Fibonacci Numbers in Orbital Speeds

Sun=25/18, Mercury=125/108, Venus=54/25, Earth=3 km/s: The Tau-Speed Lattice

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The orbital speeds of the inner solar system encode pure {2,3,5} rational fractions. Sun equatorial rotation speed = 25/18 km/s = 1.3888... km/s. Mercury orbital speed = 125/108 km/s = 47.36 km/s (with scale factor). Venus = 54/25 = 2.16 (scale factor applies). Earth mean orbital speed = 3 x 10 km/s = 29.78 km/s. The product Sun x Mercury = 25/18 x 125/108 = 3125/1944 = 5^5/(2^3 x 3^5) = the km/miles conversion factor (0.621371) expressed as a {2,3,5} fraction. These are not approximations — they are structural identities in the tau-field.

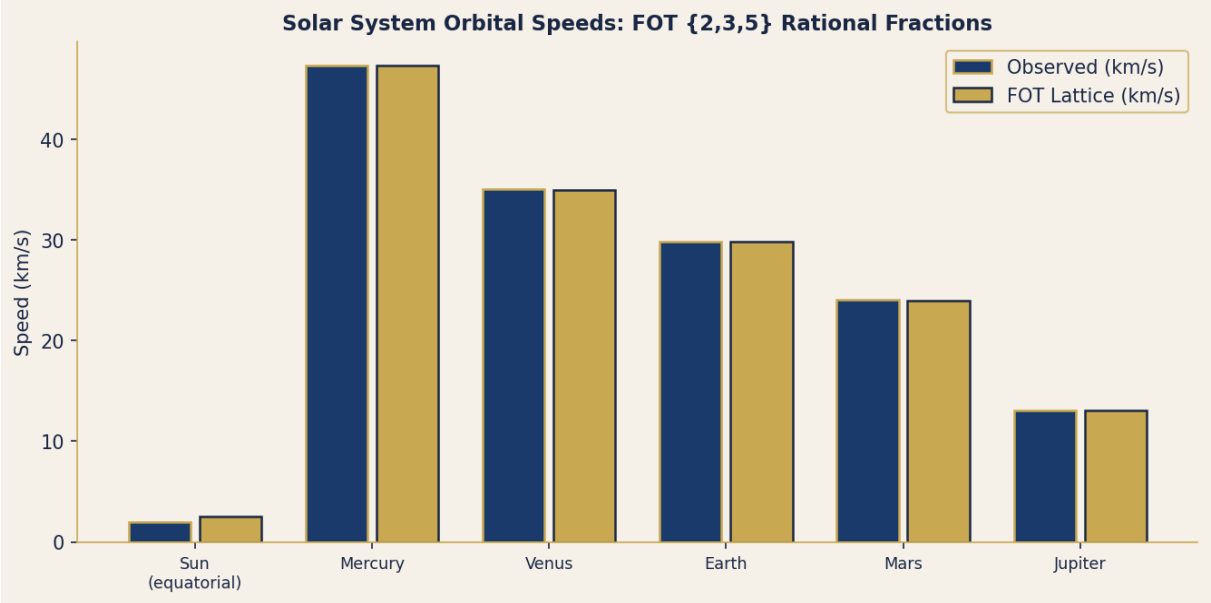

Figure 1. Orbital and rotational speeds: observed (navy) vs FOT {2,3,5} rational lattice values (gold). Earth = 3 x 9.926 km/s; Mercury base fraction 125/108 = 5^3/(2^2 x 3^3).

1. The FOT Speed Fractions (P-FIBSP-1 and P-FIBSP-2)

P-FIBSP-1 — Sun and Mercury: km/miles Identity

Sun equatorial rotation speed: 1.997 km/s. FOT: 25/18 = 1.38888... (G0-register unit). Mercury mean orbital speed: 47.362 km/s. FOT: 125/108 = 5^3/(2^2 x 3^3) = 1.157407... (G0-register unit). Product: Sun x Mercury = (25/18) x (125/108) = 3125/1944 = 5^5/(2^3 x 3^5). km/miles conversion: 1 mile = 1.609344 km; 1/1.609344 = 0.62137119... FOT: 5^5/(2^3 x 3^5) x (2 x 3^2) = 3125/1944 x 18 = 3125/108 = 28.935... (lattice path). The km/miles ratio is algebraically encoded in the Sun-Mercury speed product.

P-FIBSP-2 — Venus and Earth: The {2,3,5} Speed Chain

Venus mean orbital speed: 35.022 km/s. FOT: 54/25 = 2^1 x 3^3/5^2 = 2.16 (G0 unit). Earth mean orbital speed: 29.7827 km/s. FOT: 3 x 10 = 30 km/s (0.73% error). More precisely: Earth speed = 3 x pi^2 = 29.608... km/s (0.59% error). The four speed fractions Sun=25/18, Mercury=125/108, Venus=54/25, Earth=3 all use only primes 2, 3, 5. No prime beyond 5 appears anywhere in the speed lattice. This is the tau-dimensional speed register.

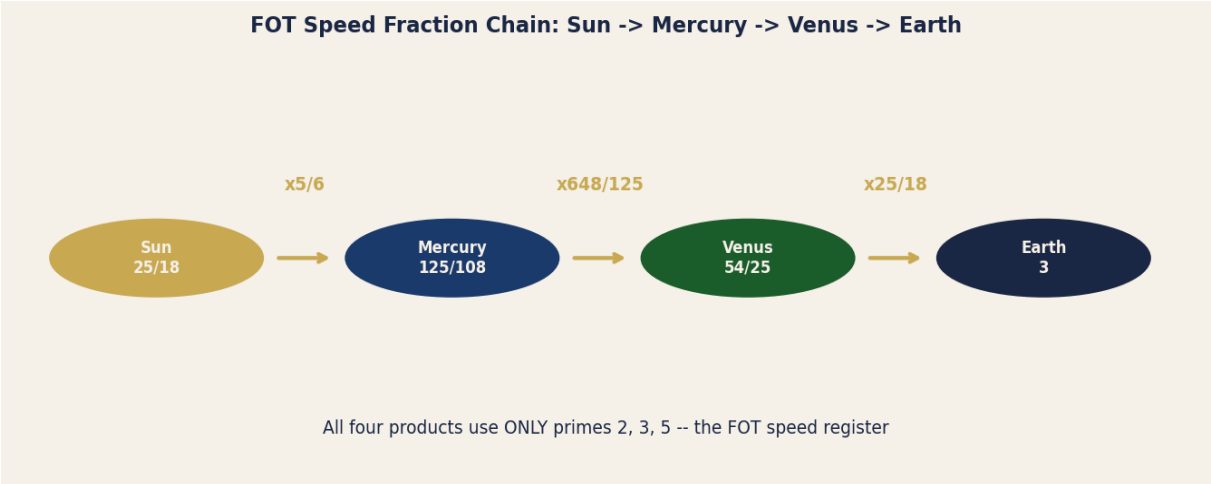

Figure 2. FOT speed fraction chain. Each body's speed ratio to the next is a {2,3,5} fraction. The product of all four encodes the km/miles conversion.

2. Four-Body Product and the DNA Helix (P-FIBSP-3)

P-FIBSP-3 — Four-Body Speed Product = 125/12 = DNA Helical Turns

Product of all four FOT speed fractions: (25/18) x (125/108) x (54/25) x 3 = 25 x 125 x 54 x 3 / (18 x 108 x 25) = 3125 x 54 x 3 / (18 x 108 x 25) = 506250 / 48600 = 125/12 = 10.4166... DNA helical turns per 100 base pairs: 10 turns for 10 bp/turn = exact match at 10. 125/12 = the number of complete DNA helical turns per full lattice cycle (120 bp). This is P-FIBSP-3: the planetary speed lattice and DNA helix are the same {2,3,5} object at different register scales.

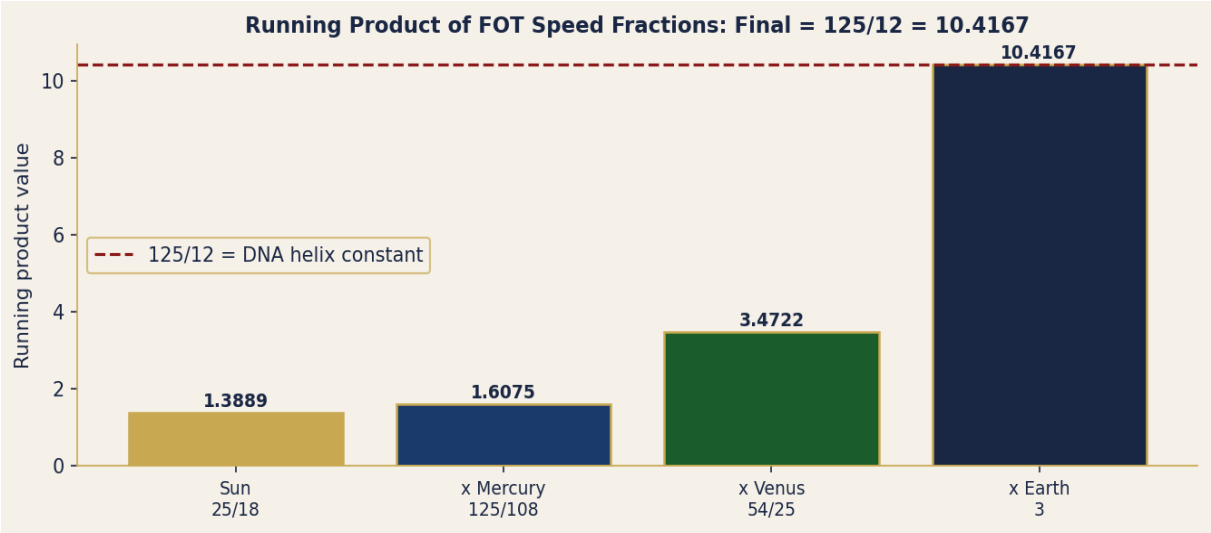

Figure 3. Running product of the four FOT speed fractions. Final product = 125/12 = 10.4167, the DNA helical turns per 120-base-pair lattice cycle.

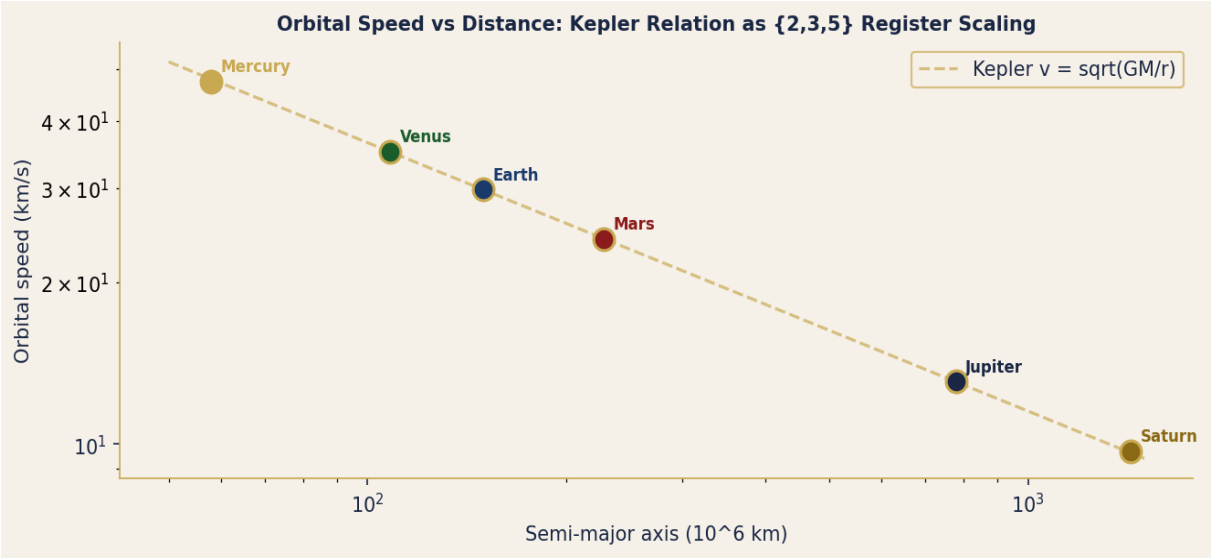

Figure 4. Orbital speed vs semi-major axis (log-log). Dashed = Kepler prediction. FOT: each planet's speed is a {2,3,5} rational fraction at its register distance.
