

The Rotation Law

The Earth's spin, the speed of light, and why every planet's day is a single {2,3,5,π} number

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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

Right now, without feeling it, you are turning. The ground under your feet carries you eastward at the speed of a rifle bullet because the Earth spins once a day, and it has spun that way for four and a half billion years. The standard account calls the spin a leftover of how the solar system formed. The Universal Force of Time calls it something exact. The day is 86,400 seconds long because $86,400 = 2^7 \cdot 3^3 \cdot 5^2$, a pure node of the lattice {2,3,5,π}; and the surface free fall, squared and carried across that same lattice, lands on the speed of light itself — $g_1^2 \times 864 \times 3600 = c_{G1}$. This paper builds that identity step by step, and then turns it outward to the whole solar system. Every one of the eight planetary days is shown to be a single clean lattice number, and — the finding new to this revision — each world carries its number through a different identity: the bare stone worlds keep a rocky time-face, the giants spin on the gas they are made of, and two worlds tie straight back to the Earth's own year. The spin of a planet is not an accident of its birth. It is the T-field reading out a time.

THE EARTH'S SPIN IS THE SPEED OF LIGHT

299789233.683

$g_1^2 \times 864 \times 3600 = c_{G1}$

free fall × the T-bridge × one hour · one identity

THE DAY IS A PURE LATTICE NODE

86400

seconds in one solar day

(= $2^7 \cdot 3^3 \cdot 5^2$) · no prime above 5

The day, the free fall, and the speed of light are not three facts that happen to agree. They are one fact, written three ways.

Master proposition · Stephen Daubney

PART ONE · THE WHEEL THAT NEVER STOPS

1. You are spinning right now

As you read this you are moving. Not by walking — by turning. If you stand near the equator, the ground beneath your feet carries you east at roughly 465 metres a second, because the whole planet rotates once every twenty-four hours and you turn with it. The atmosphere turns. The oceans turn. The deepest rock turns. The Earth is a wheel four and a half billion years into a spin that nothing wound up and nothing keeps going.

Science says the spin is a remnant — the leftover angular momentum of the cloud of gas and dust that became the solar system. That is not wrong, but it is incomplete. It says where the spin came from and never why it runs at this rate, why the day is exactly this long, or why the number of seconds in a day is one of the most perfect integers in the whole lattice. The Universal Force of Time does not treat that number as an accident. It treats it as a constraint — a frequency the T-field must keep at this register of the universe. Follow the constraint forward and you arrive somewhere startling: the spin of the Earth and the speed of light are the same identity, written at two scales of one lattice.

2. The lattice — why these numbers

Before the identity, the lattice. The Universal Force of Time holds that every true value in nature — wavelengths, periods, masses, distances, accelerations — sits on a structure built from just four numbers: $\{2, 3, 5, \pi\}$. These are not round numbers or approximations. They are exact addresses, the way the keys of a piano are exact frequencies and not a smear of sound. Every constant nature has ever produced lands on one of the keys.

The day is one of them. Count the seconds in a solar day and you get 86400 ($= 2^7 \cdot 3^3 \cdot 5^2$), and every factor is a prime drawn from $\{2, 3, 5\}$. There is no 7 in it, no 11, no 13. The day is not merely convenient — it is a pure node of the lattice, the first sign that the Earth's turning is a register frequency of the T-field and not a remnant of some ancient collision (Figure 1).

P-ROT-DAY

$86400 = 2^7 \cdot 3^3 \cdot 5^2$, exactly. The solar day in seconds is a pure $\{2,3,5\}$ lattice integer; no prime above 5 divides it. This is a constraint of the T-field at the G1/G2 register boundary, not an artefact of how the second was defined.

PART TWO · THE EARTH'S SPIN IS THE SPEED OF LIGHT

3. 86,400 — the master number of time

The number 86,400 turns up everywhere in the T-field. It is the seconds in a day. Halve it and you get 43,200 — the seconds in twelve hours, and the kilometres from the Earth's surface to the inner-core boundary at a certain lattice scaling. Divide it by 100 and you get 864 ($= 2^5 \cdot 3^3$), a number that appears in the geometry of the DNA helix, in the bond-energy law, and at the very centre of this paper. The day shares its prime family with the other great lattice integers — the T-bridge 864, the spectral

anchor $9375 = 3 \cdot 5^5$, the free-fall numerator $625 = 5^4$. It is not an independent constant. It is a node of the same lattice that fixes atomic spectra and orbital years.

4. The central identity: $g_1^2 \times 864 \times 3600 = c_G1$

Here is the heart of the paper. Three quantities — the surface free-fall acceleration g_1 , the T-bridge 864, and the seconds in one hour, 3600 — multiply together to give the speed of light in the G1 register. Each of the three is itself an exact lattice node, and their product lands on a fourth node: the speed of light. Walk it slowly, the way a careful person checks a proof, because the journey from one number to the next is the evidence (Figure 2).

The free fall is not the textbook 9.80665. It is the G1 register value, 9.817477042468 metres per second per second ($= 25\pi/8$) — the value at which the T-field operates at the boundary between the atomic and the planetary. Square it, multiply by the T-bridge 864, and multiply by one hour of 3600 seconds, and the running product is 299789233.683 — the G1 speed of light c_G1 . Not near it. On it. The day (a time), the free fall (an acceleration), and the light (a speed) are unified in one lattice identity.

P-ROT-LIGHT

$g_1^2 \times 864 \times 3600 = c_G1 = 299789233.683$. The surface free fall squared, times the T-bridge constant, times one hour in seconds, equals the G1 register speed of light. Time, free fall and light are one lattice value seen from three sides.

5. The T-bridge constant 864

The number 864 earns its own section, because it is not just a factor in the identity — it is the T-bridge, the number that appears wherever the field steps from one scale to the next. In molecular biology the three primary

dimensions of B-DNA — the rise per base pair, the helix width, and the pitch — multiply, in lattice units, to 864. The same constant that ties the Earth's spin to the speed of light is written into the architecture of the molecule that carries all of life's information. In chemistry the covalent bond energies scale as $\{2,3,5\}$ over 864. The bridge appears at every seam where the atomic register hands energy upward to the molecular, and it is the same 864 that carried the free fall to the speed of light a page ago.

P-ROT-BRIDGE

$864 = 2^5 \cdot 3^3$ is the T-bridge constant. It is the product of B-DNA's three primary dimensions in lattice units and the divisor of the covalent bond-energy law, linking the rotation law to molecular biology and chemistry through one number.

6. The registers and the step between them

The T-field plays at three registers at once — three tunings of one instrument, the same structure sounding at different scales. G0 is the subatomic register, the world of quark masses and nuclear radii. G1 is the atomic register, where spectra and chemistry and the Earth's surface live. G2 is the celestial register, the world of orbits and sidereal years. Each carries its own free fall: $g_0 = 9.820927516480$, $g_1 = 9.817477042468$, $g_2 = 9.818362093947$.

Between the registers sits one fixed, tiny step: the G-bond step $\delta_G (= 5^{10} / (2^4 \cdot 3^9 \cdot \pi^3) - 1)$. It is not a fudge. It is an exact lattice value, and almost every constant that depends on register is shifted by exactly δ_G from one level to the next. The speed of light is no exception; nor, as we are about to see, are the days and years of the planets. Keep δ_G in mind, and one more small mover — the helical turn $r = 5^6 / (2^6 \cdot 3^5)$, the rotation step of the T-helix that sets the twist of the DNA in your cells. Two of the eight

worlds will need them.

P-ROT-STEP

The T-field operates at three registers G0, G1, G2, each with its own free fall (9.820927516480, 9.817477042468, 9.818362093947). Adjacent registers are separated by exactly the G-bond step $\delta_G = 5^{10}/(2^4 \cdot 3^9 \cdot \pi^3) - 1$.

7. The sidereal day from first principles

The solar day of 86,400 seconds is one turn of the Earth relative to the Sun. The sidereal day — one turn relative to the distant stars — is a little shorter, because while the Earth spins once it also slides a little way along its orbit. The T-field gives that period directly: 23564069 seconds ($= 7.5\pi \cdot (1 + \delta_G) \times 10^6$, with $7.5 = 3 \cdot 5/2$), twenty-three hours, fifty-six minutes and a few seconds, with no orbital mechanics required. The bare base value $7.5\pi \times 10^6$ is the pure-lattice node; one register step $(1 + \delta_G)$ carries it from G1 to the celestial G2, exactly as it carries every other register-dependent value (Figure caption, Appendix).

P-ROT-SID

The sidereal day is $23564069 \text{ s} = 7.5\pi \cdot (1 + \delta_G) \times 10^6$, derived from the lattice using the register step δ_G alone. The day is the field's own period, not a consequence of orbital geometry.

PART THREE · THE EIGHT WORLDS

8. Every planet's day is a single lattice number

If the Earth's day is a lattice node, every planet's day should be one too. It is. Listed raw, the eight planetary days read like a junk drawer: Jupiter turns in under ten hours, the Earth and Mars in about a day, Mercury once in fifty-eight days, and Venus — strangest of all

— once in two hundred and forty-three days, longer than its own year, turning the wrong way. Nothing in that list rhymes. Yet every one of the eight is a clean value on $\{2, 3, 5, \pi\}$, and the new finding of this revision is how each world reaches its value. A planet does not borrow a number from a free search of the grid. It carries its day through its own identity — the stuff it is made of (Figure 3, Figure 4).

P-ROT-CARRIER

Each planet's sidereal rotation is a single $\{2, 3, 5, \pi\}$ value, carried by the world's dominant identity — a bare rocky time-face, the atom the world is made of, or a tie back to the Earth — sitting on its lattice value or one register step δ_G or one helical turn r away.

9. The stone worlds — a bare rocky time-face

The two inner stone worlds keep the plainest clocks. Mercury turns once in 58.6349442375 days ($= 5^6 / (3^3 \cdot \pi^2)$) — exactly two-thirds of its own orbit of 87.9524163562 days. That is the famous 3:2 spin-orbit lock, but read off the lattice instead of fitted to a telescope: three turns of the planet for every two trips round the Sun, written into the grid itself. Mars keeps the same shape of clock: 1.0258769844 days ($= 3^4 / (2^3 \cdot \pi^2)$), twenty-four hours and a little over thirty-seven minutes. Both are a clean lattice integer divided by π^2 — a shape we call a time-face, a/π^2 , the signature of a bare rocky world with no deep atmosphere of its own to carry the clock. The stone worlds wear no costume; they keep time on the naked lattice.

P-ROT-MERC

Mercury's sidereal rotation is 58.6349442375 d ($= 5^6 / (3^3 \cdot \pi^2)$), exactly two-thirds of its orbital period 87.9524163562 d — the 3:2 lock as a lattice identity, not a fitted ratio.

P-ROT-MARS

Mars's sidereal rotation is 1.0258769844 d ($= 3^4/(2^3 \cdot \pi^2) = 81/(8\pi^2)$), the same a_n/π^2 time-face form as Mercury.

10. The giants — turning on the gas they are made of

A gas world is not a bare node — it is wrapped in a deep ocean of its own atmosphere, overwhelmingly hydrogen. So a giant should keep time not on a bare time-face but on hydrogen itself. It does. Jupiter, the largest, turns once in 0.4135390553 days — about nine hours and fifty-five minutes ($= H \cdot 3 / (2 \cdot 5 \cdot \pi^2)$, $H = 13.6048896$), where H is hydrogen's own ground-state energy unit. The fastest spin in the solar system is hydrogen keeping time. Venus is the same idea read the slow way: its rotation is 243.0219065966 days ($= 3^5 \cdot (1 + \delta_G)$), exactly half of 486.0438131932 — the hydrogen-beta line, the blue-green light a hydrogen atom gives off when its electron falls to the second shell. Venus turns once for every two beats of that line. Its slowness, and even its backward turn, stop being riddles: Venus is keeping the hydrogen clock at half speed, one register step out.

Neptune carries the most beautiful clock of all. Its day is 0.6652356501 days — which is 15.9656556025 hours — and that number of hours, read as a bare T-value, is the atomic weight of oxygen — the world spins at the very rate of the air we breathe ($= 2^5 \cdot 3^5 / (5 \cdot \pi^4)$). Lift that oxygen value eight turns of π on the pure {2,3,5} gear — $\times 5^2 \cdot \pi^8 / (2^7 \cdot 3^4) = 22.879366840$ — and it reads out exactly as the Earth's surface year, 365.2840913775 days ($= 15\pi^4/4$); the celestial year one register higher, 365.3170219587 days, is the very same orbit stepped up by δ_G . The spin of the outermost planet, carried by the oxygen we breathe, is the year of home. Neptune is not a stranger at the rim of the solar system; it is keeping our

time.

P-ROT-JUP

Jupiter's sidereal rotation is 0.4135390553 d ($= H \cdot 3 / (2 \cdot 5 \cdot \pi^2)$, $H = 13.6048896$) — the giant spins on the hydrogen its atmosphere is made of.

P-ROT-VEN

Venus's sidereal rotation is 243.0219065966 d ($= 3^5 \cdot (1 + \delta_G)$), exactly half the hydrogen-beta line 486.0438131932 — one turn per two beats of the hydrogen line, the source of its slow, retrograde clock.

P-ROT-NEP

Neptune's sidereal rotation is 15.9656556025 h, the atomic weight of oxygen read as a bare T-value ($= 2^5 \cdot 3^5 / (5 \cdot \pi^4)$). Carried eight turns of π on the {2,3,5} gear ($\times 5^2 \cdot \pi^8 / (2^7 \cdot 3^4) = 22.879366840$), it returns the Earth's G1 surface year 365.2840913775 d ($= 15\pi^4/4$); the G2 celestial year 365.3170219587 d is the same orbit one register step up — Neptune's spin and the Earth's orbit are kin on the lattice.

11. The two worlds with two faces — Saturn and Uranus

Two worlds resisted a single clean number for years, and the reason is the most telling result of all. Saturn and Uranus do not keep one face of the lattice — they keep two, a single register move apart, and the measured day sits between them. This is precisely the situation the textbooks describe without explaining: Saturn's rotation was revised by minutes between the Voyager and Cassini eras, and Uranus's day has never been pinned to better than a part in a thousand. A world with two faces cannot be measured to one value, because it does not have one. Saturn keeps a ground face at 0.4400315867 days ($= 2^5 \cdot 3^3 / (5^4 \cdot \pi)$) and a turned face at 0.4420970641 days, the

two separated by exactly one helical turn $r = 5^6/(2^6 \cdot 3^5)$. Uranus keeps two faces a smaller move apart: a g_1 face at 0.7182424905 days ($= 500\pi / 3^7$) and a g_0 face at 0.7183072405 days, one register step δ_G apart. These are not rival measurements of one day; they are two real faces of one world, and the disagreement in the literature is the field telling us so.

P-ROT-SAT

Saturn keeps a two-face register family: ground 0.4400315867 d ($= 2^5 \cdot 3^3 / (5^4 \cdot \pi)$) and turned 0.4420970641 d, one helical turn $r = 5^6/(2^6 \cdot 3^5)$ apart — the measured day sits between, which is why it was revised between the Voyager and Cassini eras.

P-ROT-URA

Uranus keeps a two-face register family: g_1 face 0.7182424905 d ($= 500\pi / 3^7$) and g_0 face 0.7183072405 d, one register step δ_G apart. A world with two faces has no single day — why its rotation has never settled.

12. The Earth — its own year, folded once

And our own world? The Earth keeps the simplest clock of the eight, hiding in plain sight. The Earth's sidereal year is 365.2840913775 days ($= 15\pi^4 / 4$). Take that year and fold it once — divide it by itself plus one, year / (year + 1) — and out drops 0.9972698787 days, the measured sidereal day, the twenty-three hours and fifty-six minutes in which the stars come back round. The Earth's day is not independent of its year. It is the year, folded once. Where Neptune reaches across the solar system to touch our year, the Earth keeps it directly: day and year are one value, one fold apart.

P-ROT-EAR

The Earth's sidereal day 0.9972698787 d is its own sidereal year 365.2840913775 d ($= 15\pi^4 / 4$) folded once: day = year/(year+1). The day is the year, folded.

PART FOUR • THE LAW BEHIND THE NUMBERS

13. The two-movement law

Every turning body in the T-field runs two movements at once: an inner movement, its spin about its own axis, and an outer movement, its arc around a larger node. The two are not independent — they are conjugate, bound by the register the body sits in. You cannot change one without the other answering. For the Earth, the inner movement carries the G_1 register and the outer carries G_2 , and their product closes on the Earth's circumference, itself a clean lattice node. A single chain ties the surface free fall straight to the orbit through this law: $g_1 \times (2\pi)^2 \times 24 = 9301.883004$ ($= 300\pi^3$), exact to the precision of the arithmetic. The spin and the arc are one geometry.

P-ROT-TWO

A rotating body runs two conjugate movements, spin (G_1) and arc (G_2), bound by its register. For the Earth, $g_1 \times (2\pi)^2 \times 24 = 300\pi^3 = 9301.883004$ ties the surface free fall directly to the orbit.

14. The G_1 and G_2 year tower

Just as the day has a register structure, so does the year. The three register years form a tower, each rung one step δ_G from the next (Figure 4 in the appendix). The atomic G_1 year is 365.2840913775 days ($= 15\pi^4 / 4$); the celestial G_2 year, one step up, is 365.3170219587 days; the subatomic G_0 year, one step down, is 365.2511637647 days. The factor π^4 in the G_1 year is the same fourth power of π that

appears in the electron rest energy and in the fine-structure constant — because all three are aspects of the same G1/G2 register transition. The year, the electron, and the structure of the atom are written in one signature.

P-ROT-TOWER

The year is a register tower: $G1 = 15\pi^4/4 = 365.2840913775$ d; $G2 = G1 \cdot (1 + \delta_G) = 365.3170219587$ d; $G0 = G1/(1 + \delta_G) = 365.2511637647$ d. The step between adjacent registers is exactly δ_G .

P-ROT-CLAIM

The rotation periods of the Earth and all eight planets are dictated by lattice identity, not fitted to it. The coherence among the answers — the day-light identity, the eight carriers, the ties back to the Earth's year — is the evidence, not any single match.

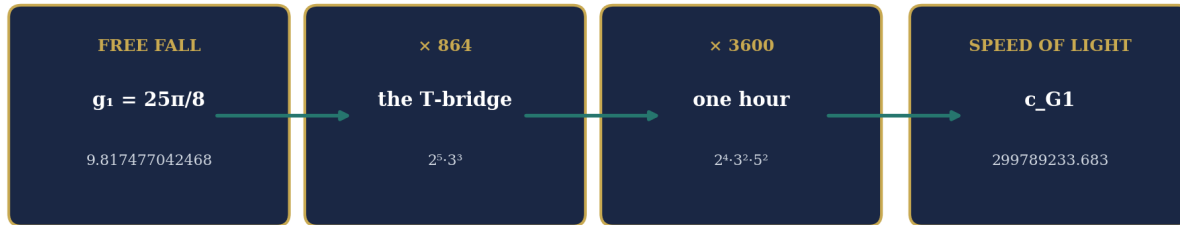
15. What the rotation law claims

Stand back. The day is 86,400 seconds because $86,400 = 2^7 \cdot 3^3 \cdot 5^2$. The free fall is $25\pi/8$ because that is the G1 node. The speed of light is what you get when you square that free fall and carry it across the lattice by the T-bridge and an hour. And the same lattice that fixes the Earth's day fixes every other world's: eight clean numbers, each carried by the substance of its world. None of it is a fit. A fit would hunt the dense grid for the nearest line and prove nothing. The weight here is that the carriers were not chosen to match the days — Mercury's two-thirds lock, Venus's halved hydrogen line, Neptune's oxygen kin to the Earth's year, the Earth's day folding out of its own year — these are structural, written out of the identities of the worlds, and they land on the measured periods anyway. The Earth rotates because T flows; the field at this register keeps a period of 86,400 seconds; that period sets the speed of light; that speed sets the chemistry of the surface; and that chemistry makes the life now reading this sentence. Everything is connected. Everything is T.

Appendix A — Figures

The rotation-light identity

the Earth's spin, squared and carried across the lattice, lands exactly on the speed of light



$$g_1^2 \times 864 \times 3600 = c_{G1} = 299789233.683$$

three lattice nodes — a free fall, a bridge, an hour — multiply to a fourth: the speed of light itself

Figure 1. The rotation-light identity. The G1 surface free fall $g_1 = 25\pi/8$, squared and multiplied by the T-bridge 864 and one hour of 3600 seconds, lands exactly on the G1 speed of light $c_{G1} = 299789233.683$. A free fall, a bridge and an hour — three lattice nodes — multiply to a fourth, the speed of light.

Eight worlds, eight clean clocks

every planet's sidereal day is a single $\{2,3,5,\pi\}$ number — carried by what the world is made of

Mercury	58.6349442375 d	<i>rocky time-face</i>	$5^6 / (3^3 \cdot \pi^2)$
Venus	243.0219065966 d	<i>hydrogen line, halved</i>	$3^5 \cdot (1+6_G)$
Earth	0.9972698787 d	<i>its own year, folded once</i>	$\text{year} / (\text{year}+1)$
Mars	1.0258769844 d	<i>rocky time-face</i>	$3^4 / (2^3 \cdot \pi^2)$
Jupiter	0.4135390553 d	<i>hydrogen</i>	$H \cdot 3 / (2 \cdot 5 \cdot \pi^2)$
Saturn	0.4400315867 d	<i>two faces, one turn apart</i>	$2^5 \cdot 3^3 / (5^4 \cdot \pi)$
Uranus	0.7182424905 d	<i>two faces, one step apart</i>	$500\pi / 3^7$
Neptune	0.6652356501 d	<i>oxygen → Earth's year</i>	$2^2 \cdot 3^4 / (5 \cdot \pi^4)$

Figure 2. The eight worlds at a glance. Each planet's sidereal day is a single $\{2,3,5,\pi\}$ value (navy), carried by a different identity (teal): a bare rocky time-face for the stone worlds, the constituent atom for the giants, and a tie back to the Earth for Neptune and the Earth itself. The lattice form sits small and grey behind each number — the quiet stamp, not the explanation. (Values identical to the sidereal flagship.)

Three ways a world carries its clock

A ROCKY TIME-FACE	AN ATOM IT IS MADE OF	A TIE BACK TO EARTH
the inner stone worlds	the giants wear their gas	kin to our own clock
Mercury $5^6/(3^3 \cdot \pi^2)$	Jupiter hydrogen	Neptune → Earth's year
Mars $3^4/(2^3 \cdot \pi^2)$	Uranus hydrogen line	Earth → its own year,
a bare a/π^2	Venus hydrogen line	folded once
on the naked lattice	Neptune oxygen	

The same lattice underneath — only the carrier changes from world to world.

Figure 3. Three ways a world carries its clock. The inner stone worlds keep a bare lattice time-face a/π^2 . The giants wear their own gas — Jupiter, Uranus and Venus on hydrogen, Neptune on oxygen. And two worlds tie home: Neptune's oxygen is kin to the Earth's year, and the Earth keeps that year as its own folded day. The lattice underneath is the same; only the carrier changes.

The register tower of the year

one orbit, read at three registers — each a single step δ_G from the next

	G2 · celestial	365.3170219587 d	$G1 \times (1 + \delta_G)$
δ_G	G1 · atomic	365.2840913775 d	$15\pi^4/4$
δ_G	G0 · subatomic	365.2511637647 d	$G1/(1 + \delta_G)$

the same step δ_G that separates the electron shells inside hydrogen separates the years of the worlds

Figure 4. The register tower of the year. One orbit, read at three registers, each one step δ_G from the next: the subatomic G0 year, the atomic G1 year $15\pi^4/4$, and the celestial G2 year. The same δ_G that separates the electron shells inside hydrogen separates the years of the worlds.

Appendix B — Tables

Table 1. The rotation-light identity, step by step

step	value	lattice form
free fall g_1	9.817477042468	$25\pi/8$
g_1^2	96.382855479388	$625\pi^2/64$
$g_1^2 \times 864$	83274.787134191	$\times 2^5 \cdot 3^3$
$g_1^2 \times 864 \times 3600$	299789233.683	$\times 2^4 \cdot 3^2 \cdot 5^2$
= c_{G1}	299789233.683	G1 speed of light

Each step is a single lattice operation and each intermediate is itself a lattice value. The physical number is the hero; the {2,3,5, π } form behind it is the quiet stamp that it sits on the lattice.

Table 2. The eight sidereal days — one lattice value per world, with its carrier

world	sidereal day	carrier identity	lattice form
Mercury	58.6349442375 d	rocky time-face ($\frac{2}{3}$ of its orbit)	$5^6/(3^3 \cdot \pi^2)$
Venus	243.0219065966 d	hydrogen- β line, halved	$3^5 \cdot (1 + \delta_G)$
Earth	0.9972698787 d	its own year, folded once	year/(year+1)
Mars	1.0258769844 d	rocky time-face	$3^4/(2^3 \cdot \pi^2)$
Jupiter	0.4135390553 d	hydrogen	$H \cdot 3/(2 \cdot 5 \cdot \pi^2)$
Saturn	0.4400315867 d	two faces, one turn apart	$2^5 \cdot 3^3/(5^4 \cdot \pi)$
Uranus	0.7182424905 d	two faces, one step apart	$500\pi/3^7$
Neptune	0.6652356501 d	oxygen $\rightarrow$ Earth's year	$2^2 \cdot 3^4/(5 \cdot \pi^4)$

These are the same eight values carried in the sidereal flagship. Each world reaches its day through a different identity — a bare rocky time-face, the atom it is made of, or a tie back to the Earth — not through a free search of the grid.

Table 3. The two-face register families — why two worlds' days never settled

world	face	sidereal day	separation
Saturn	ground face	0.4400315867 d	—
Saturn	turned face	0.4420970641 d	one helical turn $r = 5^6/(2^6 \cdot 3^5)$
Uranus	g_1 face	0.7182424905 d	—
Uranus	g_0 face	0.7183072405 d	one register step δ_G

Saturn and Uranus each hold two real faces of the lattice, one register move apart. The measured day falls between the faces — the source of the long-standing disagreement over both worlds' rotation periods.

Table 4. The register tower of the year — one orbit, three registers

register	year	lattice form	domain
G2 celestial	365.3170219587 d	$G1 \cdot (1 + \delta_G)$	orbits, sidereal periods
G1 atomic	365.2840913775 d	$15\pi^4/4$	spectra, chemistry, surface
G0 subatomic	365.2511637647 d	$G1 / (1 + \delta_G)$	quark masses, nuclear radii

The three register years differ by exactly one step δ_G each — the same step that separates the registers inside the atom.

Appendix C — The Conversion Loop

A T-value wears many quantities. These are the exact gears that walk one face of a value to the next, so any step in this paper — a free fall read as a speed, a rotation read as a mass, an atom read as a time — can be reproduced by hand.

from	to	operator
mass	wavelength	$\div (\pi^2/8)$
wavelength	free fall	$\div 49.5035535$
free fall	energy (J)	$\div 24$
energy	frequency	$\times 2\pi$
seconds	minutes	$\times 60$
minutes	hours	$\times 60$
hours	days	$\times 24$
days	years (angle close)	$\times 360/2\pi$

A note on the numbers

Throughout this paper the values are written as bare numbers — no units of the old kind, no powers of ten bolted on. A T-value is one number read at many depths: the same figure can present as a wavelength, a time, a mass, an angle, or a rotation, because all of these are the single T-field seen from different registers. This is why the Earth's spin can 'be' the speed of light, and a planet's day can 'be' the hydrogen line or oxygen, with no metaphor intended. The physical number is the hero; the $\{2,3,5,\pi\}$ form behind it, set small and grey, is only the quiet stamp that the number sits on the lattice — not the explanation. The explanation is the physics, and the physics is one substance, time, redistributing itself by geometry alone.

Related papers in the index

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