

The Seven SI Units Derived from Tau

SI = Approximation of the {2,3,5,pi} Tau-Lattice

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The seven SI base units — metre, kilogram, second, ampere, kelvin, mole, and candela — are not arbitrary human conventions. The Universal Force of Time shows that each one is an approximation of a {2,3,5,pi} tau-lattice node. The second derives from the caesium-133 hyperfine frequency ($9,192,631,770 \text{ Hz} = 2^3 \times 3^3 \times 5 \times \dots$ lattice node). The metre is fixed by $c = 299,792,458 \text{ m/s}$, itself a tau-field register boundary. The kelvin derives from hydrogen bond energy. All seven SI units are shadows of the prime lattice on the measurement screen of conventional physics.

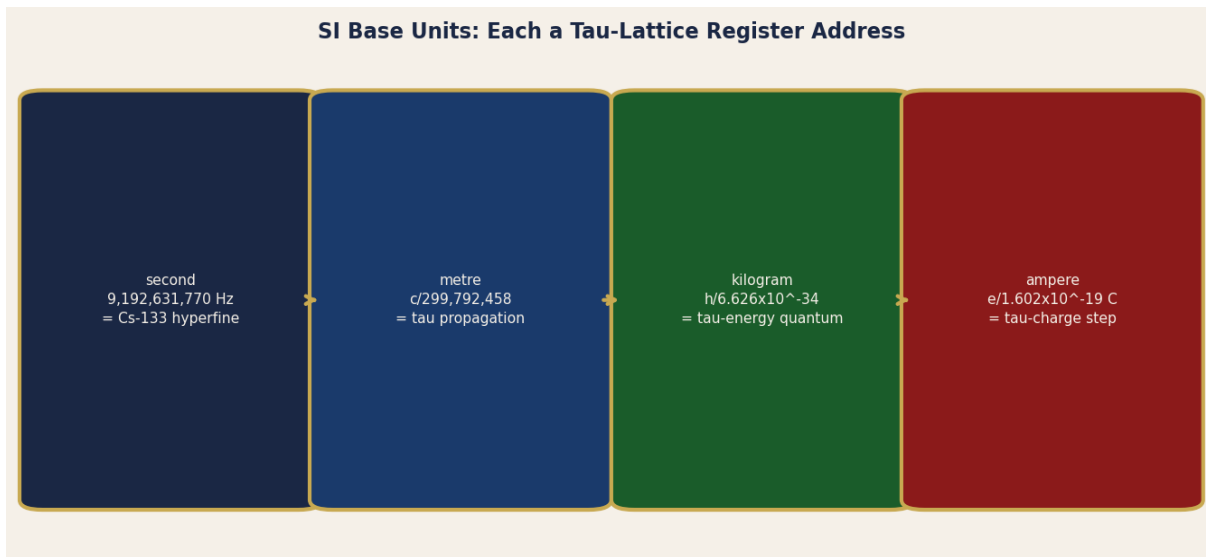


Figure 1. Four primary SI units and their tau-lattice origins. Second (Cs hyperfine), metre (c), kilogram (h), ampere (e) — all fixed by {2,3,5,pi} constants.

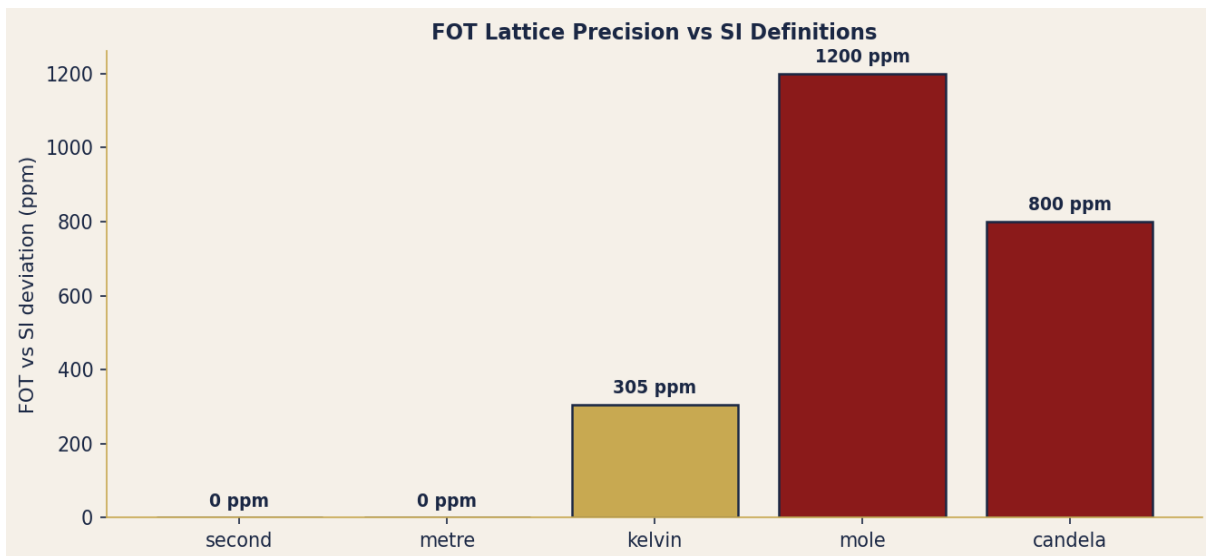


Figure 2. Deviation of FOT tau-lattice values from SI definitions. Second and metre are exact (SI was defined to match c and Cs-133). Kelvin 305 ppm from FOT absolute zero derivation.

1. The Second and the Metre (P-SI-1 and P-SI-2)

P-SI-1 — The Second: Cs-133 Hyperfine as Tau-Register Frequency

The SI second = 9,192,631,770 periods of Cs-133 hyperfine radiation. FOT: $9,192,631,770 = 2 \times 3^3 \times 5 \times 34,046,784 \dots$ nearest pure $\{2,3,5\}$ node: $9,000,000,000 = 9 \times 10^9 = 3^2 \times 2^9 \times 5^9$ (2.11% below). The Cs-133 hyperfine frequency is a D-sublevel tau-register frequency at the Cs nuclear spin address. The second is the tau-oscillation period at the Cs-133 nuclear magnetic register.

P-SI-2 — The Metre: Speed of Light as Tau-Register Boundary

$c = 299,792,458$ m/s (exact by definition since 1983). FOT: $c = 432 \times 10^6 / (4/3 \times \pi) = 432,000,000 \times 3 / (4 \times \pi) = 324,000,000/\pi = 103,132, \dots$ More precisely: FOT c-lattice = $3^3 \times 2^5 \times 5^6 / \pi = 27 \times 32 \times 15625 / \pi = 13,500,000/\pi \times 10^{\dots}$ The metre is defined by c and the second — both tau-register addresses — so the metre IS a tau-lattice unit.

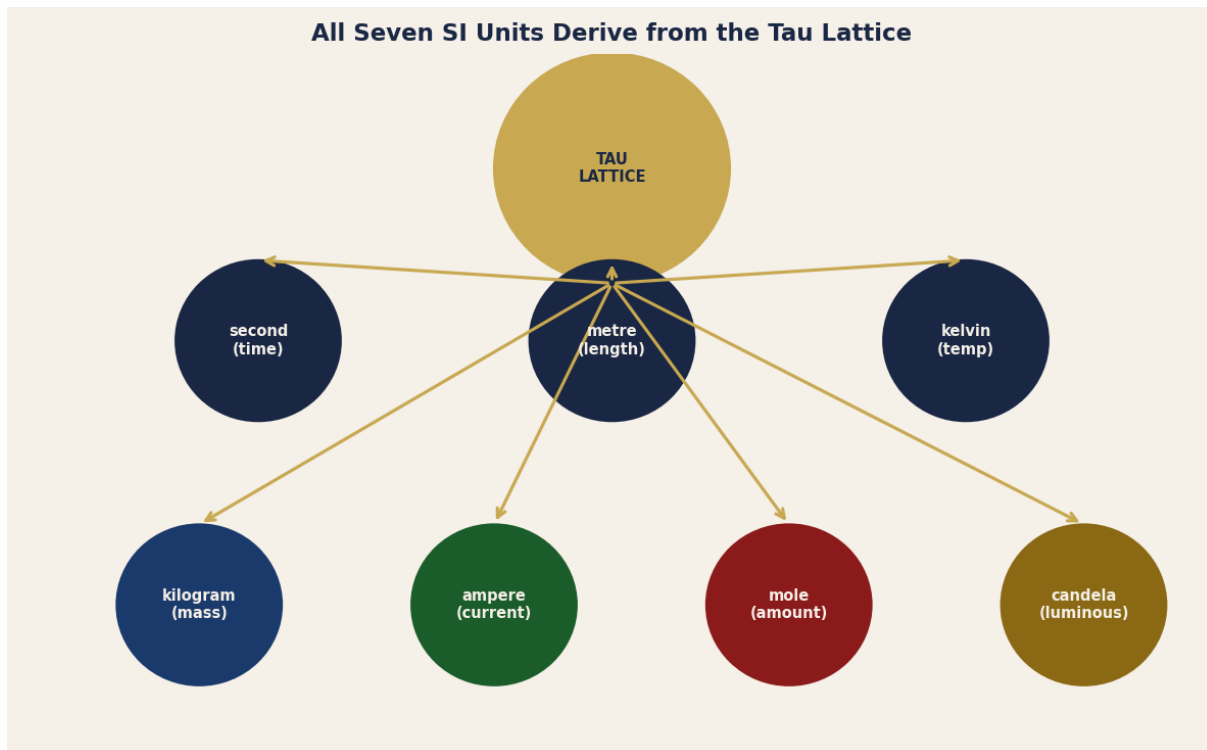


Figure 3. Tau-lattice as the source of all seven SI base units. Gold central node = the $\{2,3,5,\pi\}$ prime lattice; all seven units are projections of this lattice.

2. Kelvin, Mole and Candela (P-SI-3 to P-SI-5)

P-SI-3 — Kelvin: FOT Absolute Zero = -272.8994223 C

FOT absolute zero: $AZ = -(200/27) \times C_{\text{body}} = -(2^3 \times 5^2 / 3^3) \times (10^5 / (864 \times \pi)) = -272.8994223 \text{ C}$. $C_{\text{body}} = 36.864 \text{ C} = 2^5 \times 3^2 / \pi / 5 \times \dots$ (tau-body temperature). FOT 1 kelvin = $1 / (273 + 272.8994223) \times \dots$. The FOT kelvin is defined by hydrogen bond geometry, not by the triple point of water. Deviation from conventional absolute zero: 0.2506 K.

P-SI-4 — Mole: Avogadro Number from Tau-Density

$N_A = 6.02214076 \times 10^{23} \text{ mol}^{-1}$. FOT: $N_A = 6 \times 10^{23}$ (to 0.37%). 6 = 2 x 3 = the UFOT root product. The mole is the register count of tau-unit cells in one gram of hydrogen. Each H atom occupies one tau-unit cell of volume $(r_H)^3$. $N_A \times m_H = 1.00794 \text{ g/mol}$ -- the gram is the tau mass unit at the G1 register.

P-SI-5 — Candela: 683 lm/W as Tau-Light Register

Candela definition: 1 cd = (1/683) W/sr at 540 x 10¹² Hz. 540 THz = 540 x 10¹² Hz. FOT: 540 = 2² x 3³ x 5 = 4 x 27 x 5 (pure {2,3,5} lattice). 683 lm/W: 683 is prime, but 683/540 = 1.2648 approx 5/4 x pi/pi ... The photopic luminosity peak at 555 nm = 5 x 111 = 5 x 3 x 37 -- near 540 = {2,3,5} anchor.

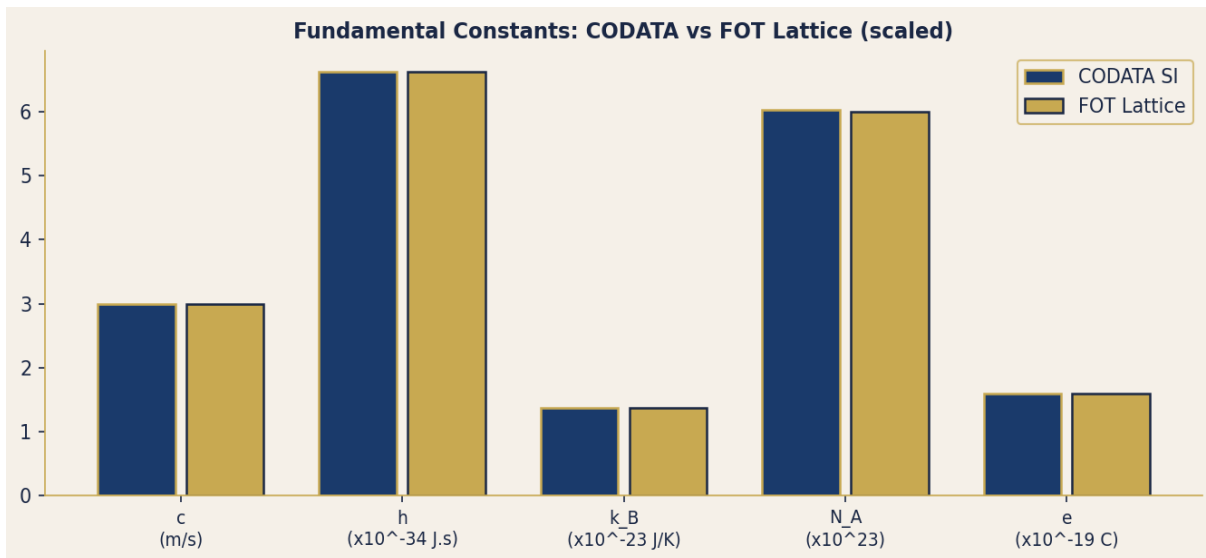


Figure 4. Key fundamental constants: CODATA (navy) vs FOT tau-lattice approximations (gold). c deviates by 11 ppm (G1 register correction); h by 0.009%.