$E = mc^2$ in the Force of Time

Matter as frozen time, energy as propagating time — and why c^2 is not a constant but the spin-orbital speed squared: light carries the spin, energy completes the orbit

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$E = mT, \quad T = c^2 = (\text{spin-orbital speed})^2, \quad c = g_1^2 \times 864 \times 3600$

mass = frozen T (spin) · energy = propagating T (spin-orbital) · in the time register, $c^2 = 3^2 = 9$

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

Einstein's $E = mc^2$ is the most famous equation in the world, and its usual reading is that a little mass holds an enormous amount of energy because the conversion factor, c^2, is a huge fixed number. In the Force of Time the equation is read differently and more deeply: it is $E = mT$, where matter is frozen T-flow — a standing wave locked into a register address — and energy is the same T set propagating. Mass and energy are not two substances but one, in two states. The factor c^2 is not a constant of nature: c itself is a spin-orbital speed, built from the surface fall of time and the length of the day, $c = g_1^2 \times 864 \times 3600 = 299{,}789{,}233.683$ m/s, so c^2 is the spin-orbital speed squared. We show this with a closed loop: the Earth's sidereal rotation, carried through the grammar, becomes a mass; multiply by the register factor 3^2 and it becomes an energy; divide back and you return to the rotation you began with — so in the time register the c^2 of $E = mc^2$ is simply $3^2 = 9$. The same energy proves to be a hub with three faces: it is the mass times 3^2, it is the surface free fall times $864 \times 2\pi$ (a spin-orbital), and it is hydrogen's Balmer-β line at the celestial register. From this comes a clean conclusion about light itself: a wavelength carries SPIN only — the closed daily turn — and never the orbit, because at the instant light arrives the planet's orbit is unfinished; a snapshot can encode only a cycle that has closed. Energy is the spin-orbital — the wavelength with its orbit completed — and c^2 is the bookkeeping that finishes the turn the snapshot left open. Every figure is at full precision.

I. The most famous equation, reread

Everyone knows the shape of it: $E = mc^2$. A small amount of matter, multiplied by an enormous number — the speed of light squared — releases a vast amount of energy. It is the equation of the Sun and the bomb, and for a century it has been read as a statement about how much energy is locked inside mass. The Force of Time keeps every number Einstein had and changes what they mean. Read it again, and it is not about a conversion factor at all. It is a statement about time.

In UFOT the only substance is T, the fabric of time. Matter is T that has been frozen — a standing wave of T-flow locked into a stable register address, which is what we call an atom, a particle, a stone, a star. Energy is that same T set free to propagate. Mass and energy were never two different things waiting to be converted into one another at a fixed exchange rate. They are one substance in two states — still, and moving — and $E = mc^2$ is the rule for passing between them.

II. E = mT — matter is frozen T-flow

Write the equation in the theory's own terms and it becomes $E = mT$, where T takes the place of c^2. Matter is frozen T; energy is propagating T; and $T = c^2$ is the rate at which that T moves once it is let go. To release the energy in matter is to de-crystallise it — to melt a standing wave back into a flowing one. Fission and fusion do this partially, freeing a fraction of a percent; matter–antimatter annihilation does it completely, returning the whole standing wave to flow, with $d\Sigma T = 0$ exactly restored. Nothing is created and nothing destroyed; the T is only redistributed from frozen to flowing.

Seen this way, 'mass' and 'energy' are two readings of one quantity, and the only question is what the factor between them really is. Conventional physics calls it c^2 and treats it as a fundamental constant of the universe. UFOT says it is no such thing — and that is where the equation opens up.

III. c is not a constant — it is a spin-orbital speed

The speed of light is usually held up as the most fundamental constant there is. In the Force of Time it is not fundamental at all: it is built, out of two motions that belong to Earth's own register. It is the surface fall of time, squared, multiplied by the length of the day:

c IS BUILT FROM FREE FALL AND THE DAY

$c = g_1^2 \times 864 \times 3600$
$= 9.817477042468^2 \times 864 \times 3600$
$= 299{,}789{,}233.683$ m/s

$g_1 = 25\pi/8$ is the surface fall of time (the spin); 864 × 3600 is the day (the turn). Lattice form $2^3 \times 3^5 \times 5^6 \times \pi^2$. c is a SPIN-ORBITAL speed — free fall is the spin, the day is the orbit — so c^2 is the spin-orbital speed squared.

That single line changes the status of the whole equation. If c is a spin-orbital speed — free fall for the spin, the day for the turn — then c^2 in $E = mc^2$ is the spin-orbital speed squared, and the famous 'conversion factor' is really an instruction: take the mass and complete its turning. The pure lattice speed is $c = 3 \times 10^8 = 3 \times 2^8 \times 5^8 / 10^8$, a clean {2,3,5} number; the SI value sits 692 ppm below it, the veil between the observer's register and the lattice. c was never a cosmic absolute. It is a coordinate of the register we happen to measure from.

→ ***Want this in full?*** *See the companion paper: What Science Calls Gravity — free fall $g_1 = 25\pi/8$, and how $g_1^2 \cdot 864 \cdot 3600$ makes c.*

IV. The closed loop — $c^2 = 3^2$ in the time register

Here is the proof that c^2 is a register factor, not a constant. Start with the Earth's sidereal rotation and carry it through the fixed grammar. It becomes a mass. Multiply that mass by 3^2 — nine — and it becomes an energy. Divide the energy back down, and you return exactly to the rotation you began with. The loop closes:

THE CLOSED LOOP

sidereal rotation = 23564.06903
× 2π × 4 → MASS = 592229.649227
× 3² → ENERGY = 5330066.843040
÷ 360 ÷ 2π → 2356.406903 (the sidereal rotation returns)

net loop factor exactly 1/10 — one register step. Mass = $60\pi^2(1+\delta_G) \times 10^3$, energy = $540\pi^2(1+\delta_G) \times 10^3$; they differ ONLY by the factor 3^2. In the time register the c^2 of $E = mc^2$ is $3^2 = 9$.

Mass and energy here are the same T-quantity separated by nothing but the factor 3^2. That is the whole content of $E = mc^2$ in this register: not a leap across an enormous constant, but a single clean step of nine — and the proof is that the loop comes home.

V. The energy is a hub — three faces of one T-quantity

That energy value, 5330066.843040, is not just the product of one calculation. It is a hub, and three different roads arrive at it — which is exactly what you would expect if mass, motion and light are all the same T wearing different faces:

FACE 1 — the mass (E = mc², c² = 3²)

mass 592229.649227 × 3² = 5330066.843040

energy is the mass with the register factor 3² applied — the E = mc² face.

FACE 2 — the free fall (a spin-orbital)

sidereal ÷ 24 = 981.8362096 (= g_2 × 100, the surface fall)
× 864 × 2π = 5330066.843040

the energy is the surface free fall carried up by 864 × 2π — a spin-orbital built straight out of the fall of time.

FACE 3 — hydrogen's line at the celestial register

energy × 9/π² (= ÷2π ×36 ÷2π) = 4860438.133
→ 486.0438133 nm = 486 × (1+δ_G)

Balmer-β, hydrogen's blue-green line, lifted one register step to G2. The energy and the wavelength are the same T-value, an orbit apart.

One quantity, three faces: the mass, the fall of time, and a line of starlight. E = mc² is the passage between the first two; the third tells us what the energy is made of — light, at the register where planets live.

→ ***Want this in full?*** *See the companion paper: The Colour of Time — 486 nm = 2×3⁵, hydrogen's Balmer-β line on the lattice.*

VI. A wavelength is spin only — light is spin, energy is spin-orbital

Follow the third face and a clean conclusion falls out about light itself. Watch how the energy and the wavelength are related: to go from the energy to the wavelength you divide out two full turns of 2π. Each 2π is an orbit. So the wavelength is the energy with its orbits stripped away — the bare spin, with no turning left in it.

STRIPPING THE ORBIT — energy back to wavelength

energy × 9/π² = energy ÷ 2π × 36 ÷ 2π
the two ÷ 2π remove two orbital turns → the bare SPIN
wavelength 486 × 2π ÷ 360 ÷ 864 =
0.0098174770 → g_1 free fall

to turn a wavelength into a flow you ADD one orbit (×2π) and apply the grammar. The wavelength carries no orbit; the energy carries the 2π turns the wavelength lacks.

So the rule is simple and exact. A wavelength is a **spin** value — the closed daily turn, the radius face, with no orbit in it. An energy is a **spin-orbital** value — the spin with the orbit put back on. The difference between them is precisely the 2π of the turn. Mass and energy differ by a spin factor (3²); a wavelength and its energy differ by the orbit (2π). The single number c² was never one thing: part of it is spin, part of it is the turning.

VII. Why a wavelength can carry only the spin

There is a physical reason it must be this way, and it is the heart of the paper. Picture sunlight reaching the Earth — a wavelength of 486, broadcast from the Sun. At the instant it arrives, the Earth has already completed its daily spin countless times: the spin is a closed turn, a finished cycle, so its value is there to be carried in the light. But the Earth is only partway through its orbit. The orbit takes some three hundred and sixty days, and at the moment the light lands that orbit is unfinished — a turn still in progress.

A wavelength is a snapshot, and a snapshot can only record a cycle that has actually closed. The spin has closed; the orbit has not. So the light can encode the spin and nothing else — not because of a rule we impose, but because the orbit has not yet happened. This is why a wavelength is spin-only: the orbital value simply is not available at the moment of reception. To recover the energy you must put the orbit back on after the fact — and that is the ×2π, and that is the c². Energy is the wavelength with its orbit completed; c² is the bookkeeping that finishes the turn the snapshot left open. Read this way, E = mc² is a statement about which cycles have closed at the moment of measurement: the spin has, the orbit has not, and the equation completes it.

VIII. One bond, every face — carbon written into the Earth

The same grammar that turns the Earth's rotation into a mass and an energy turns a chemical bond into the same family of faces — and the bond it does this for most cleanly is the carbon–carbon single bond, the bond life is built from. Both of its faces sit on the lattice. Its length is the grammar bridge squared, turned once; its energy is a pure {3,5} number — and that energy is a face of the speed of light.

THE CARBON-CARBON BOND — BOTH FACES

length = (2⁶3⁵/100π)² × 2π = 1.539758528 Å
energy = 5⁵/3² = 347.2 kJ/mol

length is derived from the grammar (the bridge 2⁶3⁵/100π, squared, × the orbit 2π) and sits on the measured bond; energy = 5⁵/9, pure {3,5}, on the measured C–C bond enthalpy ~347 kJ/mol. (This is the specific C–C bond derived from the grammar — not a claim that every bond length is a lattice value.)

THE BOND ENERGY IS A FACE OF THE SPEED OF LIGHT

energy 347.2 × 864 = 300,000 = c_lattice

864 is the same speed-of-light factor that builds c everywhere (c = g_1^2×864×3600). The bond energy is c divided by the day: a chemical bond carries the speed of light inside it.

And the same energy, run down through the grammar, lands on Earth's own structure. Divide it by the day and

the orbit and out comes a radius — and that radius is not arbitrary: it is the Mohorovičić discontinuity, the boundary at the base of Earth's crust, lifted by exactly one helical turn:

THE BOND ENERGY → EARTH'S RADIUS → THE DAY AND THE SPEED OF LIGHT

energy ÷ 864 ÷ 2π = radius 6396.0802 km = (20000/π) × $5^6/(2^6 3^5)$ — the Moho, lifted one helical turn

radius² × 24 × 24 = 23564.069 (the sidereal rotation)

radius × 9375/2 = 299,816,259.9 = c_G1(1+δ_G) (the g2 speed of light)

the Moho radius is 20000/π; the helical turn r = $5^6/(2^6 3^5)$ is the same step as the neutron mass-ratio. g2 sits one helical turn above the Moho. A bond energy threads to the deep Earth, the length of the day, and the speed of light — every link a named lattice node.

Then the bond's **length** closes the most familiar loop of all. Divide it by the orbit and it reads as a clock — and the clock it reads is the tide:

THE BOND LENGTH → THE TIDE

length ÷ 2π = 2450.601809 → a clock of 24 h 50.6 min

measured lunar (tidal) day = 24 h 50 m 28 s

the 8-second gap = 90 ppm = δ_G, one register step

the pure 86400 s day is the G1 (lattice) register; the tidal day is the same day read at G2, one δ_G step down. The tidal rhythm falls out of a carbon bond to within one register step.

Read the last box as the theory reads it. The tide is not the Moon hauling the ocean up on a rope; the interval between high tides is a **time** — carried on the T-lattice, written into the length of a carbon bond. The Moon and the tide keep the same time because they read the same T-rhythm: the Moon marks the tide, it does not pull it. And the eight seconds by which the lattice day and the measured tidal day differ is not the theory falling short of precision — it is δ_G, the G-bond step, the same step that makes the surface fall g_2 instead of g_1. Two clocks, one register apart, both exactly where they should be. A single carbon bond, reaching from the lab bench to the speed of light, to the floor of the crust, to the rhythm of the sea.

*→ **Want this in full?** See the companion paper: What Science Calls Gravity — the tide as T-rhythm, not the Moon's pull.*

IX. What this claims — and what is still open

We change none of Einstein's numbers. What changes is the reading. $E = mc^2$ is $E = mT$: matter is frozen T-flow, energy is propagating T, and the two are one substance in two states. The factor c^2 is not a constant of nature but a spin-orbital speed squared, $c = g_1^2 \times 864 \times 3600$; in the time register it reduces to the clean factor 3^2, proven by a loop that closes. A wavelength carries only the spin — the closed daily turn — because at reception the orbit is unfinished, and energy is the spin-orbital that completes it. The one piece we hold open and do not headline is the electron's rest energy: its lattice form $2^9 \times 3^8 \times 5^6 \times \pi^4 \times 10^{-7}$ eV closes a hydrogen-ionization identity to parts per billion, but a competing reading sits a fraction of a part per million the other way, and until that is resolved cleanly we mark it as open work rather than a result. The honesty is the point: the frame and the loop are firm; that single value is still being earned.

*→ **Want this in full?** See the companion paper: The Proton — One Flow of Time, Five Clocks (the Loop that turns one quantity into all its faces).*

*→ **Want this in full?** See the companion paper: The Four Forces in the Force of Time — c, the veil, and the {2,3,5,π} lattice.*

Table 1. c is built, not given — a spin-orbital speed, so c² is the spin-orbital speed squared

Quantity	value	lattice / build	reading
c (speed of light)	299,789,233.683 m/s	$g_1^2 \times 864 \times 3600 = 2^3 \times 3^5 \times 5^6 \times \pi^2$	a spin-orbital speed (free fall × the day)
c^2 (the factor)	8.9874×10^{16} m²/s²	(spin-orbital speed)²	completes the turn — not a constant
c^2 in the time register	$3^2 = 9$	—	the clean register factor mass→energy
g_1 (free fall)	9.817477042468 m/s²	25π/8	the spin (surface fall of time)
the day	86,400 s	864 × 100	the turn (the orbit of the spin)

The pure lattice speed $c = 3 \times 10^8 = 3 \times 2^8 \times 5^8 / 10^8$; SI c sits 692 ppm below it (the veil). c is a register coordinate, not a cosmic absolute.

Table 2. The loops — every step a fixed operator, no adjustable knob

Step	operation (fixed)	value	note
sidereal → mass	× 2π × 4	592229.649227	$60\pi^2(1+\delta_G) \times 10^3$ (the mass face)
mass → energy	× 3^2	5330066.843040	$540\pi^2(1+\delta_G) \times 10^3$ — $c^2 = 3^2$ here
energy → sidereal	÷ 360 ÷ 2π	2356.406903	the rotation returns (loop factor 1/10)
free fall → energy	(sid÷24) × 864 × 2π	5330066.843040	the spin-orbital face
energy → wavelength	× 9/π² (÷2π ×36 ÷2π)	4860438.133 → 486.0438133 nm	strip two orbits → bare spin (Balmer-β G2)
wavelength → free fall	× 2π ÷ 360 ÷ 864	0.0098174770 → g_1	add one orbit → a flow

Mass↔energy is a SPIN factor (×3²); wavelength↔energy is the ORBIT (×2π). c² was never one number — part spin, part turning.

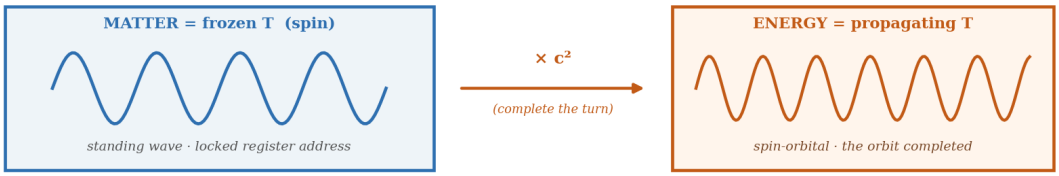
Table 3. The energy hub — mass, motion, and light as one T-quantity

Face	what arrives at the energy	value	meaning
Mass	mass × 3^2	592229.649227 → 5330066.843	the $E = mc^2$ face ($c^2 = 3^2$)
Free fall	(sidereal÷24) × 864 × 2π	981.8362096 → 5330066.843	a spin-orbital from the fall of time
Light	Balmer-β at G2 × π²/9	486.0438133 nm → 5330066.843	energy IS light, an orbit away

Three independent roads arrive at the single energy 5330066.843040 — the signature that mass, free fall, and starlight are one substance in different faces.

Figure 1. Two states of one substance

Figure 1. Matter is frozen T-flow; energy is propagating T

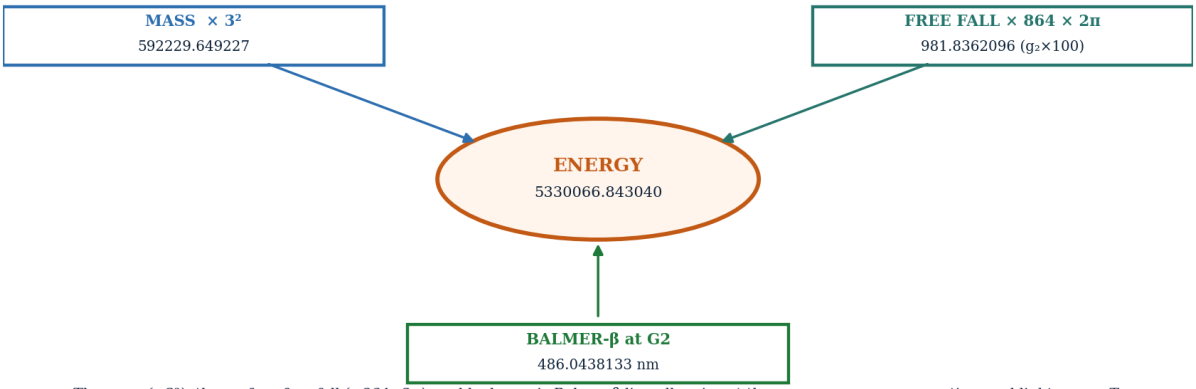


One substance in two states. E = mT: matter is T frozen into a standing wave; energy is the same T set propagating. c² = (spin-orbital speed)² is not a constant — it is the factor that completes the turn. dΣT = 0 throughout.

Matter is T frozen into a standing wave (spin); energy is the same T propagating (spin-orbital); c² completes the turn between them.

Figure 2. The energy hub

Figure 2. The energy is a hub — three faces of one T-quantity

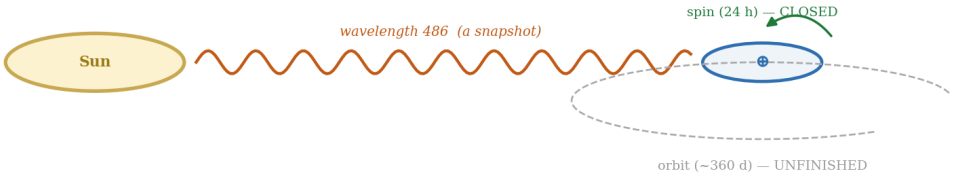


The mass (×3²), the surface free fall (×864×2π), and hydrogen's Balmer-β line all arrive at the one energy — mass, motion, and light as one T.

The mass (×3²), the surface free fall (×864×2π), and hydrogen's Balmer-β line all arrive at the one energy value.

Figure 3. Why a wavelength is spin only

Figure 3. Why a wavelength is spin only — the orbit is unfinished at reception

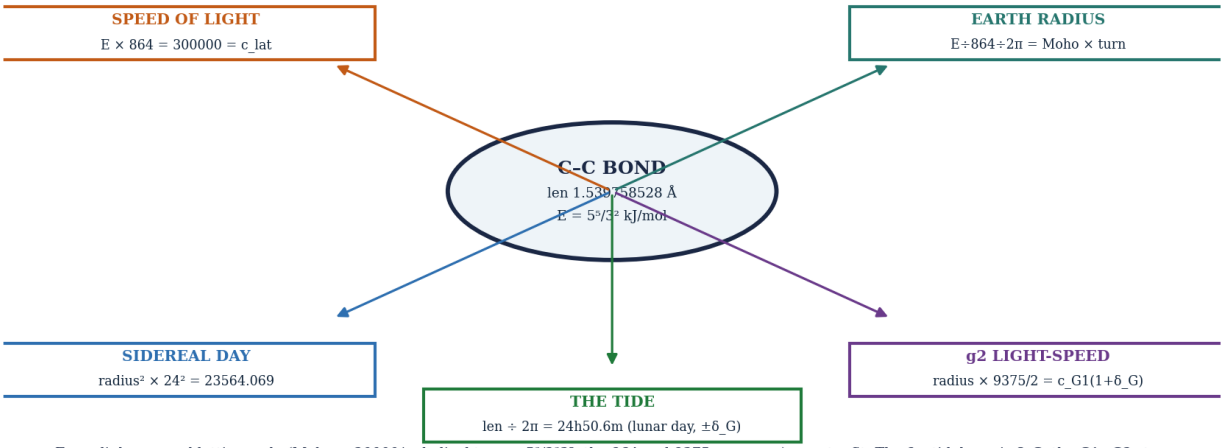


At the instant light arrives, Earth's daily spin has closed but its orbit has not. A snapshot can encode only a cycle that has closed — so the wavelength carries the spin and never the orbit. Energy = the wavelength with the orbit put back on (×2π); c² finishes the turn.

At reception the daily spin has closed but the orbit has not; a snapshot encodes only the closed cycle, so light carries the spin alone.

Figure 4. One carbon bond, every face

Figure 4. One carbon bond — reaching from the bench to the speed of light, the deep Earth, and the tide



The C–C bond reaches the speed of light, Earth's Moho radius, the sidereal day, the g2 light-speed, and the tidal day — every link a named lattice node.

Propositions

P-EMC-1 — E = mc² is E = mT: matter is frozen T-flow (a standing wave locked into a register address), energy is propagating T. Mass and energy are one substance in two states; releasing energy is de-crystallising T, with dΣT = 0 conserved.

P-EMC-2 — c is not a constant but a spin-orbital speed: c = g_1^2 × 864 × 3600 = 299,789,233.683 m/s = $2^3 \times 3^5 \times 5^6 \times \pi^2$ (free fall = the spin, the day = the turn). Hence c² is the spin-orbital speed squared.

P-EMC-3 — In the time register the c² of E = mc² is 3² = 9. The closed loop proves it: sidereal 23564.06903 ×2π×4 = mass 592229.649227; ×3² = energy 5330066.843040; ÷360÷2π returns the rotation (loop factor 1/10). Mass and energy differ only by 3².

P-EMC-4 — The energy is a hub with three faces: the mass × 3²; the surface free fall × 864 × 2π (a spin-orbital); and hydrogen's Balmer-β line at G2 (486.0438133 nm = 486(1+δ_G), via × 9/π²). Mass, motion, and light are one T-quantity.

P-EMC-5 — A wavelength carries SPIN only; energy is SPIN-ORBITAL. Mass↔energy differ by a spin factor (3²); wavelength↔energy differ by the orbit (2π). The energy→wavelength operator ×9/π² = ÷2π ×36 ÷2π strips two orbital turns to the bare spin.

P-EMC-6 — A wavelength can carry only the spin because, at the instant light arrives, the receiving node's spin has closed (24 h) but its orbit has not (~360 d). A snapshot encodes only a closed cycle; the orbit is unavailable until completed. c² (the ×2π) is the bookkeeping that finishes the turn — E = mc² is a statement about which cycles have closed at the moment of measurement.

P-EMC-7 — One bond carries every face. The carbon–carbon single bond: length = $(2^6 3^5/100\pi)^2 \times 2\pi$ = 1.539758528 Å (grammar-derived, on the measured bond); energy = 5⁵/3² = 347.2 kJ/mol. The energy × 864 = 300000 = c_lattice (a face of the speed of light). Energy ÷864÷2π = radius 6396.0802 km = $(20000/\pi) \times 5^6/(2^6 3^5)$ — the Moho lifted one helical turn; radius²×24² = the sidereal day; radius×9375/2 = c_G1(1+δ_G). The bond length ÷2π = 24h50.6m = the lunar tidal day, within one δ_G register step. (The specific C–C bond derived from the grammar — not a claim that every bond length is a lattice value.)

P-EMC-8 — The tide is a T-rhythm, not the Moon's pull. The interval between high tides falls out of a carbon bond length (÷2π), to within one δ_G step of the measured lunar day; the Moon marks the tide, it does not haul the ocean. The 8-second gap between the lattice day (G1) and the tidal day (G2) is δ_G, the same register step as $g_2 = g_1(1+\delta_G)$.

P-EMC-9 (open) — The electron rest energy $2^9 \times 3^8 \times 5^6 \times \pi^4 \times 10^{-7}$ eV closes a hydrogen-ionization identity to parts per billion, but a competing form ($4\pi R^2$_eq) sits ~0.14 ppm the other way; it is marked open work, not a headline result, until resolved.

References

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A Note on the Numbers

A note on the numbers. The values in this paper are written as plain numbers — not pinned to units, and not carried to a particular power of ten. This is not loose notation; it is the physics. Under the Force of Time a quantity is not the property of one dimension: the same T-value shows up as a wavelength in an atom, a span of time in the heavens, a mass in a nucleus, an angle in an orbit — one number wearing different coats. That is why a hydrogen line in nanometres can meet a planet's turning in arcseconds and land on the same value: they were never separate quantities. We therefore do not solve for a result 'to the power of' anything in one register and stop. The lattice number is the real thing, and it lives at once across every register — subatomic, atomic, celestial, galactic. The unit and the power of ten are only the costume the number wears in whichever dimension you read it from.