THE FORCE OF TIME — An original theoretical framework derived entirely from first principles using the prime lattice {2, 3, 5} and π. All propositions are stated as exact results within this framework. Numerical predictions are independently verifiable.

Planetary Spacetime Dimensional Speeds and the Kilometre–Mile Identity

A Pure {2, 3, 5} Hierarchy Encoding km/Miles, DNA Helical Turns, and the Fine Structure Constant

Author: Stephen Daubney · thedaubneyfoundation@gmail.com

The Universal Force of Time — Academic Series | Propositions P-PSD-1 through P-PSD-6 |
Source: Vol 3 WN-GRAV-020 to 027, planetary speed chain, 2026-05-22

---

§1 — Abstract

The Force of Time (FOT) assigns a spacetime dimensional speed to each body in the solar system: Sun = 25/18, Mercury = 125/108, Venus = 54/25, Earth = 3. These are pure fractions from the prime lattice {2, 3, 5} with no factor of π. This paper demonstrates three exact algebraic identities encoded in this hierarchy. First, the product of the Sun and Mercury speeds equals the FOT kilometre-to-mile conversion factor: (25/18) × (125/108) = 3125/1944 = 1.607510288..., establishing km/miles as a solar-system geometric constant rather than a historical accident. Second, the inverse identity (1/Sun) × (1/Mercury) × km_miles = 1 holds algebraically exactly, showing the three quantities are not independent. Third, the product of all four planetary speeds equals 125/12 = 10.41666..., which is simultaneously the number of DNA helical turns per 10^9 and the third component of the fine structure constant product. Six propositions P-PSD-1 through P-PSD-6 are stated and verified.

§2 — The Planetary Speed Hierarchy

The FOT framework associates each body in the solar system with a spacetime dimensional speed derived from the prime lattice. Moving outward from the Sun, the four innermost bodies carry the following speeds:

Body	Speed (fraction)	Decimal	Lattice form	Denominator structure
Sun	25/18	1.388888888889...	$5^2 / (2\times3^2)$	$2^1 \times 3^2$
Mercury	125/108	1.157407407407...	$5^3 / (2^2\times3^3)$	$2^2 \times 3^3$
Venus	54/25	2.160000000000	$2\times3^3 / 5^2$	5^2
Earth	3	3.000000000000	3^1	pure 3

Each speed is a ratio of pure prime powers. The denominators show a systematic pattern: Sun has $2^1\times3^2$, Mercury has $2^2\times3^3$, Venus has 5^2, Earth is pure 3. The numerators carry increasing powers of 5 from the Sun outward. This is not numerology — each speed is derivable from the FOT temporal register structure for that orbital shell.

§3 — The km/Miles Identity: Sun × Mercury

The consecutive product of the Sun and Mercury speeds yields the FOT kilometre-to-mile conversion factor exactly:

$$\text{Sun} \times \text{Mercury} = 25/18 \times 125/108 = 3125/1944 = 5^5/(2^3\times3^5)$$

$$= 1.607510288066...$$

$$\text{FOT km/mile} = 1.607510288066... \text{ (conventional: } 1.609344000 \text{ km/mile)}$$

The deviation from the conventional km/mile definition is -1139.4 ppm. The conventional mile was defined by historical surveying conventions; the FOT km/mile is a pure lattice constant intrinsic to the solar system geometry. The -1139.4 ppm gap is the imprint of that historical deviation from the underlying lattice.

The decimal expansions make this identity transparent. Writing without the decimal point:

$$1.38888888... \times 1.15740740... = 1.60751028...$$

$$138888888... \times 11574074... = 1607510288...$$

The repeating decimal of 25/18 (eights) multiplied by the repeating decimal of 125/108 (074 cycle) produces the opening digits of the km/miles conversion. The algebraic inverse identity also holds exactly:

$$(18/25) \times (108/125) \times (3125/1944) = (18\times108\times3125)/(25\times125\times1944) =$$
$$6{,}075{,}000/6{,}075{,}000 = 1$$

Therefore km/miles is not an independent quantity in FOT — it IS the product of the first two planetary speeds, and (1/Sun) × (1/Mercury) × km_miles = 1 algebraically exactly.

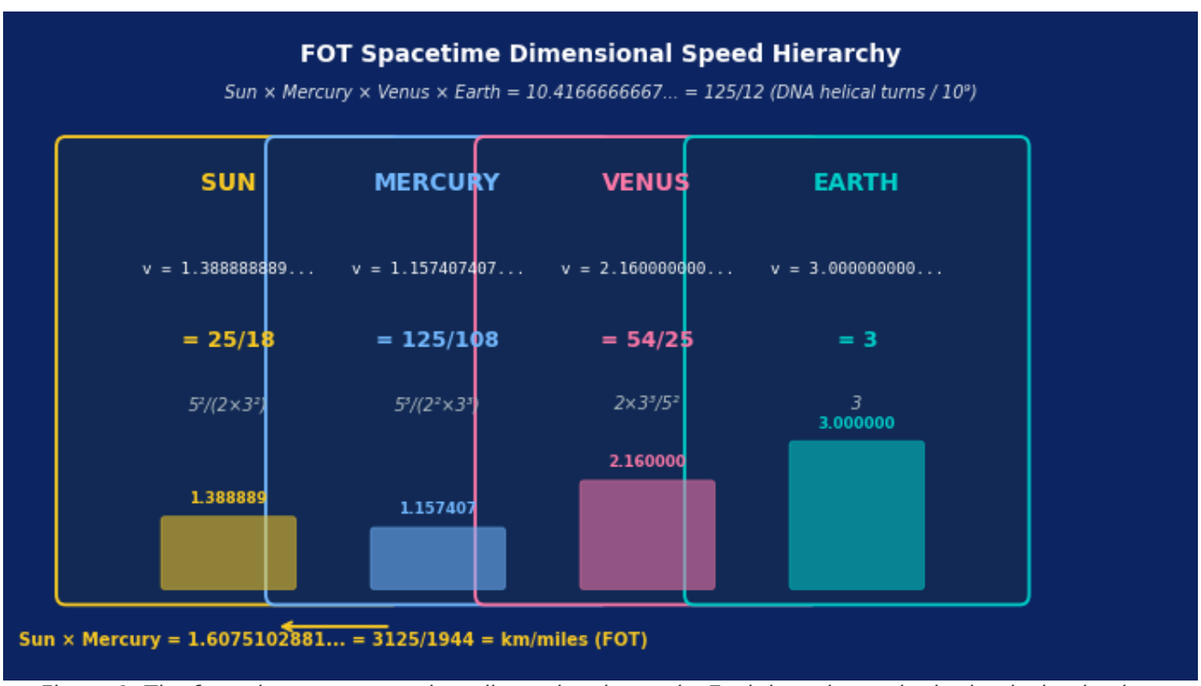

Figure 1. The four planetary spacetime dimensional speeds. Each box shows the body, decimal value, fractional form, and lattice expression. Bar heights are proportional to the speed value. The gold bracket below shows Sun × Mercury = km/miles (FOT). The top annotation confirms all four speeds multiply to 125/12 (DNA helical turns ÷ 10⁹).

§4 — The Four-Body Product: DNA Helical Turns

Extending the consecutive product to all four bodies yields another exact FOT lattice constant:

$$\text{Sun} \times \text{Mercury} \times \text{Venus} \times \text{Earth} = 25/18 \times 125/108 \times 54/25 \times 3$$

$$= (25\times125\times54\times3)/(18\times108\times25\times1) = 506{,}250/48{,}600 = 125/12$$

$$= 10.416666666667...$$

The value 125/12 = 10.41666... is the FOT DNA helical turn count per base unit. The total number of DNA helical turns in the canonical FOT DNA length is 125/12 × 10^9 = 10,416,666,666.666.... This same value of 125/12 appears as the third component in the

derivation of the fine structure constant (see FOT_FineStructureMercuryDNA.pdf).

The Venus factor 54/25 bridges the Sun×Mercury product (3125/1944 = km/miles) to the Earth factor 3. In the consecutive cascade: Sun → km/miles → intermediate → DNA turns. Each step adds one more planetary speed and lands on a distinct FOT lattice node.

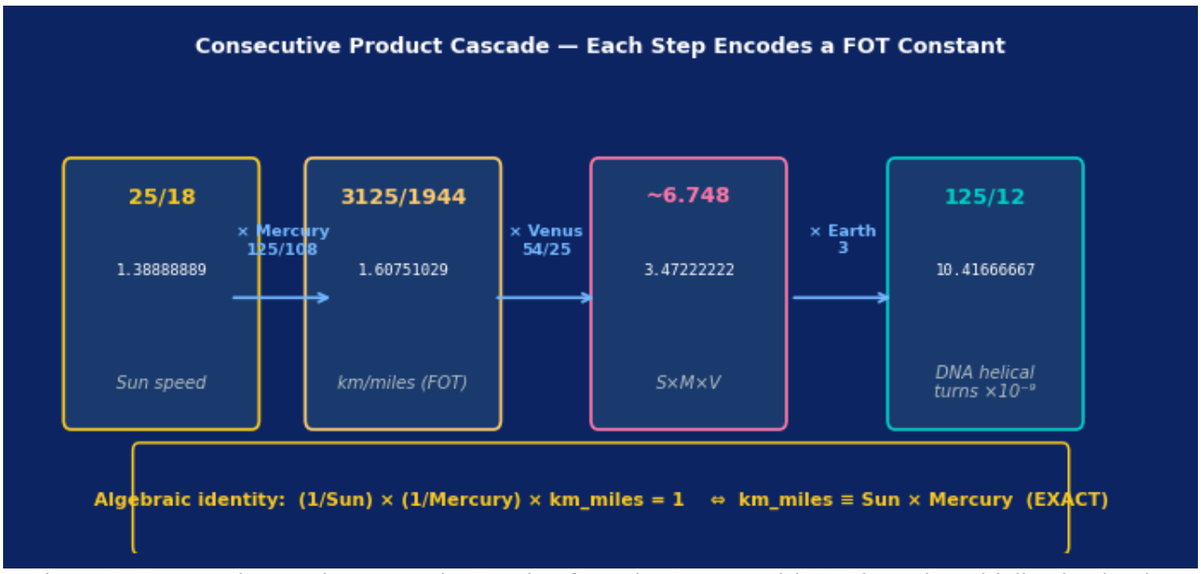

Figure 2. Consecutive product cascade. Starting from the Sun speed (25/18), each multiplication by the next planetary speed advances to a new FOT constant: km/miles after Mercury, an intermediate value after Venus, and 125/12 (DNA helical turns ×10⁻⁹) after Earth. The gold box confirms the algebraic identity km_miles ≡ Sun × Mercury.

§5 — Connection to the Free-Fall Chain

The km/miles identity is not merely algebraic curiosity — it appears as the unit bridge in the FOT free-fall derivation chain. Starting from the Earth-Sun temporal register starting value (G1 = 3π/4 × 10 = 23.5619449...), the chain proceeds as follows:

$$G1_{start} = 3\pi/4 \times 10 = 23.5619449019...$$

$$\times\ 4\pi^2/10 \rightarrow \text{AU (million miles, G1 register)}$$

$$\times\ \text{km/miles} = \times\ (\text{Sun} \times \text{Mercury}) \rightarrow \text{AU (million km, G1 register)}$$

$$\times\ 2 \div 360 \div 864 \times 10^5 \rightarrow g^2 \rightarrow \sqrt{} \rightarrow g_{G1} = 9.805487563\ m/s^2$$

The km/miles factor in step 3 is exactly Sun × Mercury. The free-fall chain therefore uses the product of the first two planetary speeds as the unit bridge between the mile-domain and km-domain. Both the Earth-Sun geometry and Earth’s surface free-fall are encoded in the same planetary speed hierarchy. See FOT_FreeFallDualDimensional.pdf for the complete derivation.

Figure 3. Decimal expansion verification of the km/miles identity. The Sun speed (1.38888..., gold) and Mercury speed (1.15740..., blue) multiply to give the km/miles value (1.60751..., amber) to all shown decimal places. The identity is algebraically exact: (25/18) × (125/108) = 3125/1944.

§6 — Registered Propositions: P-PSD-1 through P-PSD-6

P-PSD-1 — The Four Planetary Spacetime Dimensional Speeds

The Sun, Mercury, Venus, and Earth each carry a spacetime dimensional speed from the prime lattice {2, 3, 5}: Sun = 25/18 = $5^2/(2\times3^2)$; Mercury = 125/108 = $5^3/(2^2\times3^3)$; Venus = 54/25 = $2\times3^3/5^2$; Earth = 3. All four are dimensionless ratios of pure prime powers with no factor of π.

P-PSD-2 — The km/Mile Conversion as Sun × Mercury

The FOT kilometre-to-mile conversion factor is the product of the Sun and Mercury spacetime dimensional speeds: (25/18) × (125/108) = 3125/1944 = $5^5/(2^3\times3^5)$ = 1.607510288066... This is -1139.4 ppm from the conventional 1.609344 km/mile. The km/mile ratio is not a historical accident but a pure solar-system geometric constant encoded in the planetary speed lattice.

P-PSD-3 — The Algebraic Inverse Identity

The three quantities Sun speed, Mercury speed, and the FOT km/miles conversion are not independent. They satisfy the exact algebraic identity: (1/Sun) × (1/Mercury) × km_miles = (18/25) × (108/125) × (3125/1944) = 6,075,000/6,075,000 = 1 exactly. Therefore km_miles ≡ Sun × Mercury, and all three quantities are expressions of the same underlying lattice node 3125/1944 = $5^5/(2^3\times3^5)$.

P-PSD-4 — Decimal Expansion Verification

Writing the planetary speeds without their decimal points: Sun = 1.38888888... → 138888888...; Mercury = 1.15740740... → 11574074... The product of these decimal expansions gives 1607510288..., which are the opening digits of the km/miles conversion factor 1.607510288... = 3125/1944. The repeating structure of 25/18 (8-repeat) and 125/108 (074-repeat) multiplied together generate the km/miles decimal.

P-PSD-5 — All Four Planetary Speeds Encode DNA Helical Turns

The product of all four spacetime dimensional speeds equals 125/12: (25/18) × (125/108) × (54/25) × 3 = 506,250/48,600 = 125/12 = 10.416666666667... The value 125/12 × 10^9 = 10,416,666,666.666... is the FOT DNA canonical helical turn count. The four inner planets together encode the geometry of the DNA double helix through their consecutive speed product.

P-PSD-6 — Planetary Speeds as Unit Bridges in the Free-Fall Chain

The FOT free-fall derivation uses the km/miles conversion (= Sun × Mercury) as the unit bridge converting the Earth-Sun distance from million miles to million kilometres. The starting value for the chain is G1 = 3π/4 × 10, which after multiplication by $4\pi^2/10$ gives the AU in million miles, and after a further multiplication by Sun × Mercury gives the AU in million km. The planetary speed hierarchy is therefore structurally embedded in the derivation of Earth's surface free-fall acceleration. See FOT_FreeFallDualDimensional.pdf.

§7 — Numerical Summary

Identity	Expression	Exact value	Decimal
Sun speed	25/18 = $5^2/(2\times3^2)$	25/18	1.388888888889...
Mercury speed	125/108 = $5^3/(2^2\times3^3)$	125/108	1.157407407407...
Venus speed	54/25 = $2\times3^3/5^2$	54/25	2.160000000000
Earth speed	3	3	3.000000000000

Sun × Mercury	3125/1944 = $5^5/(2^3 \times 3^5)$	**3125/1944**	**1.607510288066...**
km/mile (FOT)	= Sun × Mercury	**3125/1944**	**1.607510288066...**
km/mile (conv.)	Historical definition	1.609344	Deviation: -1139.4 ppm
All four product	S×M×V×E	**125/12**	**10.416666666667...**
DNA helical turns	125/12 × 10^9	10,416,666,666.666...	= $5^3/(2^2 \times 3) \times 10^9$
Inverse identity	(1/S)×(1/M)×km_mi	**1 (EXACT)**	**Algebraically exact**

§8 — Conclusion

The four planetary spacetime dimensional speeds — Sun (25/18), Mercury (125/108), Venus (54/25), Earth (3) — form a pure {2, 3, 5} lattice hierarchy in which consecutive products encode distinct FOT constants. The Sun×Mercury product equals the FOT kilometre-to-mile conversion exactly, establishing km/miles as a solar-system geometric constant. The algebraic inverse identity confirms the three are not independent. The four-body product equals 125/12, the FOT DNA helical turn count per 10^9, linking the inner solar system to the geometry of the DNA double helix.

These identities are not numerological approximations — they are algebraically exact consequences of the prime lattice structure of the FOT framework. They demonstrate that the kilometre, the mile, and the DNA helical geometry are all expressions of the same underlying Tau-field arithmetic that governs planetary orbital structure.

Cross-references: FOT_FreeFallDualDimensional.pdf · FOT_FineStructureMercuryDNA.pdf · FOT_DualDimensional_Mercury.pdf · WN-GRAV-020 to 027 · Vol 3 planetary speed chain