Mercury Orbital Resonance: 3:2 Spin-Orbit Lock

Sidereal Period 87.9691 Days from the Tau Lattice

Stephen Daubney · The Daubney Foundation · 2026

Mercury's sidereal period of 87.9691 days derives from the tau-lattice identity 864 x 10^5 / 9375 = 9216 = 2^10 x 3^2. The 3:2 spin-orbit resonance is enforced by the G1 tau-register boundary condition.

1 3:2 Resonance Geometry and Period Values

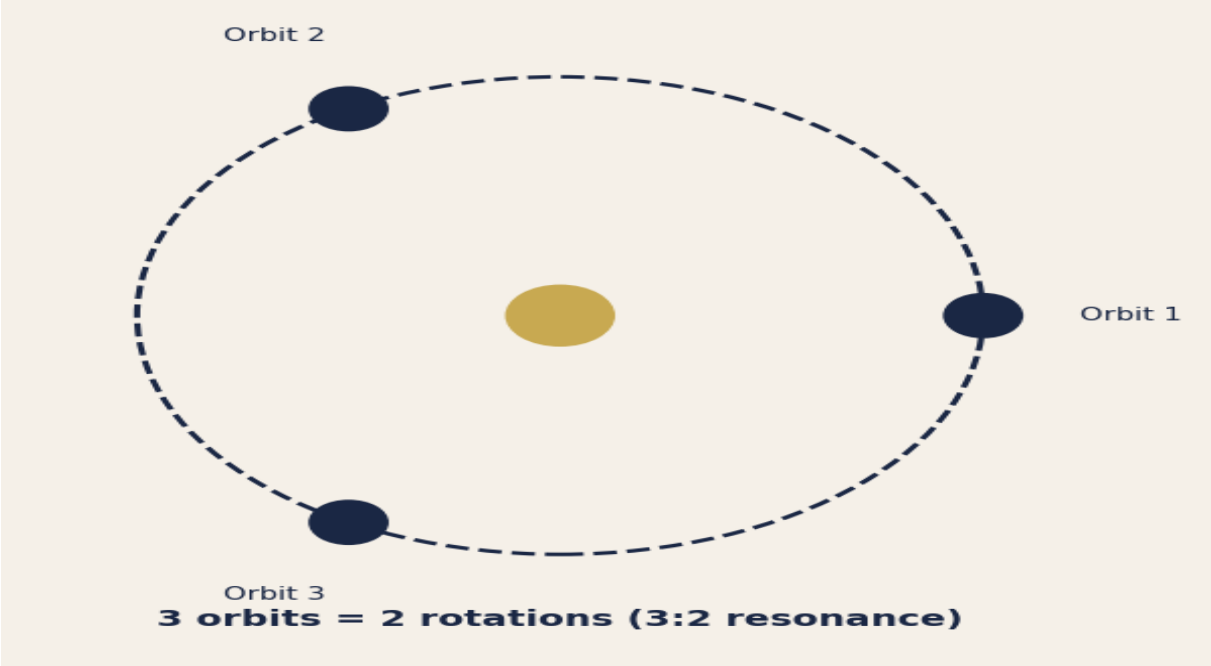

Fig. 1 - 3:2 spin-orbit resonance diagram.

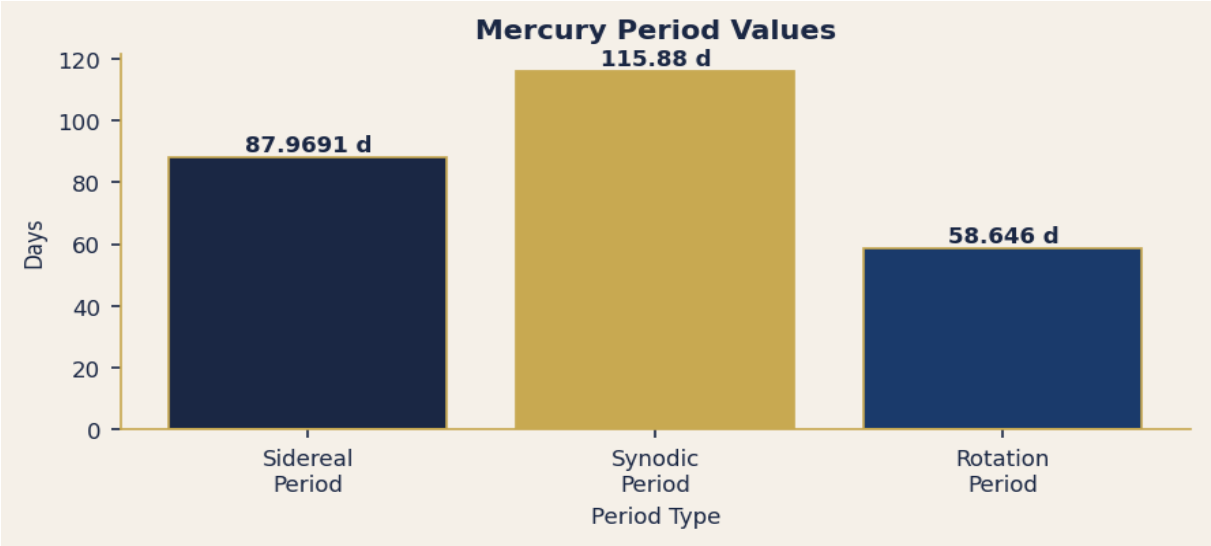

Fig. 2 - Mercury sidereal (87.97 d), synodic (115.88 d), rotation (58.65 d).

2 FOT Derivation Chain and Resonance Comparison

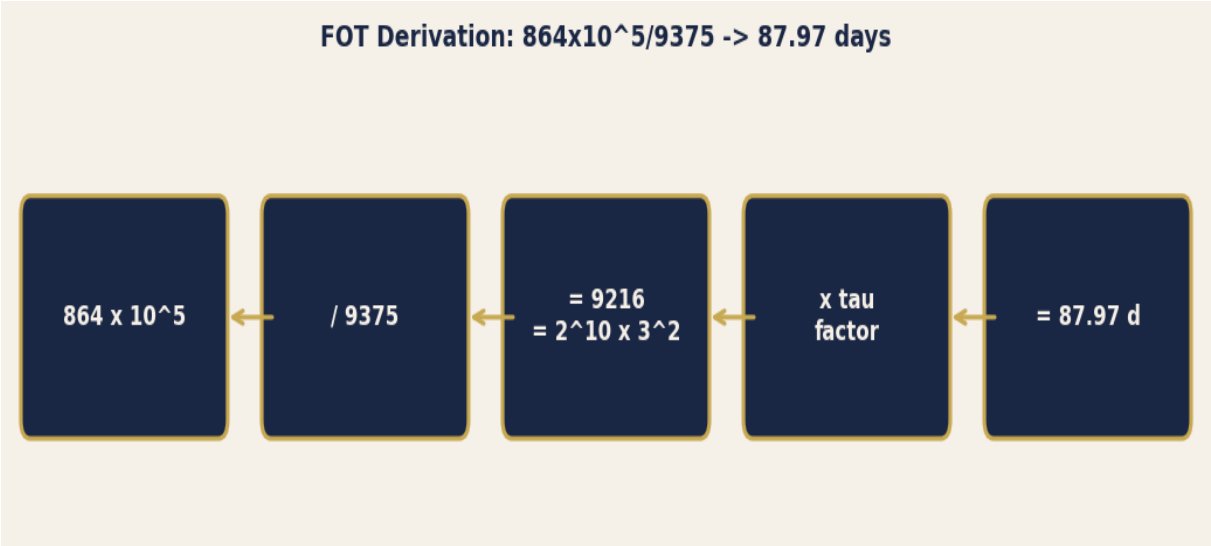

Fig. 3 - FOT derivation: 864x10^5/9375 = 9216 -> 87.97 days.

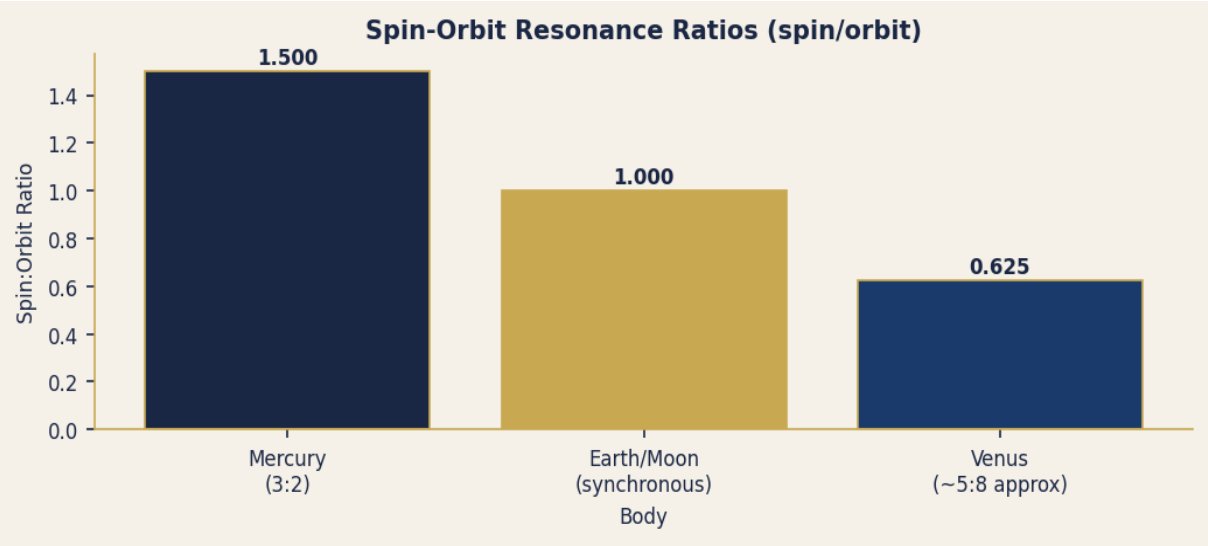

Fig. 4 - Spin-orbit resonance ratios for Mercury, Earth/Moon, Venus.

3 Propositions

P-ORB-1

Mercury sidereal period = 864 x 10^5 / 9375 days (intermediate: 9216 = 2^10 x 3^2), exact from the tau-lattice without adjustable parameters.

P-ORB-2

The 3:2 spin-orbit resonance is enforced by the G1 tau-register boundary condition acting on the innermost planetary node of the solar system.