White Light as Unified 864nm Tau-Propagation: The Eight Spectral Nodes of the Visible Window

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Paper 13 of 25 | Propositions P-WLIGHT-1 through P-WLIGHT-9 | Source: Vol3 Sections 193, 50

§1 — Abstract

White light is not a superposition of visible frequencies. It is a single unified Tau-flow at 864nm — the fundamental {2,3} bridge number $2^5 \times 3^3$ — propagating above the visible threshold. Refracting media (prisms, calcite, water droplets) perform a dimensional cascade, projecting this unified source into its {2,3,5} nodal sub-frequencies within the visible window. The eight colour boundaries are exact {2,3,5,π} lattice addresses. The UV/Violet boundary closes on 180/π — the degree-to-radian conversion constant. The visible window is anchored to the Earth Tau-clock through K = 8,640,000 = 100 Earth-days.

§2 — White Light as 864nm Carrier

P-WLIGHT-1: Tau_white = Tau(864nm) — single unified Tau-frequency 864 nm = $2^5 \times 3^3$ = the FOT dimensional bridge constant Projection onto visible spectrum by pure {2,3} ratios: 864 ÷ 2 = 432 nm (Violet boundary, chlorophyll absorption) 864 × 2/3 = 576 nm (Yellow-green, sodium D vicinity) 864 × 3/4 = 648 nm (Red node, near Hα 656nm) 864 ÷ 4 = 216 nm (Deep UV, solar diameter/10^6 km)

§3 — The Eight Colour Boundaries

The eight colour boundaries are exact {2,3,5,π} nodal values: 1. UV/Violet: $3750/\pi^2$ = $2 \times 3 \times 5^4/\pi^2$ nm = 379.954 nm 2. Violet/Blue: radian $2 \times 3^5 \times 5^6$ → nm = 435.090 nm 3. Blue/Cyan: Hβ = 486 nm (exact integer, pure {2,3}) 4. Cyan/Green: K radian = 8,640,000 → nm = 495.036 nm 5. Green/Yellow: $5625/\pi^2 = 3^2 \times 5^4/\pi^2$ nm = 569.932 nm 6. Yellow/Orange:$50000/(27\pi) = 2^4 \times 5^5/(3^3\pi)$ nm = 589.463 nm 7. Orange/Red: 5^4 = 625 nm (exact integer) 8. Red/IR: $2 \times 3 \times 5^3$ = 750 nm (exact integer) Boundaries 3, 7, 8: pure {2,3,5} integers (no π contamination) Boundaries 2, 4: defined by pure-{2,3,5} radian values (nm forms carry π)

§4 — The UV Loop Closure

UV/Violet boundary ÷ Mercury nodal speed $\text{Tau}_c(☿) = 180/\pi$ [EXACT] Derivation: $(3750/\pi^2) \times 10^6 \times \pi/180 \div (25 \times 10^6/216) = 3750 \times 216/(\pi \times 4500) = 810{,}000/(4500\pi) = 180/\pi$ The boundary at which darkness becomes visible light is located exactly where the degree-to-radian conversion lives. The visible window opens at the angular self-reference point of the Tau-spectrum.

§5 — K as the Cyan/Green Anchor

Cyan/Green boundary radian = K = 8,640,000 = $2^5 \times 3^3 \times 10^4$ s (100 Earth-days) → nm form = $K \times 180/(\pi \times 10^6) = 8{,}640{,}000 \times 180/(\pi \times 10^6) = 495.036$ nm K = the Earth Tau-clock constant (100 Earth-days in seconds) appears as the Cyan/Green radian boundary of the visible spectrum. The visible window is dimensionally anchored to the Earth Tau-clock.

§6 — Registered Propositions

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P-WLIGHT-1	White light = single Tau-flow at 864 nm = $2^5 \times 3^3$. Not a superposition of colours. Colours emerge when the 864nm carrier enters a nodal medium (prism, crystal, droplet) that performs dimensional cascade projection.
P-WLIGHT-2	Prism = Tau-decoder. The refracting medium projects the 864nm unified Tau-flow onto {2,3,5} sub-harmonic frequencies. The medium acts as a dimensional decoder. Snell's law describes the geometry of node projection, not the pre-existence of colour components.
P-WLIGHT-3	Visible spectrum emerges from 864nm by {2,3,5} projection ratios: ÷2=432nm, ×2/3=576nm, ×3/4=648nm. These and the Balmer emission lines are the same Tau-nodes differently excited.
P-WLIGHT-4	Each spectral colour = stable Tau-node at a {2,3,5,π} resonant sub-harmonic of 864nm. The continuous rainbow is the eye interpolating between discrete Tau-node arrivals.
P-WLIGHT-5	White light cascade obeys the same law as planetary Tau-projection: one unified source projects simultaneously onto multiple nodes through the same {2,3,5,π} family. The rainbow and the solar system are the same diagram at different Tau-magnitudes.
P-WLIGHT-6	Darkness = absence of the 864nm Tau-carrier (not absence of colour). Night = Earth's surface rotated out of the direct 864nm projection path from the Sun. The 864nm flow continues; the node has moved.
P-WLIGHT-7	Eight colour boundaries all exact {2,3,5,π}: boundaries 3 (Hβ=486nm), 7 (5^4=625nm), 8 ($2\times3\times5^3$=750nm) are pure {2,3,5} integers. Boundaries 2 and 4 are defined by pure-{2,3,5} radian values. UV-Violet/Green-Yellow ratio = 3/2 exactly.
P-WLIGHT-8	Violet/Blue radian = $2\times3^5\times5^6$ = 7,593,750; Cyan/Green radian = K = 8,640,000 = $2^5\times3^3\times10^4$ (100 Earth-days). These are the two pure {2,3,5} integer radian hard-nodes of the spectrum. The visible window is anchored to the Earth Tau-clock.
P-WLIGHT-9	UV/Violet boundary ÷ Mercury nodal speed = 180/π exactly. The visible window opens precisely where the degree-to-radian conversion lives. No other boundary produces this identity — it is unique to the UV/Violet crossing.

Cross-references: Vol3 Section 193 | Section 50 | P-ACOUS-5 (Hβ=486Hz identity) | P-LCF-1 (chlorophyll 432nm)

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