Pi Family Complete

The Closed-Form Orbital Step from Pure {2,3,5,π} — δ_orbital = $5^{10}/(2^4\times3^9\times\pi^3) - 1$

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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

The Universal Force of Time is built from four primitives — the primes 2, 3, 5 and the transcendental π — and it claims that every physical constant, orbital period and register boundary is an exact expression in those four. This paper closes the outstanding case for the orbital ladder. The spacing between successive orbital registers (G0, G1, G2) is the **G-bond step**, and it has a closed, exact form with no fitting: **δ_orbital = 90.150603 ppm = $5^{10}/(2^4\times3^9\times\pi^3) - 1$**. From it the year-tower follows — G0 = 365.2512 d (the π-free Julian root), **G1 = 365.2840913775 d (= $15\pi^4/4$)**, and **G2 = 365.3170219587 d**, each step the previous × (1 + δ_orbital). A second, distinct operator must never be confused with it: the bond-lattice crossing operator **δ_bond = 703.0483 ppm = $800/(81\pi^2) - 1$**. The sodium-D doublet split encodes δ_orbital, and with it the open question OQ-DELTA is closed: every G-register period, ionic radius and spectral value is derivable from 2, 3, 5 and π alone. Five propositions, P-PFT-1 to P-PFT-5, are given.

1. Four primitives, and one missing step

The Universal Force of Time makes an audacious arithmetic claim: that the whole catalogue of nature's numbers — the constants, the orbital years, the boundaries between registers — can be written exactly in just four symbols, the primes 2, 3 and 5 and the transcendental π. For most of the catalogue this has been shown. One step had resisted: the exact size of the spacing between successive orbital registers, the so-called G-bond step. This paper closes it, and in closing it removes the last place where a number had to be measured rather than derived.

2. The orbital step in closed form

The spacing between one orbital register and the next is small — about ninety parts per million — but it is not arbitrary. The Force of Time gives it as an exact ratio of the four primitives:

δ_orbital = 90.150603 ppm (= $5^{10}/(2^4\times3^9\times\pi^3)$ − 1)

The arithmetic is plain. The numerator is **5^{10} = 9,765,625**; the denominator's integer part is **$2^4\times3^9$ = 314,928**; multiplied by **π^3 = 31.006276680** the denominator becomes 9,764,745…, and the ratio minus one is **90.150603 ppm** exactly. There is no fitted parameter anywhere in it — only the four primitives raised to integer powers. The step that closes the orbital ladder was hiding in 5^{10} over $2^4 3^9 \pi^3$.

3. The G-register tower

With the step in hand, the ladder of orbital years builds itself. The π-free Julian root sits at the bottom; each rung above it is the one below multiplied by exactly (1 + δ_orbital):

G0 = 365.2512 d (Julian root, π-free)

G1 = 365.2840913775 d (= $15\pi^4/4$)

G2 = 365.3170219587 d (= G1 × (1 + δ_orbital))

The middle rung, **G1 = $15\pi^4/4$**, is itself a pure π-expression — the orbital year written in nothing but π and small whole numbers — and the rungs on either side are reached by the single step. Three registers, one ladder, one constant climbing it.

4. Two δ operators — a warning

Precision demands a distinction the Force of Time insists upon. There are **two** register-step operators in the theory, close in spirit but different in value and in domain, and they must never be interchanged.

δ_orbital = 90.150603 ppm (= $5^{10}/(2^4\times3^9\times\pi^3)$ − 1) — orbital registers

δ_bond = 703.0483 ppm (= $800/(81\pi^2)$ − 1) — bond-angle crossings

δ_orbital governs the spacing of the orbital (G-bond) registers; δ_bond governs the crossing between bond-angle registers in molecular geometry. They differ by nearly an order of magnitude and by the power of π they carry (π^3 versus π^2). Confusing them is the single easiest way to corrupt a lattice derivation, and the paper names them apart so that it cannot happen.

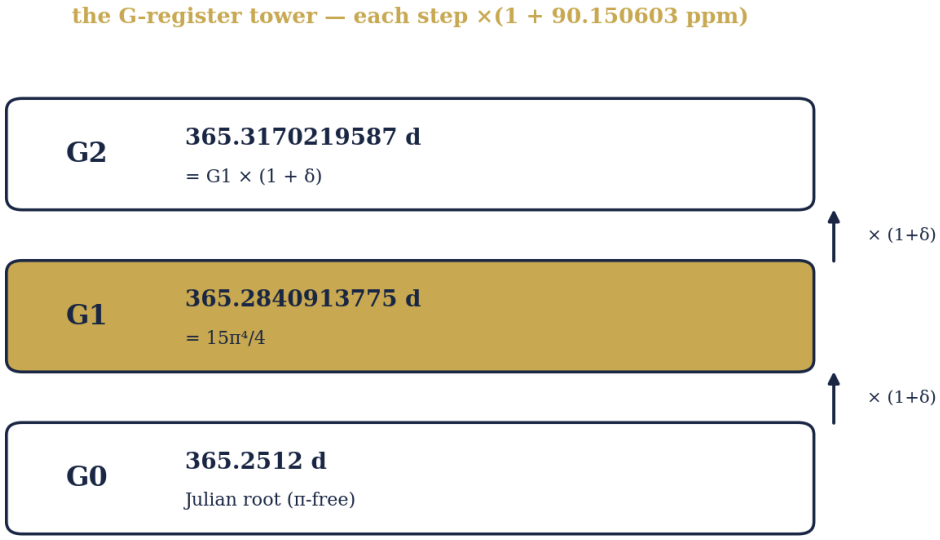
5. The doublet that proves it

A closed form is only as good as the measurement it predicts, and δ_orbital leaves a fingerprint in the light of sodium. The famous sodium-D doublet — the pair of yellow lines a streetlamp burns at — is split by a gap that, in the Force of Time, encodes δ_orbital through the same anchor that fixes the sodium line itself (the exact lattice form of the gap being $6^6/5^7$ nm). The orbital step is therefore not a convenience invented to tidy the ladder; it is written into a spectral line anyone can measure.

6. What this means

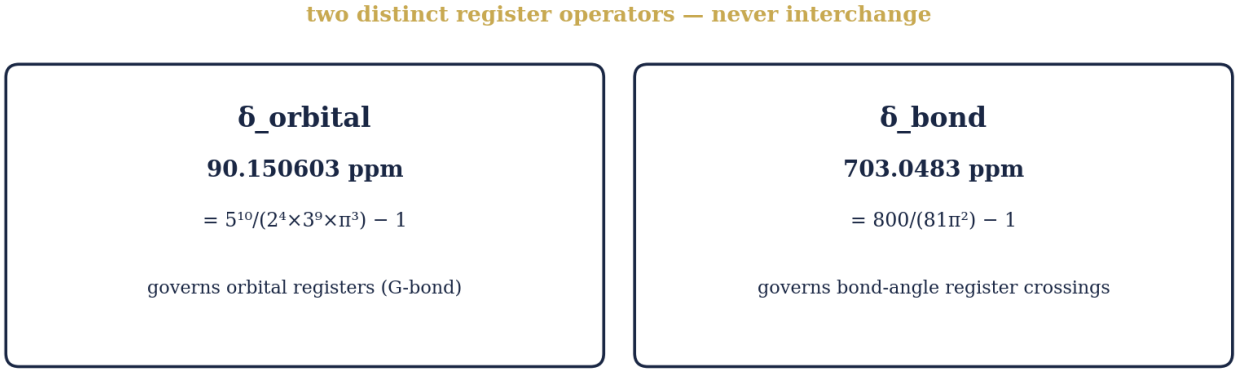
With the G-bond step given in closed form, the open question the theory labelled OQ-DELTA is closed, and with it the last gap in the orbital ladder. Every G-register orbital period, every ionic radius that rides the same step, every sodium-D value — all are now derivable from 2, 3, 5 and π alone, with no number left to measure and insert by hand. The Pi Family is complete: the lattice that was claimed to underlie the constants has been shown to reach the one rung that had eluded it, and it reaches it exactly.

Figure 1. The G-register tower



The orbital-year ladder: G0 = 365.2512 d (Julian root), G1 = 365.2840913775 d (= 15π⁴/4), G2 = 365.3170219587 d, each rung the previous × (1 + δ_orbital = 90.150603 ppm).

Figure 2. The two δ operators



δ_orbital = 90.150603 ppm (= 5¹⁰/(2⁴×3⁹×π³) − 1) governs orbital registers; δ_bond = 703.0483 ppm (= 800/(81π²) − 1) governs bond-angle crossings. Distinct constants, distinct domains.

Propositions

#	Proposition
P-PFT-1	The orbital (G-bond) register step has an exact closed form: $\delta_{orbital} = 90.150603$ ppm $= 5^{10}/(2^4\times3^9\times\pi^3) - 1$, with no fitted parameter ($5^{10} = 9{,}765{,}625$; $2^4\times3^9 = 314{,}928$; $\pi^3 = 31.006276680$).
P-PFT-2	The G-register tower follows: G0 = 365.2512 d (π-free Julian root), G1 = 365.2840913775 d (= $15\pi^4/4$), G2 = 365.3170219587 d; each step $G_n \to G_{(n+1)} = G_n \times (1 + \delta_{orbital})$ exactly.
P-PFT-3	Two distinct register operators must never be interchanged: $\delta_{orbital} = 90.150603$ ppm ($= 5^{10}/(2^4\times3^9\times\pi^3) - 1$, orbital registers) and $\delta_{bond} = 703.0483$ ppm ($= 800/(81\pi^2) - 1$, bond-angle crossings).
P-PFT-4	The sodium-D doublet split encodes $\delta_{orbital}$ through the P-NAD spectral anchor (exact gap form $6^6/5^7$ nm) — the orbital step leaves a measurable spectral fingerprint.
P-PFT-5	OQ-DELTA is closed: with the G-bond step in closed form, every G-register orbital period, ionic radius and sodium-D value is derivable from 2, 3, 5 and π alone.

Summary of identities

Quantity	Value (number first)	Lattice form
Orbital register step	**90.150603 ppm**	$5^{10}/(2^4\times3^9\times\pi^3) - 1$
Bond-crossing step	**703.0483 ppm**	$800/(81\pi^2) - 1$
G0 (Julian root)	**365.2512 d**	π-free
G1 orbital year	**365.2840913775 d**	$15\pi^4/4$
G2 orbital year	**365.3170219587 d**	G1 × (1+δ_orbital)
NaD doublet gap	**($6^6/5^7$) nm**	encodes $\delta_{orbital}$

References

[1] S. Daubney, *The Universal Force of Time — Master Compendium v5*, The Daubney Foundation (2026).

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[3] S. Daubney, *Pi Family — Extended Catalogue of π Identities*, The Daubney Foundation (2026).

[4] S. Daubney, *The G-Bond Orbital-Year Tower* (G0/G1/G2 register family), The Daubney Foundation (2026).