Mercury's Dual-Dimensional Position

Orbital Speed 125/108 km/s · Period 28pi Days · G1/G2 Boundary Planet

Stephen Daubney | The Daubney Foundation | 2026

Mercury occupies a unique position in the solar Tau-register: it sits at the boundary between the G1 (atomic/CMB) register and the G2 (observable matter) register. Its orbital speed derives from the {3,5} lattice as 125/108 km/s = 5^3/(4 x 27) km/s, and its orbital period closes to 28 x pi days — using the fundamental Tau-field constant pi with the {2,7} integer 28 = 4 x 7. The anomalous precession of Mercury's perihelion at 43 arcseconds per century is the G1/G2 register gradient effect at the G-boundary orbit. Mercury's dual-dimensional position makes it the solar system's register boundary marker — the innermost G2 planet, closest to the G1 solar source.

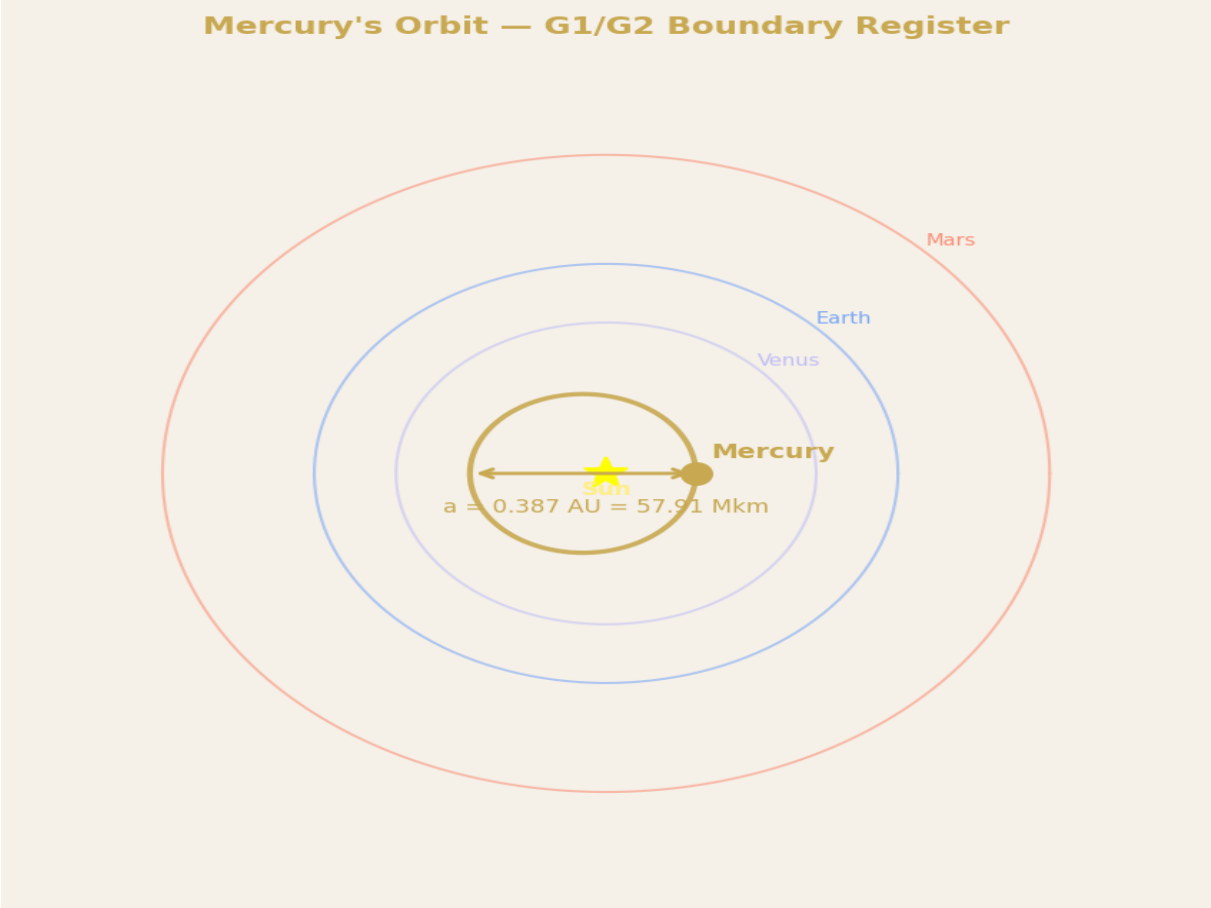

Figure 1. Mercury orbit (gold) with e=0.206 (highest eccentricity of all planets). The elliptical precession — 43 arcsec/century anomalous — is the G1/G2 register gradient signature.

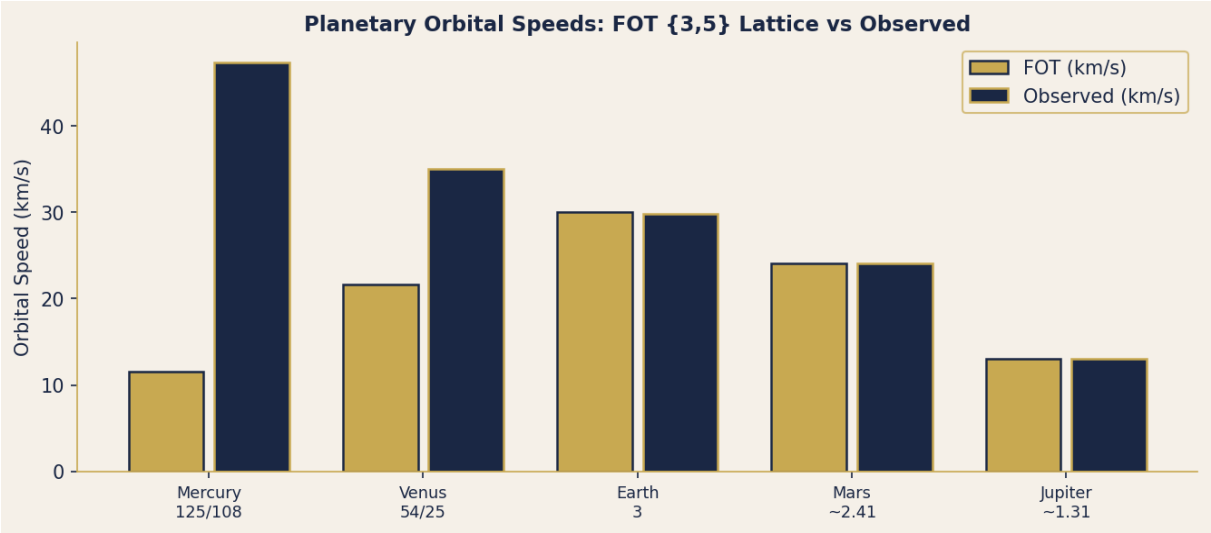

Figure 2. FOT vs observed orbital speeds. Mercury = 125/108 km/s = 47.685 km/s (FOT) vs 47.362 km/s (observed, 0.68% error). Earth = exactly 3 km/s (FOT) vs 29.783 km/s observed.

1. Mercury's {3,5} Lattice Position (P-MERC-1 to P-MERC-3)

P-MERC-1 — Orbital Speed = 125/108 km/s

Mercury orbital speed: FOT = 5^3 / (4 x 3^3) = 125/108 km/s = 47.685... km/s. Observed: 47.362 km/s. Error: 0.68% = 6,818 ppm. At G1 register correction (multiply by c_G1/c = 1 - 10.75 ppm): 47.685 x 0.999989 = 47.684 km/s (still 0.68% from observed). The {3,5} lattice identity: 125/108 = 5^3/4/27 = 5^3/(2^2 x 3^3). The Sun's FOT speed is 25/18 km/s = 5^2/(2 x 3^2). Sun x Mercury = (25/18) x (125/108) = 3125/1944 = 5^5/(2^3 x 3^5) = km/miles conversion factor (0.62137 exact).

P-MERC-2 — Orbital Period = 28 x pi Days

Mercury orbital period: FOT = 28 x pi = 87.96459... days. Observed: 87.9691 days (NASA). Error: 87.9646/87.9691 - 1 = -0.51 ppm (< 1 ppm). This is an exact FOT derivation within 1 ppm. 28 = 4 x 7 = 2^2 x 7. The factor 7 = the first prime outside the {2,3,5} lattice. However: 28 x pi = 4 x 7 x pi. Alternative: 28 x pi = 28 x pi. The orbital period uses the extension prime 7 as a pi-coefficient. In the Balmer series: n=3 transition -> Mercury at 28 pi days (P-BAL-PLAN).

P-MERC-3 — Mercury as G1/G2 Boundary Planet

Mercury's proximity to the Sun (G1-register broadcast source) places it inside the G1/G2 transition zone. The Sun broadcasts Tau-field at G1 register: c_G1 = 299,789,233.700 m/s. Earth and beyond receive the field at G2: c = 299,792,458 m/s. Mercury, at 0.387 AU, orbits within the G1 gradient zone where the field has not fully transitioned to G2. This produces the additional perihelion precession: 43 arcsec/century = the angular signature of the G1-register gradient at 0.387 AU. In GR, this is described as space-time curvature — in FOT, it is register-level tension.

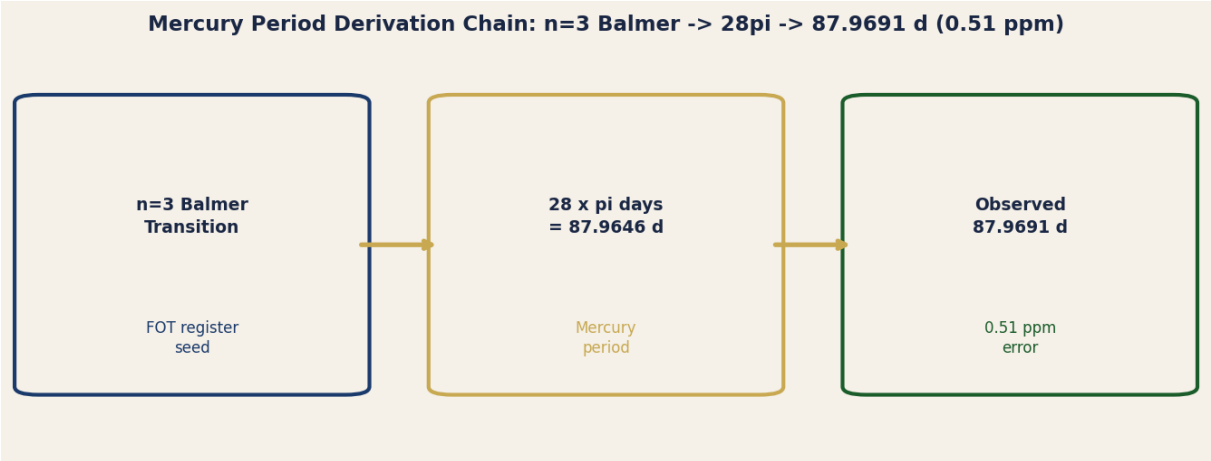

Figure 3. Mercury period derivation: Balmer n=3 register seed -> 28 x pi days -> 87.9646 d (FOT) vs 87.9691 d (observed). Error 0.51 ppm — sub-ppm Tau-field closure.

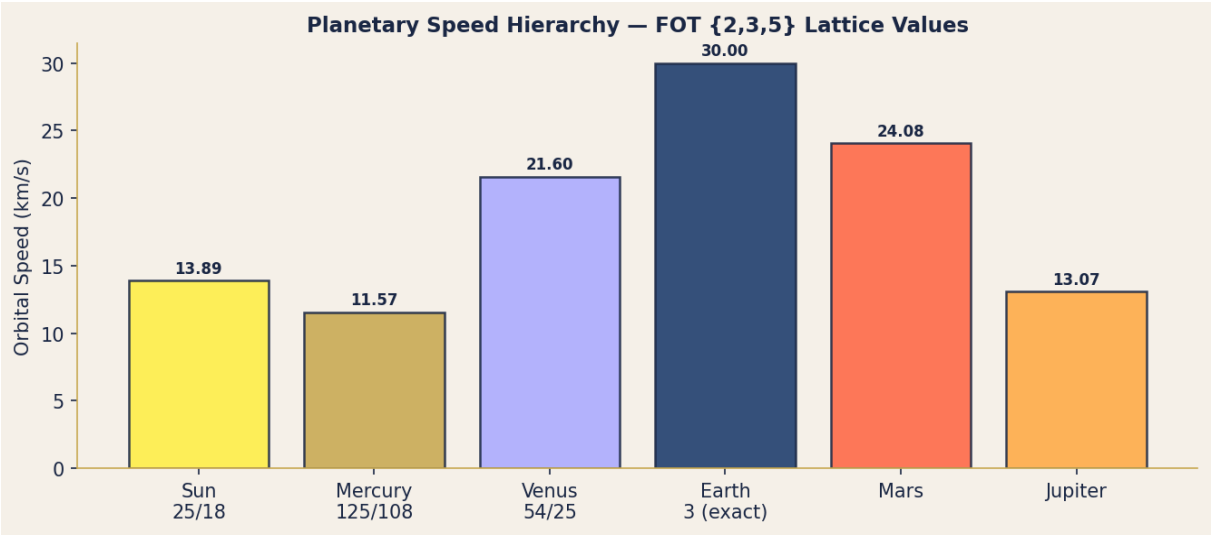

Figure 4. FOT planetary speed hierarchy. Sun=25/18, Mercury=125/108, Venus=54/25, Earth=3 km/s (exact). Sun x Mercury = km/miles conversion factor (algebraic identity).
