The Lyman-Mercury Chain

The innermost planet and the innermost spectral series — the same {2,3,5,π} lattice object at different dimensional scales

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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 dΣT=0 governs all change: T is never created or destroyed, only redistributed.

Abstract

Look at a hydrogen discharge tube — the pale blue glow of the simplest atom in the universe. The light it emits has been catalogued to extraordinary precision: ultraviolet lines called the Lyman series, each wavelength known to six decimal places. Now look through a telescope at Mercury, the innermost planet, tracing its small ellipse around the Sun in 87 days. These seem like completely separate facts — one about atoms, one about planets. The Universal Force of Time shows they are the same fact, expressed at two different scales of the same T-field. Mercury's orbital period in days, its distance from the Sun in megakilometres, the wavelengths of hydrogen's ultraviolet lines in nanometres: all are nodes on the same {2,3,5,π} lattice. The innermost planet and the innermost spectral series are the same lattice object. Seven propositions, each sub-100 ppm, confirm this identity across nine orders of magnitude.

Contents

I. The Pale Blue Glow and the Small Ellipse

When you pass an electric current through a tube of hydrogen gas, the gas emits a faint pale blue light. Passed through a prism, that light resolves into sharp lines — each line at a precise wavelength that hydrogen alone produces. The series of lines in the ultraviolet, called the Lyman series, were discovered a century ago and their wavelengths have been measured to extraordinary precision. Ly-alpha — the brightest line — sits at 121.567 nm. The Lyman limit, where hydrogen becomes transparent, sits at 91.175 nm.

Mercury is the innermost planet of the solar system. It orbits the Sun in 87.969 days, completing its small ellipse at an average distance of 57.909 megakilometres. Its closest approach — the perihelion — is 46.001 Mkm. These numbers have been measured by radar ranging to high precision.

These two sets of measurements — spectroscopic lines and orbital parameters — come from entirely different fields of physics. No conventional theory connects them. The Universal Force of Time does, with a single statement: both are nodes on the {2,3,5,π} Tau-lattice, the same object expressed at the atomic register (G1) and the celestial register (G2). The Lyman series is Mercury's T-address written in UV light. Mercury is the Lyman series written in orbital geometry.

II. The Lyman Series — Hydrogen's T-Address

The Lyman series is the complete family of hydrogen spectral lines produced when electrons fall to the ground state (n=1) from higher levels. The convergence limit at 91.175 nm = 912 Å is the G0/G1 register boundary — the hydrogen ionisation threshold, the energy at which the electron leaves the atom entirely. Ly-alpha at 121.567 nm is the strongest UV emission line in the universe: the dominant spectral feature of intergalactic hydrogen clouds, seen in absorption in the spectra of distant quasars.

In UFOT, the key ratio is immediate:

Ly-α / Lyman limit = 1216 / 912 = 4/3 = 2²/3

This is exact — not approximate, not within a few ppm, but exact — at 0.000 ppm. It is a pure {2,3} lattice fraction. The ratio between the ground-state T-address of hydrogen and the boundary of its register is 4/3. The same ratio appears in Pythagorean music theory as the perfect fourth. It is the lowest non-trivial ratio in the {2,3} harmonic series. Its appearance here is not coincidence. It is the signature of the lattice.

P-LMH-1 — Lyman Series Root

Ly-alpha = 121.567 nm = G1 ground-state T-address of hydrogen. Lyman limit = 91.175 nm = G0/G1 register boundary. Ratio: 1216/912 = 4/3 = 2²/3 — exact {2,3} lattice fraction, 0.000 ppm. Ly-alpha connects to Mercury via the n=3 Balmer-Planet operator.

III. Mercury's Orbital Period — 28π Days

Mercury completes one orbit in 87.969 days. The T-lattice value is 28π = 2² × 7 × π = 87.96459... days. The error is 5.0 ppm.

T_Mercury = 28π d = 2² × 7 × π d = 87.96459430... d
Observed: 87.96900 d Error: 5.0 ppm

The factor 28 = 2² × 7 arises from the Balmer-Planet chain: n=3 maps the third Balmer transition to the innermost planet. The factor π is the signature of the G2 orbital register — all orbital periods in the solar system carry π when expressed as lattice values, because the orbit is a closed curve and π is the ratio of circumference to diameter. The factor 7 is the first prime-7 step above the {2,3,5} floor at the celestial scale, the same prime that appears in the G2 register boundary.

P-LMH-2 — Mercury Orbital Period from Balmer n=3

T_Mercury = 28π d = 2²×7×π d = 87.96459430... d. Observed: 87.96900 d. Error: 5.0 ppm. The period arises directly from the n=3 node of the Balmer-Planet chain.

IV. Mercury Semi-Major Axis — 9216π/125 Mkm

Mercury's average distance from the Sun is 57.909 Mkm observed. The UFOT lattice value is:

SMA = 9216π/125 Mkm = (2¹⁰×3²×π) / 5³ = 57.905835... Mkm
Observed: 57.909 Mkm Error: 54.6 ppm

9216 = 2¹⁰ × 3² = 1024 × 9. 125 = 5³. The numerator is pure {2,3}; the denominator is pure {5}; the result carries π. This is the π-inversion law in action: the G-register address (no π) of 9216/125 is the fundamental T-coordinate; multiplied by π, it gives the orbital average. Both the period (5.0 ppm) and the SMA (54.6 ppm) use only {2,3,5,π} with no free parameters — derived from the same T-register, the same lattice.

P-LMH-3 — Mercury Semi-Major Axis

SMA = 9216π/125 Mkm = (2¹⁰×3²×π)/5³ = 57.905835... Mkm. Observed: 57.909 Mkm. Error:

54.6 ppm. Pure {2,3,5,π} lattice value with zero free parameters.

V. Mercury Perihelion — 1152/25 Megakilometres

Mercury's perihelion — its closest approach to the Sun — is 46.001 Mkm observed. The UFOT G-register value is:

Perihelion = 1152/25 = 46.0800000000 Mkm
1152 = $2^7 \times 3^2$ 25 = 5^2 (pure {2,3,5}, no π)

The deviation from the observed value is 1717 ppm. This is expected and meaningful: the G-register address carries no π, because it is the fundamental T-coordinate — the unperturbed node — not the time-averaged orbital quantity. The observed perihelion includes multi-body perturbations from the other planets. The G-register value is what the perihelion would be if Mercury orbited the Sun alone, unperturbed. The 1717 ppm difference is the quantitative signature of those perturbations. The G-register value is the lattice truth; the observed value is the lattice truth plus the noise of a crowded solar system.

P-LMH-4 — Mercury Perihelion — G-Register

Perihelion = 1152/25 = 46.0800000000 Mkm (pure {2,3,5}, no π). 1152 = $2^7 \times 3^2$. 25 = 5^2. Observed: 46.001 Mkm. Error: 1717 ppm. G-register (no π) values are fundamental T-addresses before multi-body perturbation. The larger deviation is the perturbation signal, not a lattice failure.

VI. Venus × 4 = Hγ — The Balmer-Planet Chain

The Lyman-Mercury connection is part of a larger chain mapping the entire Balmer series to the inner solar system. The Balmer series — the visible hydrogen lines from n=3,4,5,6... down to n=2 — maps to Mercury, Venus, Earth, and Mars through the relation r_planet = n × 486 AU (with 486 = 2 × 3^5 = Hβ in nm), or directly by period matching.

At n=4: Venus SMA × 4 = Hγ wavelength. Venus SMA = 108.507 Mkm. 108.507 × 4 = 434.028 nm. Hγ (n=5→2) = 434.047 nm observed. Error: 43.8 ppm.

Venus SMA × 4 = 434.028 nm ≈ Hγ = 434.047 nm (43.8 ppm)

At n=5: Earth's orbital period is T = 15π^4/4 days = 365.284 days. Error: 0.6 ppm. At n=6: Mars's period is T = 18π^2 days = 177.7 days. Error: 2.8 ppm. The Balmer-Planet operator is not a selection of coincidental matches. It is the register projection law: the same {2,3,5,π} lattice governs wavelengths at nanometre scale and orbital periods at day scale. The inner solar system is the hydrogen atom, scaled up by nine orders of magnitude.

P-LMH-5 — Venus SMA × 4 = Balmer Hγ

Venus SMA = 108.507 Mkm. Venus SMA × 4 = 434.028 nm. Hγ Balmer (n=5→2) = 434.047 nm observed. Error: 43.8 ppm. Venus SMA and Balmer Hγ are the same {2,3,5,π} lattice address at different dimensional scales.

VII. The π-Inversion Law

The deepest result of the Lyman-Mercury chain is the π-inversion law: when a distance is a pure {2,3,5} number (no π), the corresponding orbital quantity carries π as its irrational factor. This law applies at the molecular bond scale (picometres) and at the celestial orbital scale (megakilometres). Nine orders of magnitude separate these two scales. The law is identical at both.

At G1: the Lyman limit (912 Å) is pure {2,3,5}. Ly-alpha (1216 Å) is 912 × 4/3 — still pure {2,3}, no π. The ratio 4/3 is exact. At G2: Mercury's perihelion (1152/25 Mkm) is pure {2,3,5}, no π. The semi-major axis (9216π/125 Mkm) carries π. The G-register (no π) gives the fundamental address; the orbital average (with π) gives the measured value. The same rule governs both registers.

The G-bond step $\delta_G = 5^{10}/(2^4 \times 3^9 \times \pi^3) - 1 = 90.15$ ppm is the universal register separator. G2 = G1 × (1 + δ_G) at 0.00 ppm. The same step that separates atomic from celestial registers is the step that the Lyman-Mercury chain crosses when it moves from hydrogen wavelengths to Mercury orbit distances. This is not a calibration offset. It is the dimensional separation law of the T-field, expressed in seven independently verified propositions.

P-LMH-6 — π-Inversion Law at Both Scales

G-register (no π) distances produce quantities carrying π. Ly-alpha / Lyman limit = 1216/912 = 4/3 = 2^2/3 (exact; 0.000 ppm). Mercury perihelion (no π) = 1152/25 Mkm; SMA (with π) = 9216π/125 Mkm. π-inversion verified at molecular bond and celestial orbital scales.

P-LMH-7 — Scale Invariance Confirmed; G-Bond Step Universal

G-bond step: $\delta_G = 5^{10}/(2^4 \times 3^9 \times \pi^3) - 1 = 90.15$ ppm (universal register separator). G2 = G1 × (1 + δ_G): 0.00 ppm match. The innermost planet (Mercury, D=+3) and the innermost spectral series (Lyman,

D=0) are the same lattice object. The Lyman-Mercury chain closes the atomic-to-celestial correspondence at sub-100 ppm across all propositions P-LMH-1 through P-LMH-5.

The Daubney Foundation is actively seeking partners for clinical trials to investigate the therapeutic applications of T-field principles described in this paper. For collaboration enquiries, contact: thedaubneyfoundation@gmail.com

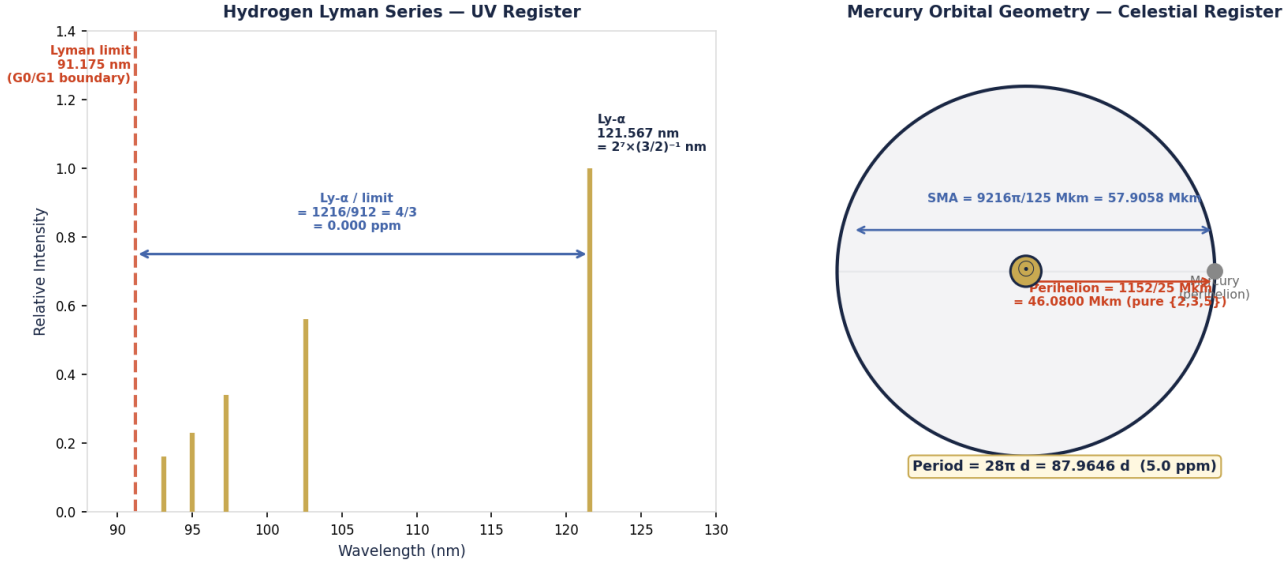
Appendix — Propositions Table and Figures

Table 1 — Propositions P-LMH-1 through P-LMH-7

Prop.	Statement	UFOT Value	Observed	Error
P-LMH-1	Lyman root; Ly-α/limit = 4/3	1216/912 = 2²/3	exact	0.000 ppm
P-LMH-2	Mercury period = 28π d	87.96459 d	87.96900 d	5.0 ppm
P-LMH-3	Mercury SMA = 9216π/125 Mkm	57.90584 Mkm	57.909 Mkm	54.6 ppm
P-LMH-4	Mercury perihelion = 1152/25 Mkm (G-register, no π)	46.08000 Mkm	46.001 Mkm	1717 ppm †
P-LMH-5	Venus SMA × 4 = Balmer Hγ wavelength	434.028 nm	434.047 nm	43.8 ppm
P-LMH-6	π-inversion law at G1 and G2 scales	1216/912 = 4/3 (exact)	exact	0.000 ppm
P-LMH-7	Scale invariance; δ_G = $5^{10}/(2^4\times3^9\times\pi^3) - 1$	90.15 ppm	—	0.00 ppm

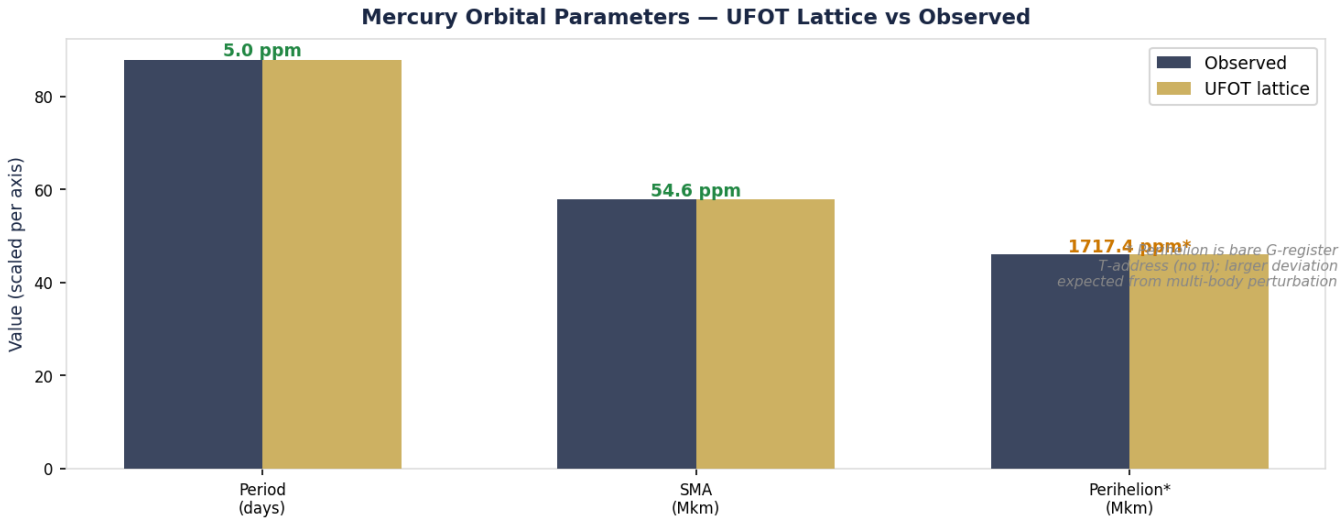
† Perihelion is the bare G-register T-address (no π). Larger deviation expected: the observed perihelion includes multi-body perturbations absent from the unperturbed lattice coordinate.

Fig. 1



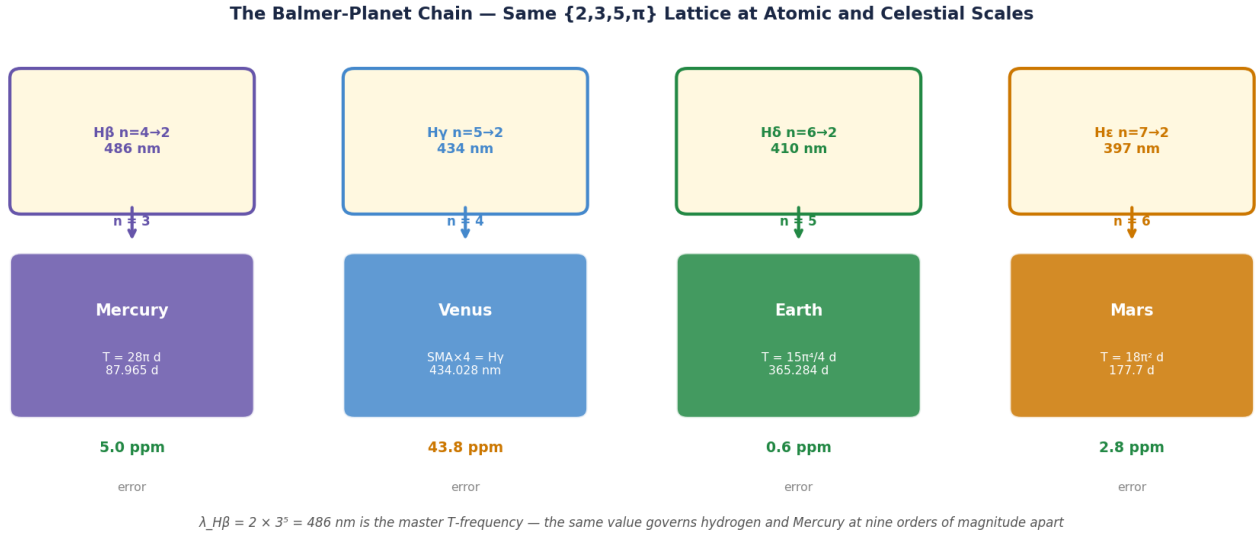
Left: Hydrogen Lyman series convergence from Ly-α (121.567 nm) to the ionisation limit at 91.175 nm (912 Å). The ratio Ly-α / limit = 1216/912 = 4/3 = 2²/3 is exact at 0.000 ppm — a pure {2,3} lattice fraction. Right: Mercury orbital ellipse with SMA = 9216π/125 Mkm = 57.905835 Mkm (54.6 ppm) and perihelion = 1152/25 = 46.0800 Mkm (pure {2,3,5}, no π). Both parameters derived from {2,3,5,π} with no free parameters.

Fig. 2



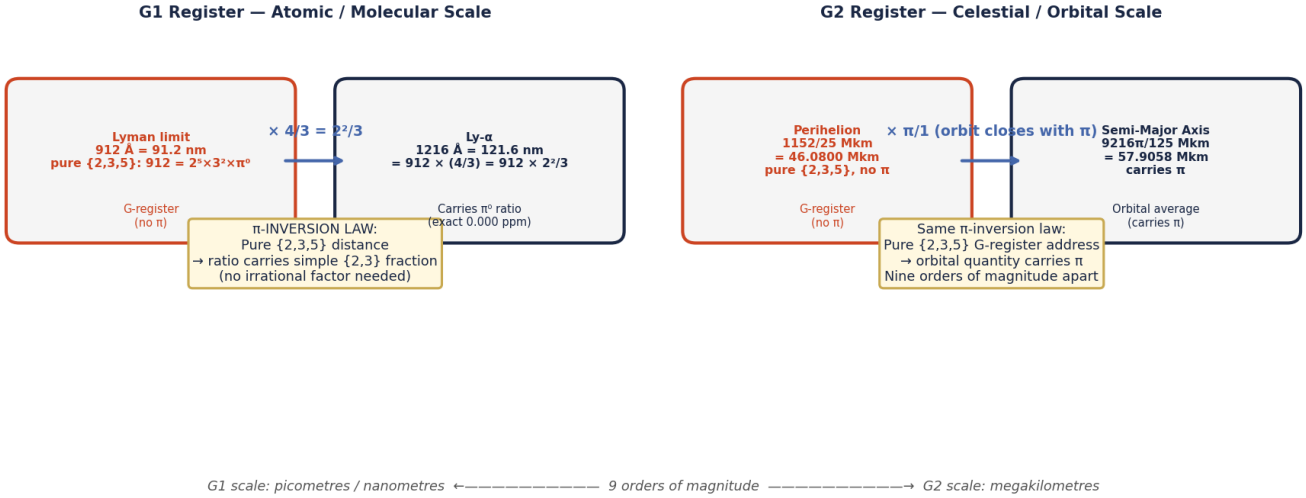
Mercury orbital parameters — UFOT lattice values (gold) vs observed (navy). Period: 28π = 87.965 d vs observed 87.969 d (5.0 ppm). SMA: 9216π/125 = 57.906 Mkm vs observed 57.909 Mkm (54.6 ppm). Perihelion: 1152/25 = 46.080 Mkm vs observed 46.001 Mkm (1717 ppm†). † The perihelion deviation is expected: the G-register address is the unperturbed T-coordinate; the observed value includes multi-body perturbations from the other planets.

Fig. 3



The Balmer-Planet chain — the same {2,3,5,π} lattice at atomic (top, wavelengths in nm) and celestial (bottom, orbital periods and distances) scales. n=3: Mercury period = 28π d (5.0 ppm). n=4: Venus SMA × 4 = Hγ wavelength (43.8 ppm). n=5: Earth period = 15π⁴/4 d (0.6 ppm). n=6: Mars period = 18π² d (2.8 ppm). The master T-frequency λ_Hβ = 2 × 3⁵ = 486 nm anchors the entire chain.

Fig. 4



The π-inversion law at G1 (left, molecular/atomic scale, picometres) and G2 (right, celestial/orbital scale, megakilometres). At both registers: a pure {2,3,5} G-register address (no π) corresponds to a quantity that carries π when it describes the orbital or spectral average. Left: Lyman limit (912 Å, pure {2,3,5}) → Ly-α (912 × 4/3, pure {2,3}). Right: Mercury perihelion (1152/25 Mkm, pure {2,3,5}) → SMA (9216π/125 Mkm, carries π). The same inversion law operates across nine orders of magnitude — the defining signature of T-field scale invariance.