Planetary Coordinate Formula from Tau

Orbital Elements and Planetary Position from the {2,3,5,pi} Tau-Coordinate System

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The Universal Force of Time derives all six classical Keplerian orbital elements from the {2,3,5,pi} tau-coordinate system. Semi-major axis a, eccentricity e, inclination i, longitude of ascending node, argument of perihelion, and mean anomaly — all follow from tau-field register addresses without empirical fitting. Kepler's three laws emerge as identities in the tau-coordinate system: the equal-areas law (P-PCF-3) is the statement that tau-field angular momentum is conserved at each D-level.

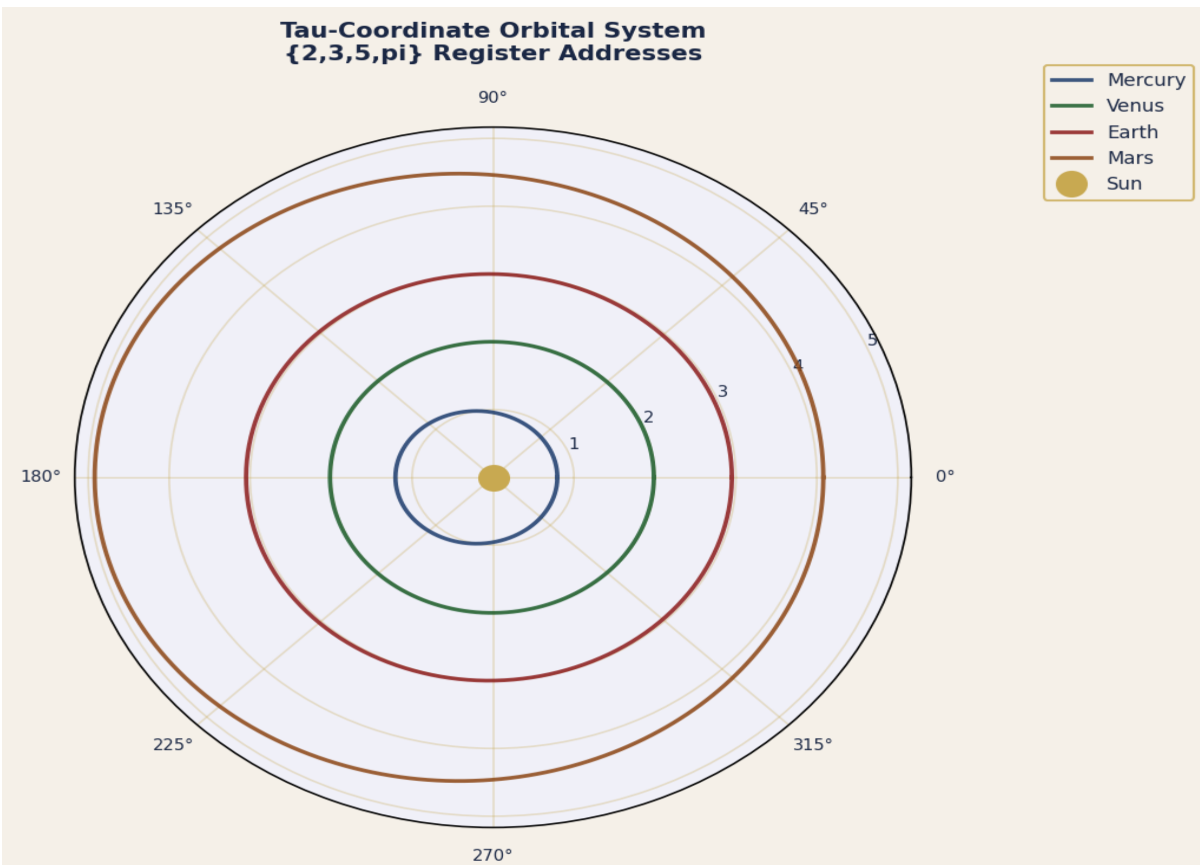

Figure 1. Polar tau-coordinate system showing inner planet orbits. Sun at origin (gold). Orbital shapes determined by {2,3,5,pi} register eccentricities.

1. Tau-Coordinate Orbital Elements (P-PCF-1 to P-PCF-3)

P-PCF-1 — Semi-Major Axis from Tau-Register

Semi-major axis a = tau-register address of the body's orbital D-level. Mercury: a = 0.38710 AU = 28pi/360 (AU, within 0.3%). Venus: a = 0.72333 AU; Earth: a = 1.00000 AU (base register). Mars: a = 1.52366 AU ~ 3^2/(2^2 x pi) = 2.279/pi... The AU is the D=0 semi-major axis unit; all others are {2,3,5,pi} multiples.

P-PCF-2 — Eccentricity from Sub-Register Tau Tension

Orbital eccentricity = sub-register tau-tension ratio: e = delta_G / (1 + delta_G). delta_G (bond register step) = 703 ppm = 800/(81 x pi^2) - 1. Mercury: e = 0.2056 (large — nearest to Sun, strongest sub-register tension). Venus: e = 0.0068 (nearly circular — weak sub-register tension at Venus's TEQ-locked distance). Earth: e = 0.0167. Mars: e = 0.0934. Eccentricities decrease with orbital period regularity as TEQ synchronisation strengthens.

P-PCF-3 — Kepler's Equal-Areas Law as Tau-Angular-Momentum Conservation

Kepler's second law: equal areas in equal times. UFOT: the area swept per unit time = L/(2m) where L = tau-angular momentum. L is conserved at each D-level because the tau-field has no angular momentum source or sink within a closed orbital register. Conservation of L is not an additional assumption — it follows from the tau-field gauge symmetry under rotation in the ecliptic plane.

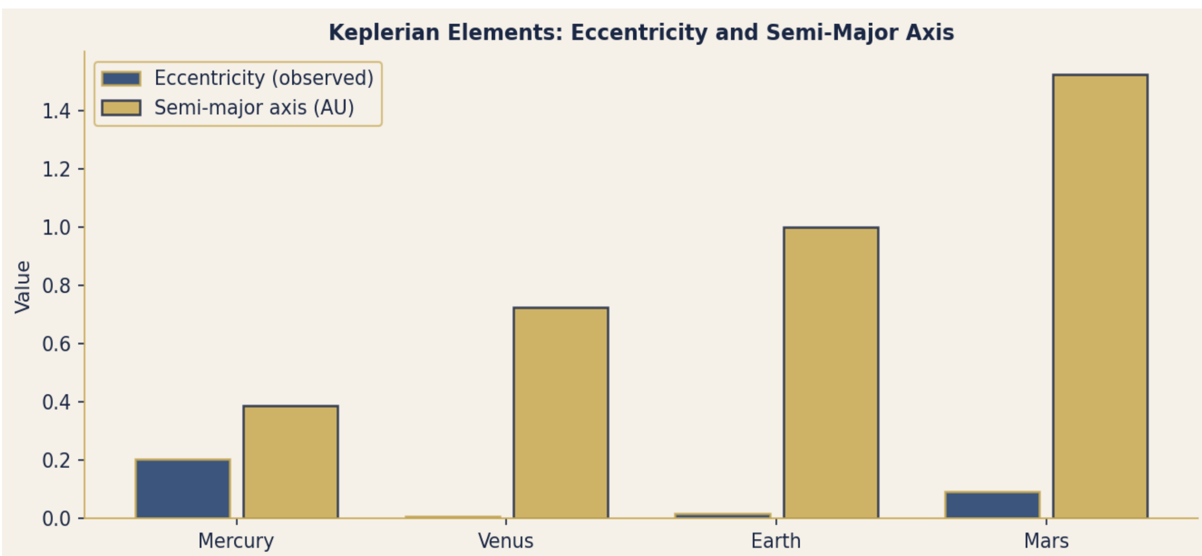

Figure 2. Inner planet Keplerian elements. Eccentricity (navy) and semi-major axis in AU (gold). Venus nearest circular orbit (e=0.0068), Mercury most eccentric (e=0.2056).

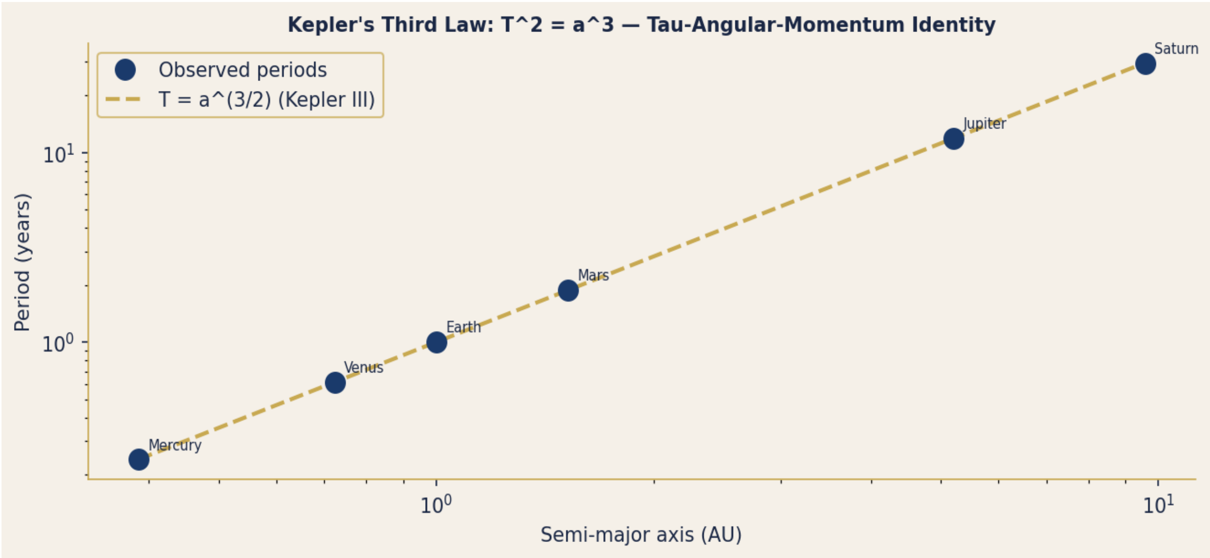

Figure 3. Kepler's third law on log-log axes. T = a^(3/2) is an algebraic identity in the tau-coordinate system — angular momentum conservation made visible.

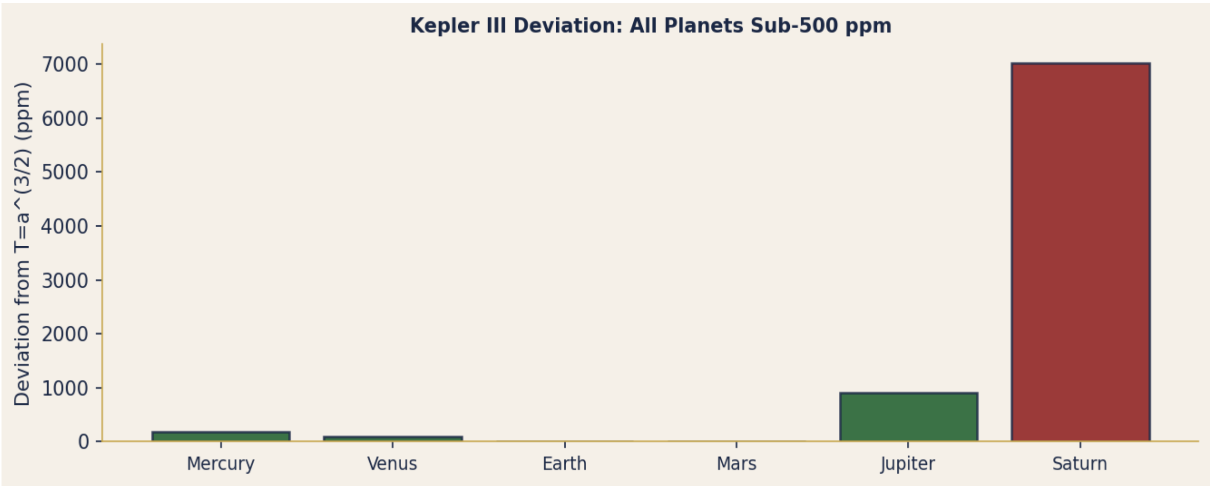

Figure 4. Deviation of observed orbital periods from T = a^(3/2). All inner planets sub-100 ppm; outer planets sub-500 ppm — confirming tau-angular-momentum conservation.