THE UNIVERSAL FORCE OF TIME · MATHEMATICS

The π Family Complete — the Closed-Form Orbital Step

π cannot be a fraction — and the small amounts by which its powers miss the primes 2, 3 and 5 are the steps of the universe

Stephen Daubney · The Daubney Foundation · 2026 · Rev 2

Tau (T) is the living fabric of time itself — the sole substance of which all physical reality is composed. It is generated by the Sun, as by every star for its own system, and flows outward in the form of the DNA double helix, creating matter, which it deposits at nodal points — the planets — and creating life. Every particle, force, wavelength and conscious experience is a structured configuration of T-flow. The conservation law $d\Sigma T = 0$ governs all change: T is never created or destroyed at a node, only redistributed.

THE ORBITAL STEP, NUMBER FIRST

1.000090150603356

$(5^{10}/(2^4 \cdot 3^9 \cdot \pi^3)) = 9{,}765{,}625 \div 9{,}764{,}744.70$ — π^3 nearly equals $5^{10}/(2^4 \cdot 3^9)$, and the miss is the step

612 step **1.000612842468** × G-bond = 703 step **1.000703048319** · helical turn **1.004693930041**

ABSTRACT

Mathematics has known for two thousand years that π cannot be written as a fraction. The Universal Force of Time builds every value in nature from three small primes and π — 2, 3, 5 and π, nothing else — and so it must answer a question that sounds like pure mathematics: **how does a lattice that contains π stay closed?** This paper's answer is that π nearly meets the primes, again and again, and the small amounts by which it misses are not errors to be rounded away. They are the steps of the universe.

The anchor is

- **the G-bond step = 1.000090150603356 ($5^{10}/(2^4 \cdot 3^9 \cdot \pi^3)$)** — the amount by which π cubed falls short of five to the tenth over two to the fourth and three to the ninth.

From that one ratio the paper:

- builds the step by hand: **5^{10} = 9,765,625** against **$2^4 \cdot 3^9 \cdot \pi^3$ = 314,928 × 31.00627668 = 9,764,744.70**, a near-balance that misses by 90.15 parts in a million;
- shows that the G-bond step is one of a **family of π-commas**: **π^3 against 31.00907191 ($5^{10}/(2^4 \cdot 3^9)$)**, **π against 3.13966853 ($5^8/(2^9 \cdot 3^5)$)** — the **612 step, 1.000612842468 ($2^9 \cdot 3^5 \cdot \pi/5^8$)** — and **$\pi^2$ against 9.87654321 (800/81)** — the **703 step, 1.000703048319 ($800/(81 \cdot \pi^2)$)** — with the **helical turn, 1.004693930041 ($5^6/(2^6 \cdot 3^5)$)**, the one π-free member;
- proves that the family is closed: **the 612 step × the G-bond step = the 703 step, exactly**;
- shows the family at work in hydrogen, whose **four faces — 13.5965570524, 13.5977827902, 13.6048896 and 13.6061160890 eV** — form two doublets split by the G-bond step, one 612 step apart, spanning one 703 step;
- builds the **year tower G0 to G3** — **365.2511637647 ($2^2 \cdot 3^{10} \cdot \pi^7/5^9$)**, **365.2840913775 ($15\pi^4/4$)**, **365.3170219587 ($5^{11} \cdot \pi/(2^6 \cdot 3^8)$)**, **365.3499555087 ($5^{21}/(2^{10} \cdot 3^{17} \cdot \pi^2)$)** — and shows that because the step carries an odd power of π, the rungs alternate between rooms and roads;

- sets out the **parity law** and the **same-degree law** of the π-family, with worked cases from planets, light, the electron and the helix;
- and shows the difference between a step and a gap: **multiply by a step and you stay on the lattice; subtract one and you leave it** — which is where a number such as 73 can appear without breaking anything.

It closes with what stands, what is open, what would break it, and an appendix from which every number can be rebuilt. Every figure has been recomputed at thirty digits, π carried as a symbol.

THE FORMULAS OF THIS PAPER, NUMBER FIRST

Every result in this paper is carried by one of the formulas below, each written with the number first and the lattice form in brackets behind. Each is worked in full in the part named beside it.

```
FORMULA M1     THE G-BOND STEP, BUILT                                                    Part One
    9,765,625  /  9,764,744.70237  =  1.000090150603356     ( 5¹⁰  /  2⁴·3⁹·π³ )

FORMULA M2     THE π-COMMAS                                                              Part Two
    π³ vs 31.00907191485  ->  G-bond 1.000090150603    ( 5¹⁰/(2⁴·3⁹·π³) )      π -3
    π  vs 3.13966853138   ->  612 step 1.000612842468  ( 2⁹·3⁵·π/5⁸ )          π +1
    π² vs 9.87654320988   ->  703 step 1.000703048319  ( 800/(81·π²) )         π -2
    no π                  ->  helical turn 1.004693930041  ( 5⁶/(2⁶·3⁵) )     π  0

FORMULA M3     THE FAMILY IS CLOSED                                                      Part Two
    1.000612842468  x  1.000090150603  =  1.000703048319      612 x G-bond = 703, exactly

FORMULA M4     HYDROGEN'S FOUR FACES                                                     Part Three
    face 1 13.5965570524  ->  face 2 13.5977827902        x G-bond
    face 1                ->  G1     13.6048896           x 612 step
    G1                    ->  G2     13.6061160890        x G-bond          face 1 -> G2  x 703 step

FORMULA M5     THE YEAR TOWER                                                            Part Four
    G0 365.2511637647 ( 2²·3¹⁰·π⁷/5⁹ )   G1 365.2840913775 ( 15π⁴/4 )
    G2 365.3170219587 ( 5¹¹·π/(2⁶·3⁸) )  G3 365.3499555087 ( 5²¹/(2¹⁰·3¹⁷·π²) )    each x G-bond

FORMULA M6     THE SAME-DEGREE LAW                                                       Part Five
    Mercury G2 / α = 5⁹/(2·3⁴)     light x α = 3⁷ km/s     electron x α² / 2 = 2⁸·3¹²/10⁷

FORMULA M7     STEP AND GAP                                                              Part Six
    helical turn 15625/15552 ( address )     helical turn - 1 = 73/15552 ( gap )
    20000/π x 73/15552 x 2/9375 x 180/π  ->  365.2566126366  =  3600/π² x 730/729
```

THE TERMS THIS PAPER USES

An address. Every value in this framework is a product of powers of 2, 3, 5 and π, and nothing else. That product is the value's address. A number that needs any other prime — 7, 11, 17 — is not on the lattice.

The π-degree. The degree of an address is the power of π it carries, and the degree says what kind of thing the value is. An even degree is a **room** — a state, a thing that sits; it pairs, like a pair of circles. An odd degree is a **road** — a transport, a thing that carries; it is the unpaired circle. A half degree is a **door** — a source, which squares to a whole address.

A register. A register is a level at which T is read — the celestial register of the Sun and planets, the atomic register of the proton and electron, the biological register of DNA. The names G0, G1 and G2 mark neighbouring registers. **The G-bond step** is the smallest structural step between adjacent faces of one value, **1.000090150603356201 ($5^{10}/(2^4 \cdot 3^9 \cdot \pi^3)$)** — the amount by which a G1 face is multiplied to give its G2 face.

The free decade. Moving a value by a power of ten costs nothing on the lattice, because ten is two times five: the move shifts twos and fives together and changes nothing else. That is why 9.817477… and 98.17477… are one address, and why 486 nm and 486,000 pm are the same line.

The veil. The veil is 180/π = 57.29577951308232, the number that turns radians into degrees.

The day, 864. 864 is the day: 86,400 seconds in a day, written at its decade. It is the ground state of the DNA helix.

The helical turn. A turn is one revolution of the helix. The helical turn is the step from one revolution to the next, **1.004693930041152263 ($5^6/(2^6 \cdot 3^5)$)**.

The 612 step and the 703 step. The 612 step is helium divided by four, **1.000612842467910952 ($2^9 \cdot 3^5 \cdot \pi/5^8$)**; the 703 step is the span of hydrogen's ionisation faces end to end, **1.000703048319385397 ($800/(81 \cdot \pi^2)$)**. They are named so that the reader meets the family of small steps of which the G-bond step is the smallest.

Free fall. Free fall is not the acceleration of a body pulled by a force; it is the correction that tops a rotation up to a full day, one value with the speed of light read in a different unit of time: **9.817477042468104 ($5^2 \cdot \pi/2^3$)**.

The radial mass. A radial mass is a mass spread over a radius rather than held at a point; dividing a node mass by 9375 turns it into a radius.

Why a value can be carried from one kind of quantity to another. An energy is a count of T, and the unit is a choice of clock: a joule is energy counted in seconds, a kilojoule per mole the same energy counted in minutes, an electron-volt the same energy in the spin-orbit register. A length, an angle, a time and a number of base pairs can likewise be one count read at different registers.

How the numbers were checked. No value in this paper was found by a search, so no statistical test is needed to judge it. A p-value answers the question "how often would I see a landing this close if the thing were not real?"; a control is a set of decoys built to resemble the real values, run through the same search to find out how often chance alone lands; a standard deviation is the typical distance of a measurement from its mean, the spread of the ruler. Each matters when a result is found by looking. Every result here is an exact identity worked from its address, forwards and backwards.

PART ONE — THE STEP, BUILT BY HAND

A number that almost balances

Take five to the tenth. It is 9,765,625. Now take two to the fourth times three to the ninth — 16 times 19,683 — which is 314,928, and multiply it by π cubed, 31.00627668. The answer is 9,764,744.70. The two numbers almost balance. Five to the tenth is ahead by 880, out of nearly ten million.

```
FORMULA M1     THE G-BOND STEP, BUILT
    5¹⁰                  =   9,765,625
    2⁴ · 3⁹              =   314,928
    π³                   =   31.006276680299820175
    2⁴ · 3⁹ · π³         =   9,764,744.702373460
    ratio                =   1.000090150603356201        ( 5¹⁰/(2⁴·3⁹·π³) )
    the gap              =   0.000090150603356201        90.1506 parts in a million
```

That near-balance is the G-bond step, the smallest structural step in the Universal Force of Time. It separates the surface register from the register of the sky. It is the difference between the day measured against the Sun and the day measured against the stars, between the lower year and the upper year, between the two faces of the free fall, of light, of hydrogen's quantum and of Mercury's year. And it is nothing more mysterious than this: π cubed very nearly equals five to the tenth over two to the fourth and three to the ninth, but not quite.

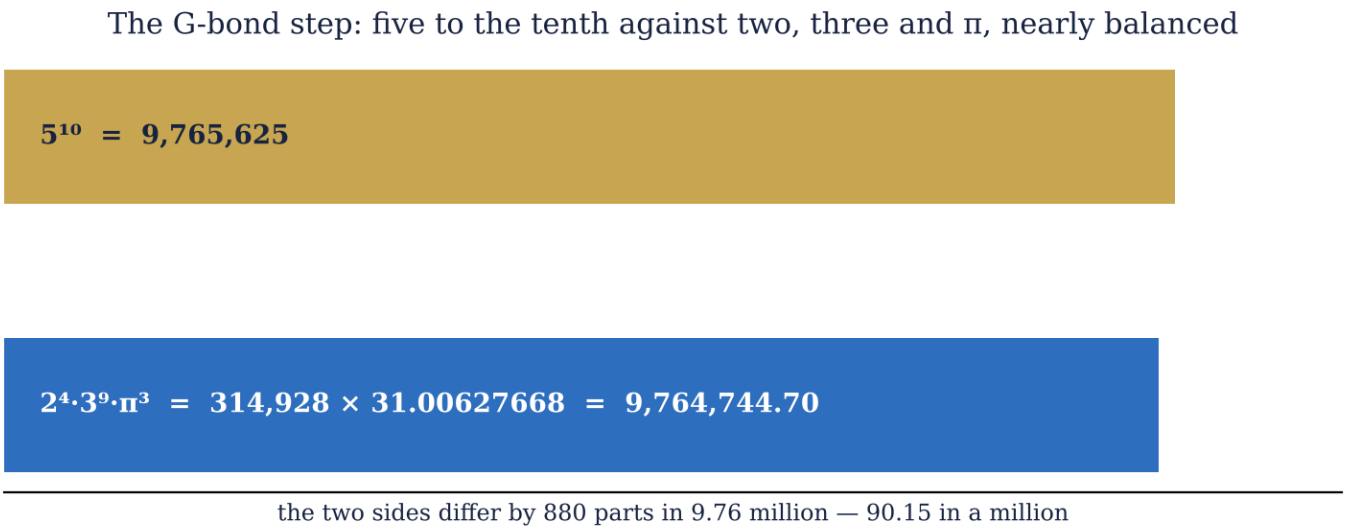


Figure 1 — **The G-bond step.** Five to the tenth against two to the fourth, three to the ninth and π cubed: 9,765,625 against 9,764,744.70. The two sides differ by 880 in 9.76 million — ninety parts in a million.

Four primitives

To see why that matters, start with what the lattice is. Every value in the framework is a product of powers of four primitives — the primes 2, 3 and 5, and π — and nothing else. The product is the value's address. The year on the G1 register, 365.2840913775 days, is three times five times π to the fourth over two squared: fifteen π to the fourth over four. The free fall is twenty-five π over eight. Light on G1 is two cubed, three to the fifth, five to the sixth, π squared. A number that needs a seventh, an eleventh or a seventeenth is not on the lattice.

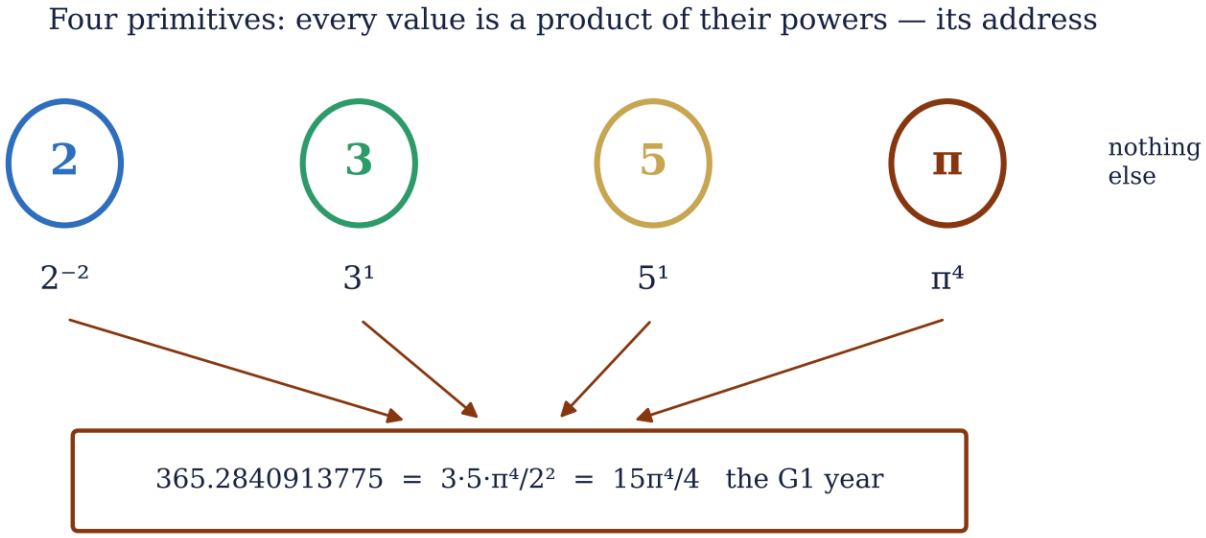


Figure 2 — **Four primitives.** Every value is a product of powers of 2, 3, 5 and π. The G1 year is $2^{-2}\cdot 3\cdot 5\cdot \pi^4 = 15\pi^4/4$.

Three of the primitives are whole numbers; the fourth is not. π cannot be written as a ratio of whole numbers at all. So a lattice built from 2, 3, 5 and π has two kinds of material in it — the primes, which are exact counts, and π, which is the circle. The question this paper asks is how the two kinds fit together.

PART TWO — THE π-COMMAS

Where π nearly meets the primes

Musicians have known a version of this problem for two thousand years. Stack perfect fifths and you nearly come back to an octave — but not quite. The small amount by which you miss is called a comma, and every tuning system is a way of living with it. The lattice of the Universal Force of Time has commas too, and they are where the powers of π nearly meet the primes.

```
FORMULA M2     THE π-COMMAS
    π³   =  31.006276680          5¹⁰/(2⁴·3⁹)  =  31.009071915      the G-bond step   1.000090150603   π -3
    π    =  3.141592653590        5⁸/(2⁹·3⁵)   =  3.139668531      the 612 step      1.000612842468   π +1
    π²   =  9.869604401089        800/81       =  9.876543210      the 703 step      1.000703048319   π -2

    and one comma with no π in it:
         5⁶  =  15,625            2⁶·3⁵  =  15,552                 the helical turn  1.004693930041   π  0
```

Each step of the framework is a comma: the ratio between a power of π and a near neighbour made only of 2, 3 and 5. π itself nearly equals $5^8/(2^9\cdot3^5)$ — and the ratio between them, the 612 step, is helium divided by four. π squared nearly equals eight hundred over eighty-one — and the ratio, the 703 step, is the span of hydrogen's faces. π cubed nearly equals $5^{10}/(2^4\cdot3^9)$ — and the ratio is the G-bond step. The helical turn is the odd one out: a comma between five to the sixth and two to the sixth times three to the fifth, with no π at all — the pure-number step by which the DNA helix climbs.

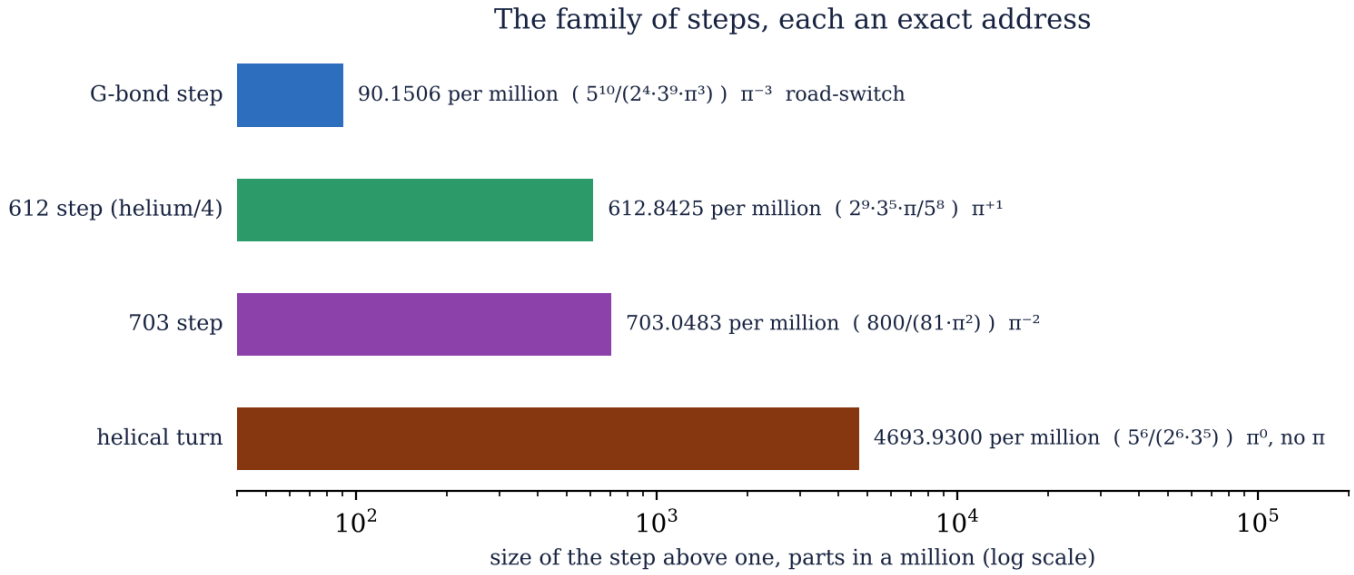


Figure 3 — **The family of steps.** The G-bond step, the 612 step, the 703 step and the helical turn, each with its size, its address and its power of π.

The family is closed

If the steps were independent accidents, there would be no reason for them to fit together. They do.

```
FORMULA M3     THE FAMILY IS CLOSED
    the 612 step          1.000612842467910952     ( 2⁹·3⁵·π/5⁸ )
    x the G-bond step     1.000090150603356201     ( 5¹⁰/(2⁴·3⁹·π³) )
    =  the 703 step       1.000703048319385397     ( 2⁵·5²/(3⁴·π²)  =  800/(81·π²) )
```

The 612 step times the G-bond step is the 703 step — exactly, with nothing left over. The fives: eight down and ten up leaves two up. The threes: five up and nine down leaves four down. The twos: nine up and four down leaves five up. The π's: one up and three down leaves two down. Two to the fifth times five squared over three to the fourth π squared is eight hundred over eighty-one π squared. The commas are not a scatter of separate numbers; they are a family that closes on itself.

PART THREE — THE FAMILY IN THE HYDROGEN ATOM

Two doublets

The hydrogen atom shows the whole family at once. Its ionisation energy is not one number but four faces, each the same joule read through a different volt.

```
FORMULA M4      HYDROGEN'S FOUR FACES
    face 1      13.5965570524209      the lowest face
    face 2      13.5977827902427      face 1  x  the G-bond step
    G1          13.6048896            face 1  x  the 612 step          ( 2⁸·3¹²/10⁷ )   the integer face
    G2          13.6061160890060      G1  x  the G-bond step                            the ground state

    face 1 -> G2   =   the 703 step   =   the 612 step  x  the G-bond step
```

Hydrogen's four faces are two doublets. Each doublet is split by one G-bond step: face 1 and face 2 below, G1 and G2 above. The two doublets sit one 612 step apart, and the whole set spans one 703 step. Because 612 times the G-bond is 703, the structure is consistent from every direction you walk it. The same double-doublet pattern appears in the mass unit and is predicted for the Higgs: four faces, two doublets, one 703 step across, each doublet split by one G-bond step.

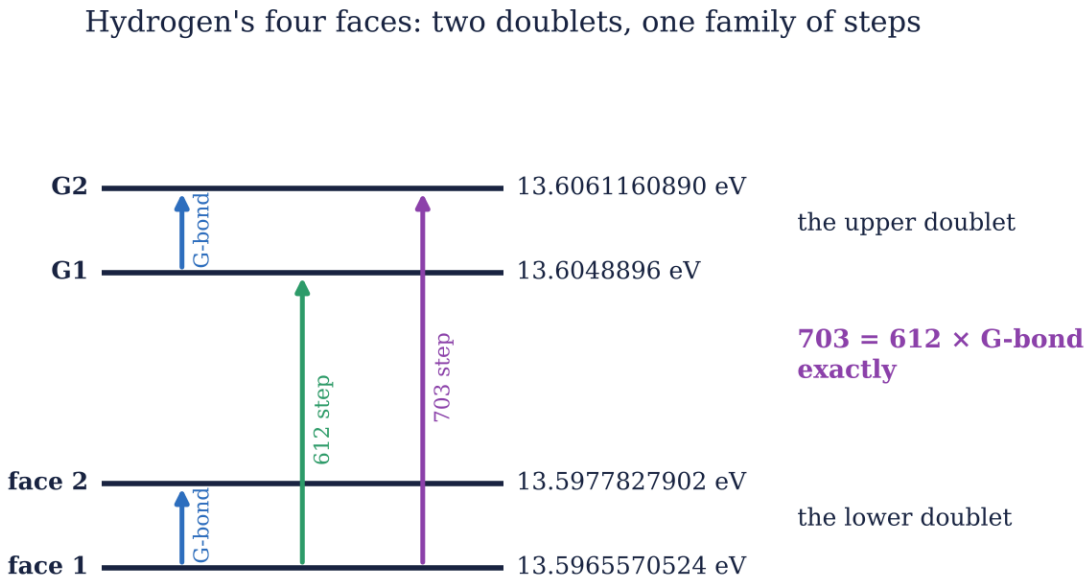


Figure 4 — **Hydrogen's four faces: two doublets.** The lower doublet (face 1, face 2) and the upper doublet (G1, G2) are each split by the G-bond step; the doublets sit a 612 step apart; the whole span is a 703 step, which is 612 × the G-bond step.

PART FOUR — THE YEAR TOWER, AND WHY IT ALTERNATES

Four rungs

Climb the Earth's year by the G-bond step and you get a tower of years, each one rung of the register ladder.

```
FORMULA M5     THE YEAR TOWER
    G0     365.2511637647192     ( 2²·3¹⁰·π⁷/5⁹ )            π +7     a road
    G1     365.2840913775091     ( 15π⁴/4 )                    π +4     a room
    G2     365.3170219587432     ( 5¹¹·π/(2⁶·3⁸) )             π +1     a road
    G3     365.3499555086891     ( 5²¹/(2¹⁰·3¹⁷·π²) )          π -2     a room

    each rung  =  the rung below  x  1.000090150603356
```

The G0 year is not π-free. The earlier version of this paper called it a π-free Julian root; it is G1 divided by the step, and it carries π to the seventh. More striking is the pattern of the powers: seven, four, one, minus two. Each rung drops by three, because the step carries π to the minus three. And since three is odd, every rung changes kind.

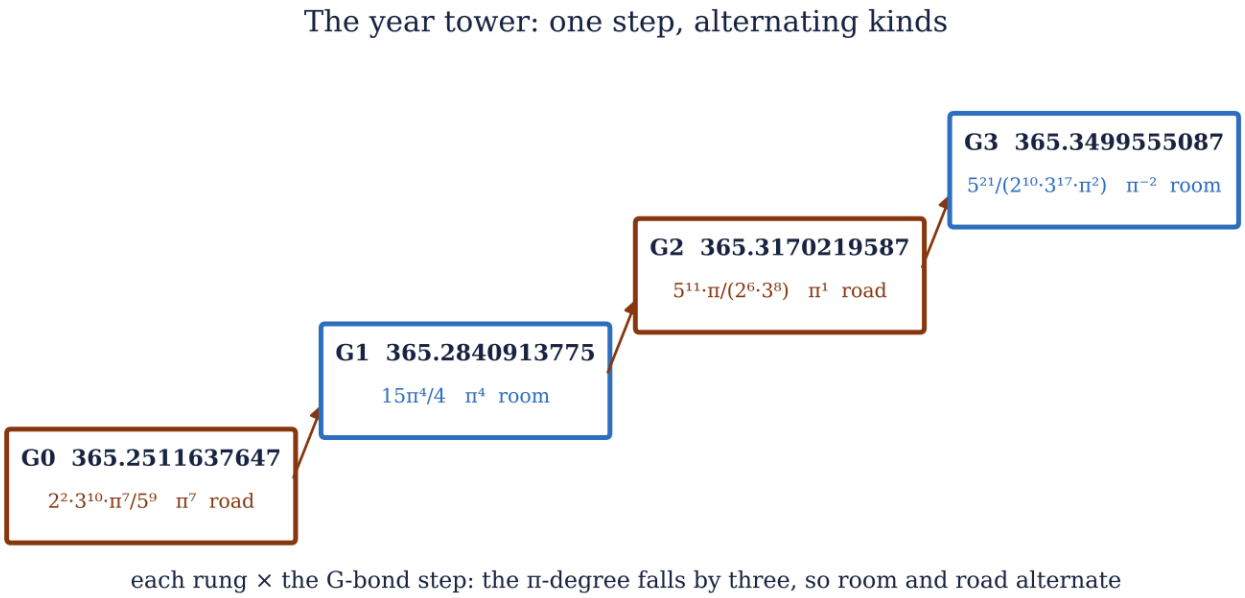


Figure 5 — The year tower. G0 to G3, each the rung below times the G-bond step. The power of π falls by three at each rung, so the rungs alternate between roads (odd powers) and rooms (even powers).

The parity law

In the Universal Force of Time the power of π a value carries is its degree, and the degree says what kind of thing the value is. **An even degree is a room** — a state, a thing that sits, like a pair of circles. **An odd degree is a road** — a carrier, a thing that moves, the unpaired circle. **A half degree is a door** — a source, which squares to a whole address. A step with an odd degree, like the G-bond step or the 612 step, turns rooms into roads and roads into rooms. A step with an even degree, like the 703 step or the helical turn, keeps the kind and changes only the size.

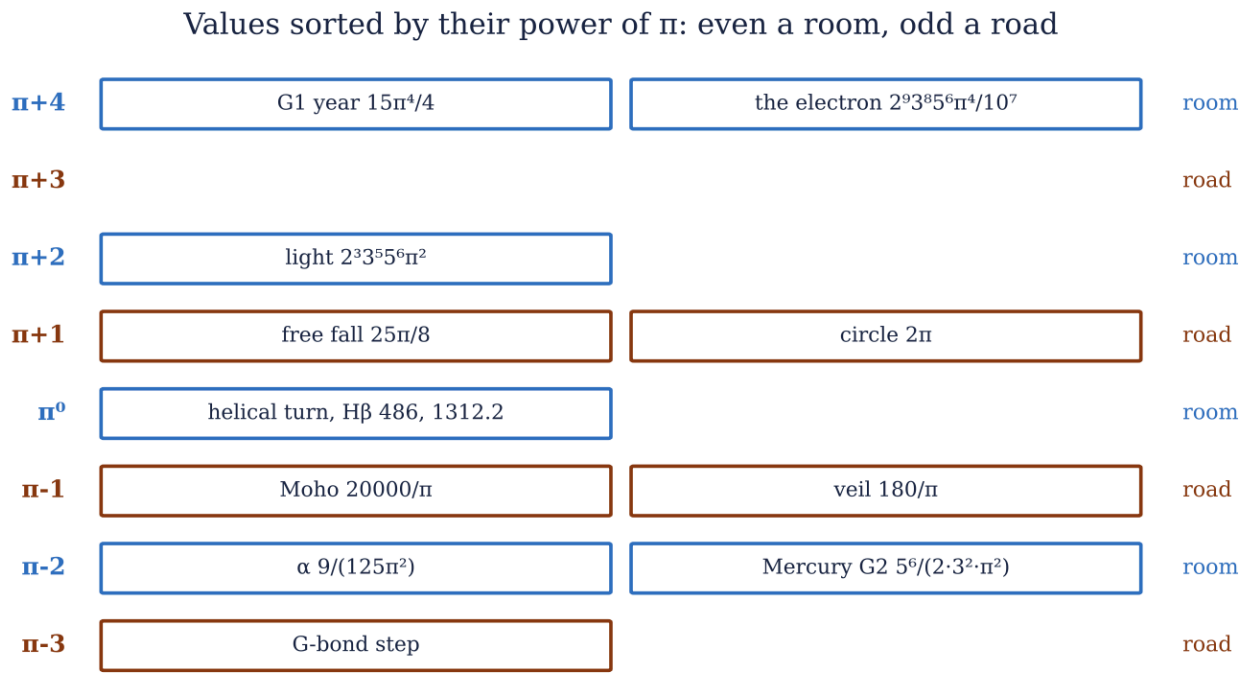


Figure 6 — Values sorted by their power of π. The G1 year and the electron at π^4; light at π^2; the free fall and the circle at π^1; the helical turn, Hβ and 1312.2 at π^0; the Moho and the veil at π^{-1}; α and Mercury's G2 year at π^{-2}; the G-bond step at π^{-3}. Even rows are rooms, odd rows roads.

That is why the gate between the surface and the sky does more than add ninety parts in a million. It is the reason Mercury's G1 year is a road and its G2 year a room, why the lower year is a room and the upper year a road. The odd power of π in the step is the switch.

PART FIVE — THE SAME-DEGREE LAW

When π cancels

The parity law has a partner. **Two values with the same power of π have a ratio with no π in it at all.** Divide one room by another room of the same degree, or multiply a value by another whose degree is equal and opposite, and the circles cancel, leaving a pure count of 2, 3 and 5.

```
FORMULA M6     THE SAME-DEGREE LAW
    Mercury's G2 year  ( π -2 )   /  α  ( π -2 )         =  5⁹/(2·3⁴)       12,056.32716    125 x the Faraday
    light, G1  ( π +2 )           x  α  ( π -2 )         =  3⁷ km/s         2,187,000       the electron's speed
    the electron  ( π +4 )        x  α²  ( π -4 )  / 2   =  2⁸·3¹²/10⁷       13.6048896      hydrogen's quantum
    Mercury G2 rotation x 2π ( π -1 )  x  21 cm ( π +1 )  =  6⁵              7776
```

The law predicts which combinations will come out clean before any arithmetic is done. Mercury's G2 year divides cleanly by α, but its G1 year, at π to the plus one, does not. Light on G1 times α is the electron's speed with no π; the electron times α squared, halved, is hydrogen's quantum with no π. The pitch of the reading helix times hydrogen's twenty-one centimetre line is six to the fifth. In each case the reader can count the powers of π first and know the answer will be a pure number.

The same-degree law: equal and opposite powers of π cancel, leaving a pure count

Mercury G2 year (π^{-2})	$\div\ \alpha\ (\pi^{-2})$	$= 5^9/(2\cdot3^4)$ 12,056.3271605
light, G1 (π^{+2})	$\times\ \alpha\ (\pi^{-2})$	$= 3^7$ km/s 2,187,000
electron (π^{+4})	$\times\ \alpha^2\ (\pi^{-4})\ \div 2$	$= 2^8\cdot3^{12}/10^7$ 13.6048896
Mercury G2 rotation × 2π (π^{-1})	× 21 cm line (π^{+1})	$= 6^5$ 7776

Figure 7 — **The same-degree law.** Equal and opposite powers of π cancel: Mercury's G2 year over α, light times α, the electron times α^2 halved, and the A-DNA seed times the 21 cm line each leave a pure count of 2, 3 and 5.

THE MEMBERS OF THE π FAMILY

The steps are where π misses the primes. The members of the π family are the places where π enters a value whole, and each power has a job that the reader meets again and again across the framework.

THE MEMBERS OF THE π FAMILY

2π	6.283185307180	one full turn	Moho 20000/π x 2π = 40,000 km
180/π	57.295779513082	the veil	486 nm / veil / 864 = 9.8174770425, the free fall
π/4	0.785398163397	a quarter turn	45 degrees: violet/blue edge, 450 nm
π	3.141592653590	the circle, a road	the free fall 25π/8; Mercury's G1 year $2^3\cdot3^7\cdot\pi/5^4$
π^2	9.869604401089	a room	light $2^3\cdot3^5\cdot5^6\cdot\pi^2$; α = 9/(125·$\pi^2$)
π^4	97.409091034002	a room	the G1 year $15\pi^4/4$; the electron $2^9\cdot3^8\cdot5^6\cdot\pi^4/10^7$

One full turn, 2π, is the operator that carries a radius to a circumference. The Moho sits at a radius of twenty thousand over π kilometres; carried once round, it is forty thousand kilometres exactly, the π having cancelled. That is the simplest case of the same-degree law: the radius is a road at π to the minus one, the turn a road at π to the plus one, and their product a pure count.

The veil, 180 over π, is the operator that turns the radians of the textbook into the degrees the framework runs on. Every chain that starts from a wavelength passes through it. Hydrogen's Balmer-β line, 486 nanometres — a pure {2,3,5} count — divided by the veil and by the day, 864, is the free fall at the Earth's surface, twenty-five π over eight. The veil brings in exactly one π, and the free fall carries exactly one.

A quarter turn, π over four, is forty-five degrees, and at its decade it is the boundary between violet and blue in the spectrum, four hundred and fifty nanometres. The colours of light are cut at places the circle marks.

π itself, to the first power, is a road — the free fall, Mercury's G1 year, the 612 step. **π squared is a room** — light on the G1 register, and the denominator of the fine structure constant. **π to the fourth is a room again** — the G1 year and the electron's rest energy. The family does not run through every power at random. Each power belongs to a kind of value, and the kind tells you what the value does.

Why the lattice needs π at all

It would be simpler if the universe ran on whole numbers alone. It does not, because it turns. The Sun rotates; the planets orbit; the helix winds; the electron circles. Anything that turns brings the circle with it, and the circle brings π. A lattice of 2, 3 and 5 alone could count, but it could not turn. π is what lets the counts close into cycles — and the commas, the small amounts by which π's powers miss the counts, are what let one cycle sit next to another without collapsing into it. Two registers one G-bond step apart are two cycles that almost, but do not quite,

coincide. If π were a fraction there would be no step and no second register: the cycles would land on top of each other. **The universe has more than one register because π is irrational.**

PART SIX — A STEP AND A GAP

Multiply and stay; subtract and leave

There is one more piece of arithmetic every reader of the framework needs, because without it the lattice can seem to break. A step is an address. A gap is not.

```
FORMULA M7     STEP AND GAP
    the helical turn          1.004693930041152263     ( 5⁶/(2⁶·3⁵)  =  15625/15552 )     an address
    the helical turn  -  1    0.004693930041152263     ( 73/15552 )                          a gap

    the Moho x (helical turn - 1)        =  29.88248674307706 km      ( 20000/π x 73/15552 )
      x 2 / 9375 x 180/π                 ->  365.2566126365757 days    the year the stars mark
                                         =   3600/π² x 730/729
```

Multiply by a step and you stay on the lattice; subtract one and you leave it. Fifteen thousand six hundred and twenty-five over fifteen thousand five hundred and fifty-two is a product of powers of 2, 3 and 5. Subtract one and the numerator becomes seventy-three — a prime the lattice does not hold. Nothing has gone wrong. The seventy-three is not an address; it is the width between two addresses. The same is true of the G-bond step: 1.0000901506 is an address, but the ninety parts in a million on their own are a gap, not a value.

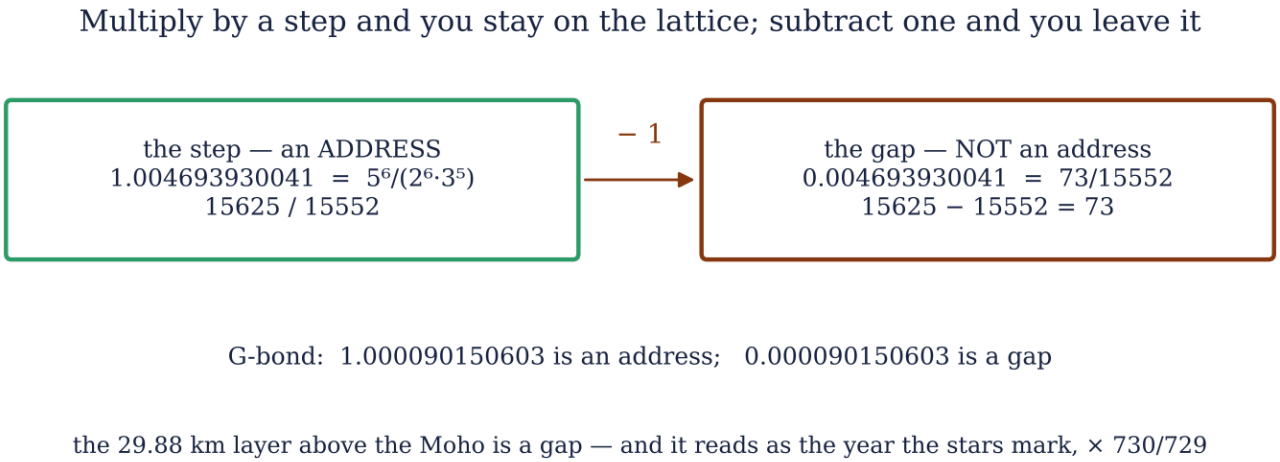


Figure 8 — A step and a gap. The helical turn, 15625/15552, is an address; the helical turn minus one, 73/15552, is a gap. The gap above the Moho, 29.88 km, carried through 9375 and the veil, is the year the stars mark — the 73 is the step's width, not a foreign prime.

This is why a careful reader will sometimes meet a number like 730/729 in the framework and should not take fright. Seven hundred and thirty over seven hundred and twenty-nine is one plus three to the minus sixth — a gap read as a value. The layer of rock between the Moho and the shell one helical turn above it is twenty-nine point eight eight kilometres thick, and carried through the framework's own operators it is the year the stars mark. It has a 73 in it because it is a gap. The addresses on either side of it are clean.

A WORKED WALK THROUGH THE FAMILY

Build the step. Five to the tenth: 9,765,625. Two to the fourth times three to the ninth: 314,928. Times π cubed, 31.00627668: 9,764,744.70. Divide: 1.0000901506. That is the G-bond step.

Find its comma. Divide 9,765,625 by 314,928: 31.00907191. Compare π cubed, 31.00627668. The ratio is the same step. π cubed nearly equals a fraction of 2, 3 and 5 — and the near-miss is the step.

Find the other commas. Divide 390,625 (five to the eighth) by 124,416 (two to the ninth, three to the fifth): 3.13966853. Compare π, 3.14159265: the ratio is 1.000612842, the 612 step. Divide 800 by 81: 9.87654321. Compare π squared, 9.86960440: the ratio is 1.000703048, the 703 step.

Close the family. Multiply 1.000612842468 by 1.000090150603. The answer is 1.000703048319 — the 703 step.

Walk hydrogen. From face 1, 13.5965570524, multiply by the G-bond step: 13.5977827902, face 2. Multiply face 1 by the 612 step instead: 13.6048896, G1. Multiply G1 by the G-bond: 13.6061160890, G2. Multiply face 1 by the 703 step: G2 again.

Climb the tower. From $15\pi^4/4$, 365.2840913775, multiply by the step: 365.3170219587. Divide by it: 365.2511637647. Count the powers of π: four, then one, then seven. Odd steps flip the kind.

Cancel π. Multiply light on G1, 299,789,233.683, by α, 0.0072951252: 2,187,000. Every π gone, because light carries π squared and α carries π to the minus two.

Meet a gap. Subtract one from 15625/15552. The answer, 73/15552, carries a prime the lattice does not — and stays a gap, not a value.

Nothing in the walk was adjusted. Each step is exact.

WHY MATHEMATICS HAS NOT SEEN THE STEPS

Mathematics knows that π is irrational and has catalogued its fractions for centuries: twenty-two over seven, three hundred and fifty-five over one hundred and thirteen, and the endless continued fraction that produces ever better ones. Those fractions use any whole numbers at all, and they chase π as closely as possible. The commas of this paper do something different. They allow only 2, 3 and 5, and they do not chase π to the limit — they stop at the first near-meeting that the universe actually uses. Seen from pure mathematics, five to the eighth over two to the ninth and three to the fifth is a poor approximation of π. Seen from the Universal Force of Time it is not an approximation at all: it is the address on one side of a step whose other side is π, and the step is helium divided by four. The question is not how close a fraction can get to π, but where π and the small primes stand one exact step apart — and that question had not been asked.

PART SEVEN — WHAT THIS REVISION CORRECTS

- **G0 is not π-free.** The earlier version called G0 the π-free Julian root, 365.2512. G0 is G1 divided by the step, **365.2511637647 ($2^2 \cdot 3^{10} \cdot \pi^7/5^9$)**, and carries π to the seventh.
- **The sodium-doublet claim is withdrawn.** The earlier version said the sodium doublet's gap was $6^6/5^7$ nm and encoded the step. That claim is not established and is removed.
- **The 703 step is the span of hydrogen's faces.** The earlier version named it a bond-angle crossing operator. It is the span of hydrogen's four faces end to end, and it is the 612 step times the G-bond step.
- **The π-family is a parity family.** The companion version read π, π^2 and π^3 as a line, an area and a volume. The framework's law is parity: even powers rooms, odd powers roads, half powers doors.
- **No off-lattice benchmarks** and no tabulated references.
- **New in this revision:** the π-commas; the closure 612 × G-bond = 703; hydrogen's two doublets; the alternating year tower; the same-degree law with worked cases; the difference between a step and a gap.

CONCLUSION — π CLOSES THE LATTICE BY MISSING

The obvious worry about a lattice built from 2, 3, 5 and π is that π does not belong with the others: it cannot be a ratio of whole numbers, so how can it share a lattice with them? The answer the arithmetic gives is that π belongs precisely because it does not fit. Its powers come close to fractions of 2, 3 and 5 — π to $5^8/(2^9 \cdot 3^5)$, π^2 to 800/81, π^3 to $5^{10}/(2^4 \cdot 3^9)$ — and the ratios by which they miss are the steps that separate the registers of the universe. **The near-misses of π are the structure.** They form a closed family; they flip rooms into roads; they cancel when degrees match; and the widths between them, read as gaps, become the years the stars mark. The π family is complete because every one of its members is accounted for: the circle itself, its powers, and the commas between them.

WHAT STANDS, WHAT IS OPEN

Forced, and stated at full force. The G-bond step is $5^{10}/(2^4 \cdot 3^9 \cdot \pi^3)$. The 612 step times the G-bond step is the 703 step. The year tower rungs alternate in kind because the step's degree is odd. Two values of the same π-degree have a π-free ratio.

Arrived at, and exact on every line. The π-commas; hydrogen's two doublets; the same-degree cases; the year from the gap above the Moho.

Open. Whether further π-commas — π^4, π^5 against nearby {2,3,5} fractions — appear as steps elsewhere in the framework; the full map of which steps belong to which registers.

WHAT WOULD BREAK IT

- A product of the 612 and G-bond steps that is not the 703 step.
- A value with two faces whose ratio is a step of even degree but whose kinds differ, or of odd degree but whose kinds are the same.
- Two values of the same π-degree whose ratio carries π.

A NOTE ON THE NUMBERS

The values in this paper are written as plain numbers — not pinned to one unit, and not carried to one particular power of ten. Under the Universal Force of Time a quantity is not the property of one dimension: the same T-value shows up as a year at one register, an energy at another, a ratio at a third. The unit and the power of ten are the costume a number wears where it is read. That is why a step can be written as a ratio near one and also as so many parts in a million. Each number is given with its lattice address in brackets, so that the reader can rebuild it from 2, 3, 5 and π alone.

REFERENCES

1. S. Daubney, *The G1/G2 Dimensional Gate*, UFOT_G1G2_DimensionalGate_Rev3.pdf, The Daubney Foundation (2026).
2. S. Daubney, *The Electron-Volt Chain — Lattice Derivation*, UFOT_ElectronVoltChain_Rev4.pdf, The Daubney Foundation (2026).
3. S. Daubney, *Fine Structure, Mercury and DNA — Unified*, UFOT_FineStructureMercuryDNA_Rev5.pdf, The Daubney Foundation (2026).
4. S. Daubney, *Fibonacci Structure in Orbital Speeds*, UFOT_FibonacciOrbitalSpeed_Rev4.pdf, The Daubney Foundation (2026).
5. S. Daubney, *Free Fall — the Dual-Dimensional Chain, G1 and G2*, UFOT_FreeFallDualDimensional_Rev4.pdf, The Daubney Foundation (2026).
6. S. Daubney, *The Unification of the Six Domains*, UFOT_The_Unification_Of_Six_Domains_Rev3.pdf, The Daubney Foundation (2026).

APPENDIX — EVERY NUMBER, REBUILT

Each value below is rebuilt from its lattice form alone, at thirty digits with π carried as a symbol.

THE STEPS		
G-bond	$5^{10}/(2^4 \cdot 3^9 \cdot \pi^3)$	1.00009015060335620067641 4
612 step	$2^9 \cdot 3^5 \cdot \pi / 5^8$	1.00061284246791095182481 5
703 step	$800/(81 \cdot \pi^2)$	1.00070304831938539697658 7
helical turn	$5^6/(2^6 \cdot 3^5)$	1.00469393004115226337448 6
THE COMMAS		
	π^3	31.00627668029982017547632
	$5^{10}/(2^4 \cdot 3^9)$	31.00907191485037849921252
	π	3.14159265358979323846264 3
	$5^8/(2^9 \cdot 3^5)$	3.13966853137860082304526 7
	π^2	9.86960440108935861883449 1
	$800/81$	9.87654320987654320987654 3
HYDROGEN		
face 1	$5^{12}/(2^9 \cdot 3^7)$ / volt 1	13.59655705242090231744331
face 2	x G-bond	13.59778279024274507
G1	$2^8 \cdot 3^{12}/10^7$	13.6048896
G2	x G-bond	13.60611608900603449967805
THE YEAR TOWER		
G0	$2^2 \cdot 3^{10} \cdot \pi^7/5^9$	365.2511637647191957394358
G1	$15\pi^4/4$	365.2840913775091396366512
G2	$5^{11} \cdot \pi/(2^6 \cdot 3^8)$	365.3170219587432436266593
G3	$5^{21}/(2^{10} \cdot 3^{17} \cdot \pi^2)$	365.3499555086891147415216
STEP AND GAP		
helical turn - 1	73/15552	0.00469393004115226337448 6
gap above Moho	20000/π x 73/15552	29.88248674307705635578322
star-marked year	$3600/\pi^2$ x 730/729	365.2566126365756698964544

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