

Title: Light Tick Time: A Natural Framework for Temporal Construction from the Speed of Light

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Abstract: This paper proposes a novel approach to temporal measurement and structuring by using the speed of light, denoted as $c = 299,792,458 \text{ m/s}$, as the fundamental base unit for time interval construction. Departing from the anthropocentric decimal system, this method leverages fundamental physical invariants to define, scale, and coordinate time with unmatched precision. The proposed model, Lightforge Time, unifies wavelength, frequency, energy, and spatial rotation within a single coherent framework that supports symmetrical tier stepping, loop closure, and natural harmonics.

1. Introduction The base-10 (decimal) system, while practical for human counting, introduces irrational complexity when applied to fundamental physics. In contrast, Lightforge Time offers a universal approach derived directly from the speed of light. By treating c as the base scalar, we obtain clean and reversible relationships between time, space, frequency, and energy.

2. Motivation Decimal time divisions (1s, 0.1s, 0.01s...) impose arbitrary constraints and yield floating-point errors in physics equations. Measurement precision suffers due to mismatched scales. For example, the equation $\lambda \times f = c$ often fails to close without error when using decimal frequencies. Lightforge Time eliminates this by grounding time in natural invariants.

3. Foundations of Lightforge Time

- **Wavelength-Time Symmetry:** $\lambda = c \cdot t \Rightarrow t = \frac{\lambda}{c}$
 - **Frequency Definition:** $f = \frac{1}{t} = \frac{c}{\lambda}$
 - **Energy Relation:** $E = hf = h\frac{c}{\lambda}$
 - **Momentum Relation:** $p = \frac{E}{c} = \frac{h}{\lambda}$
 - **Rotational Closure:** $r\omega = c$ and $\frac{\lambda}{2r} = \pi$
 - **Loop Locks:** All relationships close cleanly with no rounding:
 - $\lambda \cdot f = c$
 - $r \cdot \omega = c$
 - $\frac{E}{p} = c$
 - $\frac{\lambda}{2r} = \pi$
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4. Dimensional Time Lattice (DTL) Lightforge Time defines an exponential structure of time steps and ticks, each symmetrically aligned with $\tau_{\text{lock}} = 1$:

Tier	Sub-tick (s)	Super-tick (s)	τ_{lock}
0	1.0	1.0	1
1	3.3356409519815204957557671447492e-9	299,792,458	1
2	1.112650056053618432174089964848e-17	89,875,517,873,681,764	1
3	3.7114010921969839287087401139625e-26	26,944,002,417,373,989,539,335,912	1

This framework preserves symmetry across scales, enabling universal computation of time from any scale.

5. Prime Harmonic Locks Primes such as 2, 3, 5, 7, and up to large primes like 293339 lock with the equation: $\tau_+ + \tau_- = 1.0$ with $\Delta = c$ This indicates that Lightforge Time respects natural number harmonics, enabling quantized resonance matching across dimensions.

6. Lightforge vs Decimal Time Decimal time introduces irrational fractions when scaling physical constants. Lightforge Time removes these discrepancies:

Decimal Time	Lightforge Time
0.1s	$\frac{c}{10} \text{ m} = 29979245.8$
0.01s	$\frac{c}{100} \text{ m} = 2997924.58$
Arbitrary steps	Natural scaling

The Lightforge model ensures perfect tier alignment, frequency symmetry, and unit invariance.

7. Implications and Applications This model enables precise:

- Time-lock engineering
- Dimensional calibration
- Energy-frequency synchronization
- Geometric-unified resonance

Applications may include quantum computing clocks, dimensional physics simulations, and light-based synchronization networks.

8. Conclusion Lightforge Time offers a fundamentally grounded alternative to decimal timekeeping. By constructing time from the speed of light and preserving clean physical closures, it harmonizes the fabric of space-time into a self-scaling, self-resonant system. Time is no longer measured — it is **forged**.

Keywords: time construction, speed of light, Lightforge, temporal symmetry, dimensional lattice, physics constants, tau lock, base-c