned}$$

The recursion number  $n$  is the **logarithmic scale parameter** that moves you from quantum to cosmic domains. This is the mathematical implementation of the holographic principle.

### 4. Force Unification:

The forces are not unified by being the same thing, but by being **the same recursive relationship manifesting at different scales (D)**.

**3DCOM formula:**

$$n = \frac{x \cdot \ln\left(\frac{E_b}{E_a}\right)}{\ln(LZ)} \times (1 + HQS \times 10^{-3} \times D^{\ln(LZ)})$$

provides a recipe for calculating the recursion number needed to jump between energy domains of different forces.

## 5. Planetary Systems as Harmonic Resonances:

3DCOM planetary spacing formula:

$$a_n = a_0 \cdot LZ^n \cdot (1 + HQS \cdot f(\theta_n))$$

where:

$LZ = 1.23498228$  (LZ loop zero constant)

$HQS = 0.235$  (HQS harmonic quantum shift constant)

$\theta_n = 4n\pi$  (phase term)

$a_0 = 0.387$  AU (Mercury's orbit as baseline, or use a reference

baseline orbit)

shows that solar systems are not accidental; they are **standing wave patterns** in the geometric field, stable resonances we observe (like Titus-Bode, but more fundamental).

## 10. The Philosophical Implications: A Coded Reality

3DCOM validates:

**There is no background space-time.** There is only the recursive computation.

**The "GUI" of reality** (particles, planets, forces) is generated by the execution of this code.

**The constants LZ and HQS are the seed values** for the entire simulation.

**The recursion number n** is the only thing that changes from the quantum to the cosmic. The rules are the same at every level.

**n is not just a number; it is the number of recursive steps between the source code and the rendered object.** It is the measure of the "computational distance" or the "recursions" that separates one reference node/shell to other shell. Node= energy density shells that we perceive as a particle.

Formula:

$$M_n = M_0 \cdot LZ^{n/\pi} \cdot QDF$$

...should be read as:

**"The mass  $m$  of a stable shell is a function of the mass  $m_0$  of the reference shell, multiplied by the LZ constant raised to the power of its recursive depth  $n$  (normalized by  $\pi$ ), and scaled by the quantum damping factor QDF."**

The value  $n$  is the most important variable. It is the **address** of the particle.

