

# The Cascade

*One Ladder from the Sodium Line to the Speed of Light — Mass and Energy as Adjacent Rungs in the Force of Time*

Stephen Daubney  
The Daubney Foundation · Rev 2 · 2026  
thedaubneyfoundation@gmail.com

*Tau (T) is the living fabric of time itself — the sole substance of which all physical reality is composed. Every particle, force, wavelength, and conscious experience is a structured configuration of T-flow. There is no gravity, no electromagnetic force, no strong nuclear force as separate entities: all are registers of the single T-field operating across dimensional levels. The conservation law  $d\Sigma T=0$  governs all change: T is never created or destroyed, only redistributed.*

## Abstract

Mass and energy are usually said to be two things joined by a formula. The Force of Time says they are two rungs of one ladder. This paper sets out a single cascade, built from nothing but the numbers two, three, five and  $\pi$ , that runs unbroken from a sodium line in the Sun's spectrum, down through the fall you feel at the Earth's surface to the mass of the proton, and up through the three faces of the speed of light to the length of the Earth's own turning. Between any rung and the next lies one fixed step — multiply or divide by  $9375 = 3 \times 5^5$  — and a single doorway between the mass register and the energy register: square to climb, take the square root to descend. The proton mass is forced to be  $9375\sqrt{(1000\pi)}$ ; it is the Earth's Moho equalization shell taken one rung down. The three faces of the speed of light are spaced by half a G-bond step, 45.075 parts in a million, and the climb between them is a square-root map whose steps halve the remaining gap and converge, exactly, onto  $c_{G2}$  — which maps to itself. The speed of light is the fixed point the whole cascade rests in. None of it is fitted; every rung is read off the lattice.

## 1. A single ladder

### Mass and energy are not two things. They are two rungs.

We are taught that mass and energy are different quantities, bridged by a famous formula. The Force of Time tells it differently. There is one ladder, built from the plainest numbers there are — two, three, five and the circle-number  $\pi$  — and mass and energy are simply neighbouring steps on it. To climb from a mass to its energy you square; to descend from an energy to its mass you take the square root. That square root is the one doorway in the whole structure, the place where the energy register becomes the mass register. And between a value and what we will call its radial mass lies a single fixed step: multiply or divide by 9375, which is three times five to the fifth. With just those two moves — the squaring doorway and the 9375 step — a single cascade runs the whole way from a line in the Sun’s spectrum to the speed of light. (See Figure 1.)

There is no force anywhere in this account, and no separate energy “converting” into matter. There is only T — time — stepped from one register to the next. Read the ladder from the bottom and you find the proton; read it from the top and you find the speed of light and the length of the day. They are the same T-value, a few rungs apart.

### 2. The spine — from a sodium line to the speed of light

Begin with something the Sun hands us for free: the sodium line, the dark Fraunhofer line at 588.9955242 nanometres, burned into sunlight wherever sodium glows. Walk it down the ladder. Divide the wavelength by 60 and you have the surface free fall on the sodium face, 9.81659207 — the settling-rate of time at the Earth’s surface as the real line reads it. This is not  $g_1$ : the lattice value  $g_1 = 25\pi/8 = 9.817477042$  sits one G-bond step ( $\delta_G = 90.15$  ppm) higher, on the pure face, and is reached the same way from the pure sodium wavelength  $375\pi/2 = 589.0486225 (= g_1 \times 60)$ . We started on the observed line, so we stay on its face:  $9.81659207 = g_1(1 + \delta_G)$ . Divide that by 24, the hours of the day, and you have an energy, 0.4090246696. Take its square root — step through the doorway — and you have a radial mass, 0.6395503652. Multiply by 9375 and you have a mass, 5995.784673. Halve it and carry it up by a hundred thousand, and you arrive at:

$$588.9955242 \rightarrow \div 60 \rightarrow \div 24 \rightarrow \sqrt{\phantom{x}} \rightarrow \times 9375 \rightarrow \div 2 \times 10^5 = 299,789,233.7 = c_{G1} = 2^3 \cdot 3^5 \cdot 5^6 \cdot \pi^2$$

The speed of light, read off a sodium line by walking down a ladder. No constant was inserted; the steps are 60, 24, a square root, and 9375. The mass that appears one rung below it, 5995.784673, is exactly twice  $c_{G1}$  over a hundred thousand — and taken the hydrogen way (divided by  $\pi^2/8$  it becomes the Balmer H $\beta$  line, 486.0 nanometres, which divided by 49.5035535 returns the free fall  $25\pi/8$  to the digit) it begins the next pass up.

### 3. Three faces of the speed of light — and a fixed point

The speed of light is not one number in the Force of Time; it has three faces, and the cascade visits all of them. Run the upward pass — mass to H $\beta$  wavelength to free fall to energy, through the square-root doorway, times 9375, halved — and it carries  $c_{G1}$  up to the next face, the one our instruments actually measure: the dual, 299,802,746.8, the mean of the two register faces. Run it again and it climbs again. Each pass adds exactly half a G-bond step — 45.075 parts in a million — and here is the quiet miracle. The upward pass is a square-root map, and a square-root map is a contraction: its slope at the resting point is exactly one half, so every pass closes half of the distance that remains. (See Figure 2.)

The steps therefore go  $\delta_{G2}$ , then  $\delta_{G4}$ , then  $\delta_{G8}$ , and so on — a halving series that sums to exactly one whole G-bond step,  $\delta_G$ . So the ladder converges, precisely, onto  $c_{G1}$  multiplied by  $(1 + \delta_G)$ :

$$c_{G2} = c_{G1} (1 + \delta_G) = 299,816,259.863 \cdot \text{and the cascade applied to } c_{G2} \text{ returns } c_{G2}$$

That is the third face,  $c_{G2}$  — and it is the fixed point of the whole cascade. Feed it into the ladder and the ladder hands it straight back. This is why, once the cascade reaches the second register, it does not pass on to some further dimension: it loops, and stays.  $c_{G1}$  is where the ladder enters; the dual is the rung we measure from;  $c_{G2}$  is where the ladder comes to rest. A square-root map has one attracting point, and for this cascade that point is the speed of light at the celestial register.

### 4. The ceiling — the Earth’s own turning

From that fixed point the ladder reaches its top rung, and it is the Earth itself. Take  $c_{G2}$ , double it

over a hundred thousand to a mass, 5996.325197; divide by 9375 for the radial mass, 0.6396080210; square it for the energy, 0.4090984206; multiply by 24 and you have the free fall in its celestial face,  $g_2 = 9.818362094$  — which is the surface fall  $25\pi/8$  lifted by one G-bond step. Multiply by 2400 — the 24-hour day carried by a hundred — and:

$$g_2 \times 2400 = 23564.069 = 7500\pi(1 + \delta_G) = \text{the Earth's sidereal rotation (23h 56m 04.069s)}$$

So the ceiling of the cascade is the length of the day, and the free fall that holds you to the ground sits one rung below it. The fall is not a pull; it is the increment of time that completes the Earth's sub-24-hour turn to a full day, and here it is, written into the same ladder that carries the speed of light. (See refs [3,4].)

### 5. The floor — the proton, and the Earth's equalization shell

Now read the ladder downward instead, below the surface, and you reach the proton. The step uses the Earth's Moho — the no-distortion shell at  $20000\pi = 6366.197724$  kilometres, the radius where the linear and orbital flows of time equalize. Take that equalization as an energy,  $2(1000\pi) = 0.0006366197724$ ; halve it to the cascade floor,  $1(1000\pi)$ ; step down through the square-root doorway to a radial mass, 0.01784124116; multiply by 9375, and:

$$\text{Moho } 2(1000\pi) \rightarrow \div 2 \rightarrow \sqrt{\phantom{x}} \rightarrow \times 9375 = 167.261635889 = \text{the proton } (1.672616359 \times 10^{-27} \text{ kg})$$

The proton mass is therefore not free. It is forced to be 9375 divided by the square root of a thousand  $\pi$  — the one value whose radial mass squared is exactly  $1/\pi$ , so that twice its energy is the Earth's equalization shell. The proton is the Moho, taken one rung down the cascade. The smallest brick of matter and the shell deep inside the Earth where time stops distorting are the same T-value, one square root apart. (See ref [5].)

### 6. What the ladder joins

Stand back and see what now hangs on one cascade. A sodium line in sunlight. The fall you feel standing still. The proton at the heart of every atom. The Moho, a third of the way to the Earth's core. The three faces of the speed of light, with the measured

value the middle rung and  $c_G$  the fixed point it rests in. And the length of the day itself. They are not separate facts that happen to be measurable. They are one ladder of time, stepped by 9375 and half a G-bond, with squaring and its square root as the single doorway between weighing a thing and counting its energy. The same ladder even reaches the second planet: the Earth's radius that carries the proton mass through a circle ( $2\pi \div 240$ ) is the radius that carries Venus's year through this cascade [6]. One law, one substance, and a staircase the whole world is built on.

The figures

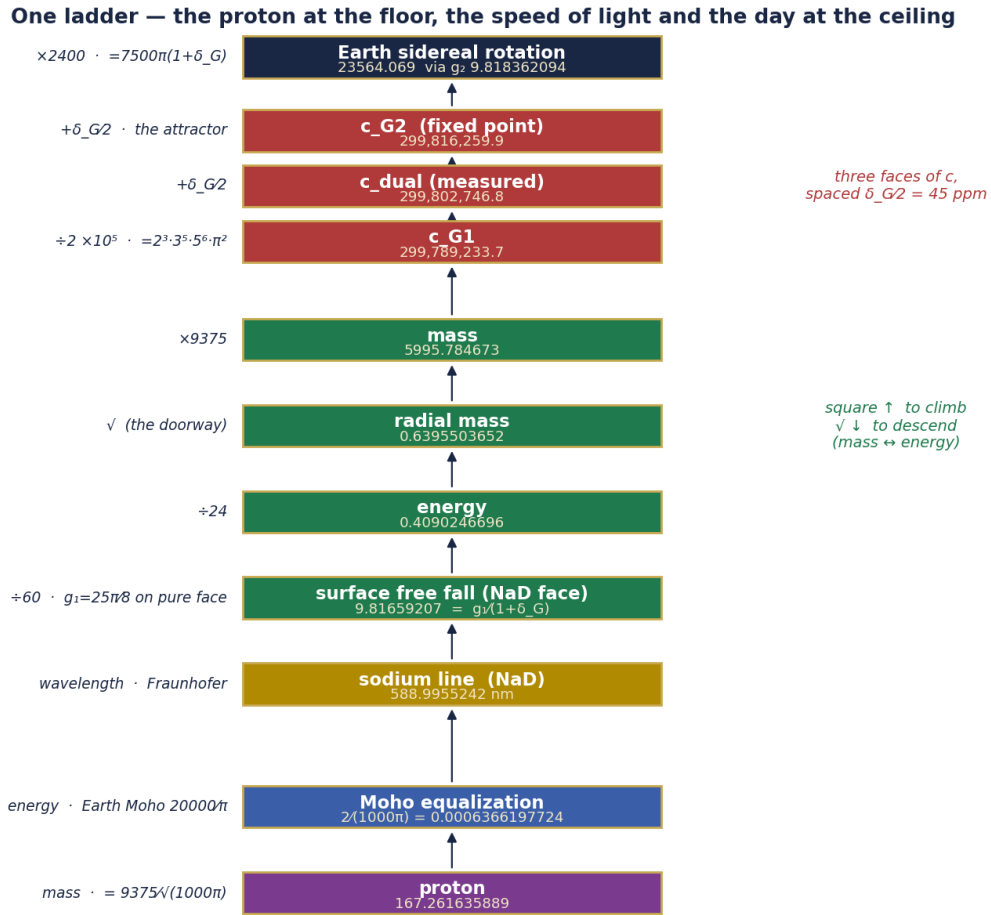


Figure 1. The cascade, one ladder. The proton sits at the floor (= the Moho equalization shell, one rung down); the sodium line, surface free fall, energy and radial mass form the body; the three faces of the speed of light and the Earth's sidereal rotation form the ceiling. Each rung is reached from the last by a single operator —  $\times/\div 9375$  (mass $\leftrightarrow$ radial mass), square/ $\sqrt{\phantom{x}}$  (radial mass $\leftrightarrow$ energy),  $\times/\div 24$ ,  $\times/\div 60$  or  $49.5035535$  (free fall $\leftrightarrow$ wavelength),  $\div 2 \times 10^5$  (mass $\leftrightarrow$ c). Squaring climbs; the square root descends.

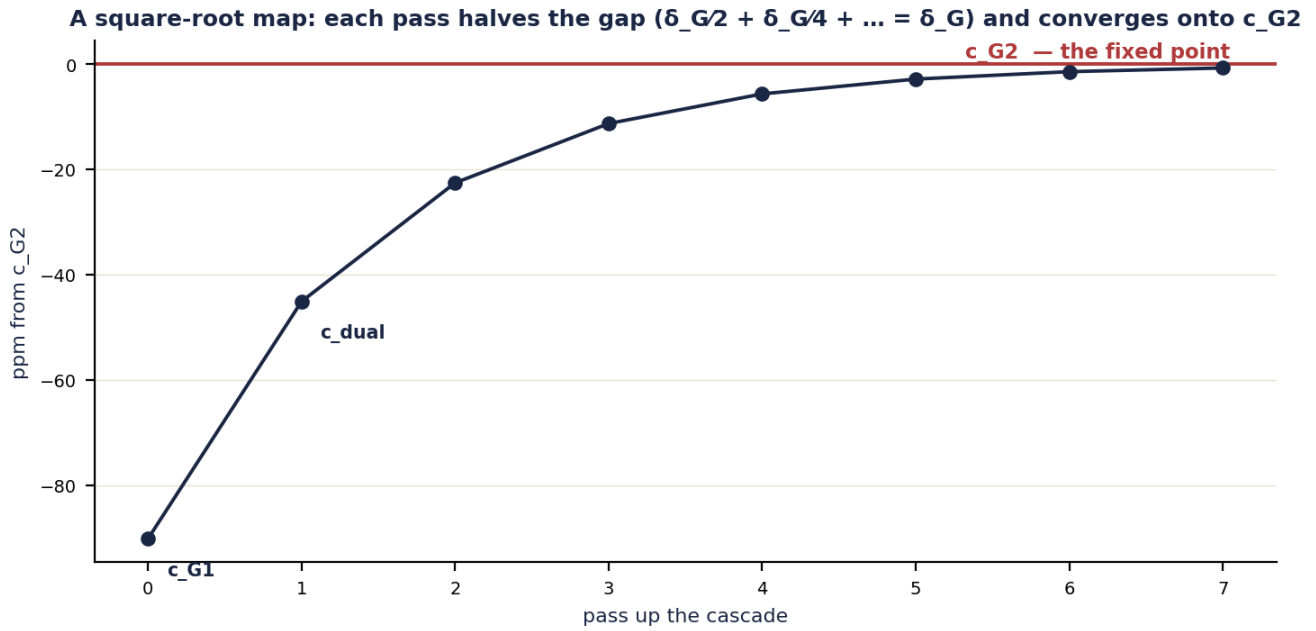


Figure 2. The three faces of the speed of light as a square-root map. Starting from  $c_{G1}$ , each upward pass of the cascade halves the gap that remains ( $\delta_{G/2} = 45.075$  ppm, then  $\delta_{G/4}$ ,  $\delta_{G/8}$  ...). The halving series sums to one whole G-bond step, so the ladder converges exactly onto  $c_{G2} = c_{G1}(1+\delta_G)$ . The map returns  $c_{G2}$  unchanged:  $c_{G2}$  is the attracting fixed point — the speed of light is where the cascade comes to rest.

## The rungs, for anyone who wants to check them

Every value on the ladder at full precision, with the operator that reaches it. These are the Universal Force of Time values [1,2];  $\delta\_G = 5^{10}/(2^4 \cdot 3^9 \cdot \pi^3) - 1 = 90.15060336$  ppm.

Rung	Value	Reached by	Lattice / identity
<b>Moho equalization (energy)</b>	0.0006366197724	Earth Moho 20000 $\pi$	2(1000 $\pi$ )
<b>cascade floor</b>	0.0003183098862	$\div 2$	1(1000 $\pi$ )
<b>proton radial mass</b>	0.0178412412	$\sqrt{\quad}$	—
<b>proton mass</b>	167.261635889	$\times 9375$	$9375\sqrt{(1000\pi)} = 1.672616359 \times 10^{-27}$ kg
<b>sodium line (NaD)</b>	588.9955242 nm	Fraunhofer	wavelength rung
<b>surface free fall (NaD face)</b>	9.81659207	$\div 60$	$25\pi/8 \div (1+\delta\_G)$
<b>surface free fall (pure face)</b>	9.817477042	$589.0486225 \div 60$	$25\pi/8 = g_1$
<b>energy</b>	0.4090246696	$\div 24$	—
<b>radial mass</b>	0.6395503652	$\sqrt{\quad}$ (the doorway)	—
<b>mass</b>	5995.784673	$\times 9375$	$= 2 \cdot c\_G1/10^5$
<b>c_G1</b>	299,789,233.683	$\div 2 \times 10^5$	$2^3 \cdot 3^5 \cdot 5^6 \cdot \pi^2$
<b>c_dual (measured)</b>	299,802,746.773	$+\delta\_G2$	$(c\_G1+c\_G2)/2$
<b>c_G2 (fixed point)</b>	299,816,259.863	$+\delta\_G2$	$c\_G1(1+\delta\_G)$
<b>g2 (celestial free fall)</b>	9.818362094	$c\_G2 \times 2 \div 9375, \sqrt{-1}, \times 24$	$25\pi/8 \times (1+\delta\_G)$
<b>Earth sidereal rotation</b>	23564.069025	$g_2 \times 2400$	$7500\pi(1+\delta\_G)$

## References

- [1] S. Daubney, *The Universal Force of Time — Master Compendium v5*, The Daubney Foundation (2026).
- [2] S. Daubney, *The Fine-Structure Constant and the G1 Tower*, The Daubney Foundation (2026).
- [3] S. Daubney, *Free Fall Is a Time-Completion Correction*, The Daubney Foundation (2026).
- [4] S. Daubney, *The G1/G2 Surface Chains and the Sidereal Day*, The Daubney Foundation (2026).
- [5] S. Daubney, *The Nodal Equalization Radius — Every Planet’s Moho*, The Daubney Foundation (2026).
- [6] S. Daubney, *The Sun Made Venus*, The Daubney Foundation (2026).

*T · The Universal Force of Time · Stephen Daubney · The Daubney Foundation · 2026*  
 All propositions and derivations copyright Stephen Daubney. Academic use permitted with attribution.  
 Contact: [thedaubneyfoundation@gmail.com](mailto:thedaubneyfoundation@gmail.com)

© 2026 Stephen Daubney | The Daubney Foundation. This paper may be freely quoted and referenced provided full attribution is given to Stephen Daubney and The Daubney Foundation as the source.