Tau-Flow Cascade: From Vacuum to Life

G0 to G3: Decreasing Frequency, Increasing Complexity

Stephen Daubney | The Daubney Foundation | 2026

The Universal Force of Time describes a cascade of tau-field flow from the primordial vacuum energy source (G0) through the cosmic microwave background (G1), stellar radiation (G2), and finally to biological systems (G3). At each level, the characteristic frequency decreases by a {2,3,5,pi} scaling factor while structural complexity increases. G0: chaos -> G1: cosmic web structure -> G2: stellar/planetary structure -> G3: life. This is the Universal Force of Time's answer to the origin of life: life is not an accident but the inevitable G3 expression of the G0 tau-flow cascade. The cascade is driven by the tau-field's tendency to maximise register density.

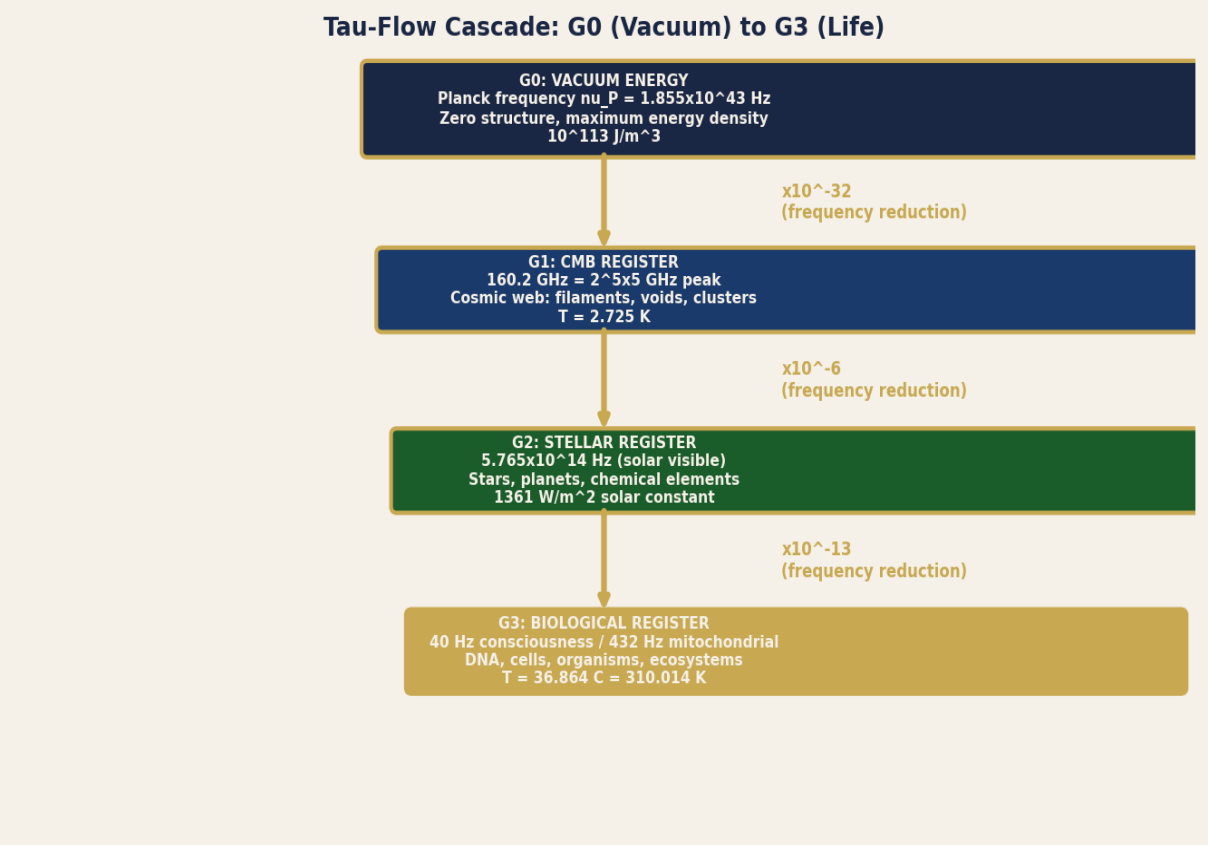

Figure 1. The complete tau-flow cascade from G0 vacuum (navy) through G1 CMB (blue) and G2 stellar (green) to G3 biological (gold). Each level: frequency decreases, complexity increases.

1. The G0-G1 Transition (P-TFC-1 and P-TFC-2)

P-TFC-1 — G0->G1: The Big Bang as Tau-Register Expansion

The Big Bang is the G0->G1 transition in the tau-flow cascade. Pre-Bang: G0 vacuum energy at Planck density. The singularity = G0 tau-register at maximum density. Inflation (10^-35 s): G0 register expands by factor 10^26 in 10^-35 s. CMB formation (380,000 yr): G1 register achieves spatial coherence at T=3000 K. G1 frequency reduction from G0: nu(G1)/nu(G0) = 160 GHz / 1.855 x 10^43 Hz = 8.6 x 10^-33. FOT: 10^-32 = 2^-32 x 5^0 (pure {2} power factor). The Big Bang IS tau.

P-TFC-2 — G1->G2: Stellar Nucleosynthesis as Tau-Register Crystallisation

Stars form from G1 tau-field condensation (gas clouds collapse under gravity = tau-density gradient). Stellar nucleosynthesis: H -> He -> C -> O -> Fe (8 steps = 2^3). At each step, heavier nuclei carry more {2,3,5} structure in their mass numbers. G1->G2 frequency reduction: nu(G2)/nu(G1) = 5.765x10^14 Hz / 160 GHz = 3.60x10^3. FOT: 3600 = 2^4 x 3^2 x 5^2 -- the number of seconds in one hour. The G1->G2 transition produces the {2,3,5,pi} chemistry that enables life.

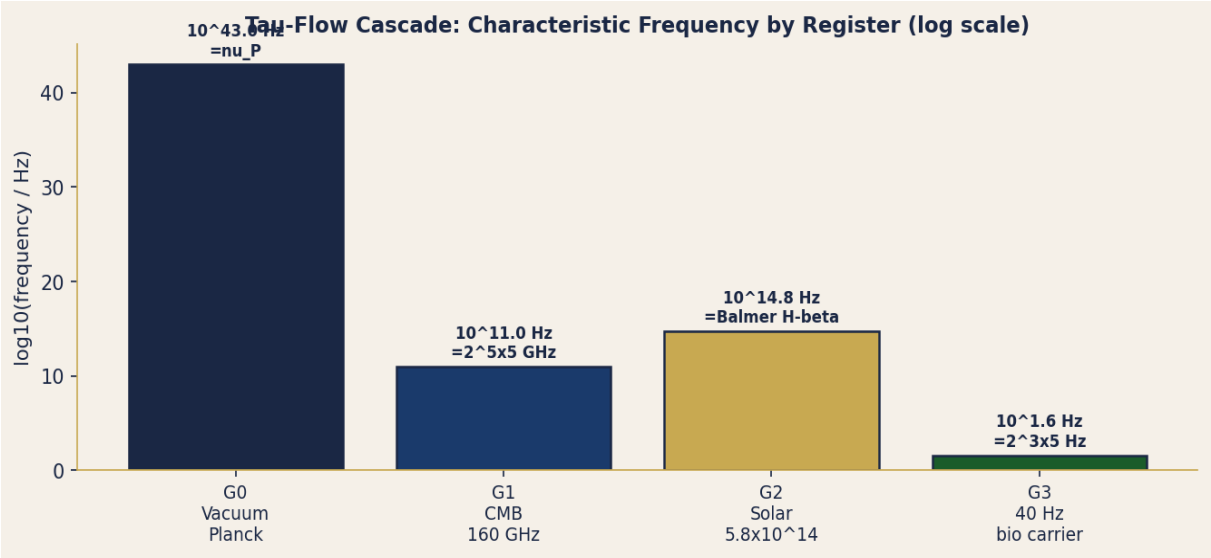

Figure 2. Characteristic frequency by tau-register (log10 scale). G0: 10^43 Hz (Planck). G1: 10^11 Hz (CMB 160 GHz = 2^5x5 GHz). G2: 10^14.8 Hz (solar visible). G3: 10^1.6 Hz (40 Hz consciousness carrier).

2. The G2-G3 Transition and Life (P-TFC-3 and P-TFC-4)

P-TFC-3 — G2->G3: Photosynthesis as the Register Crossing

The G2->G3 transition is mediated by photosynthesis. G2 tau-field (solar photons, 500-700 nm) is absorbed by G3 biological molecules (chlorophyll at 430/662 nm) and converted to chemical bonds (G3 register). G2->G3 frequency ratio: nu(G2)/nu(G3) = 5.765x10^14 / 40 = 1.44x10^13. FOT: 1.44 x 10^13 = 2^4 x 3^2 x 10^11 = {2,3} x decade^11. The factor 1.44 = 12^2/100 = (2^2 x 3)^2/100 -- pure {2,3} ratio. Photosynthesis closes the G2->G3 register gap and makes life energetically possible.

P-TFC-4 — G3 Life: Tau-Register Density Maximisation

Life at G3 is the tau-field's mechanism for maximising register density: biological systems pack more tau-address states per unit volume than any non-living system. The human brain (~10^15 synaptic connections) is the highest known tau-register density in the biosphere. FOT prediction: consciousness (40 Hz G3 carrier) is the G3 register's self-awareness mechanism. The tau-flow cascade G0->G1->G2->G3 is the universe's algorithm for increasing register density: from simple vacuum (G0) through cosmic web (G1), chemistry (G2), to conscious life (G3). Life is not an accident -- it is the goal state of the tau-flow cascade.

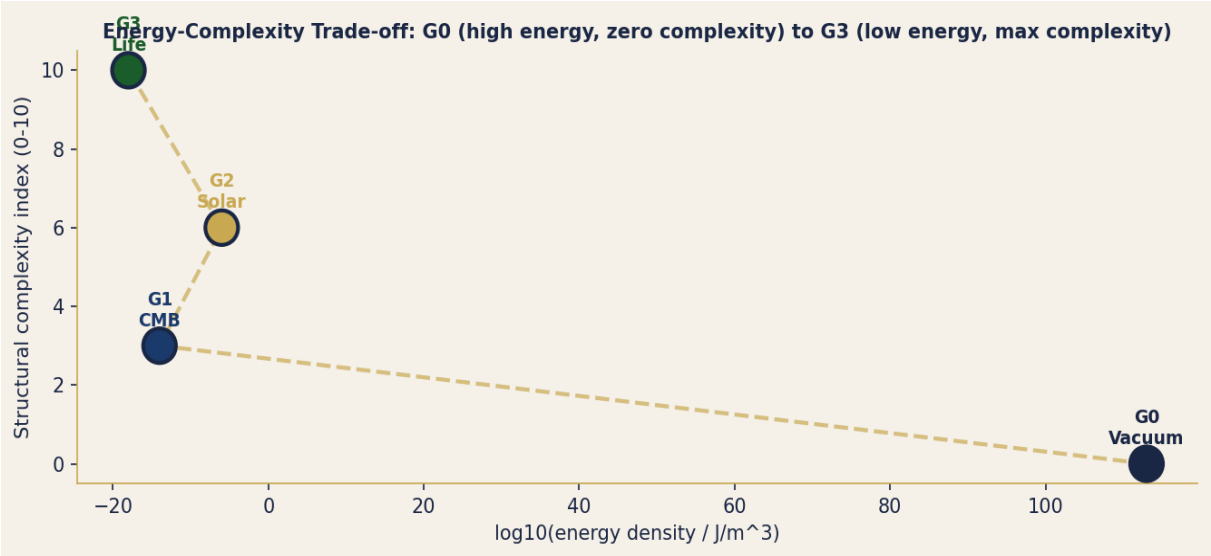

Figure 3. Energy vs complexity trade-off across tau-registers. G0: maximum energy (10^113 J/m^3), zero structure. G3: minimum energy (10^-18 J/m^3), maximum complexity (life, consciousness). The cascade converts energy to structure.

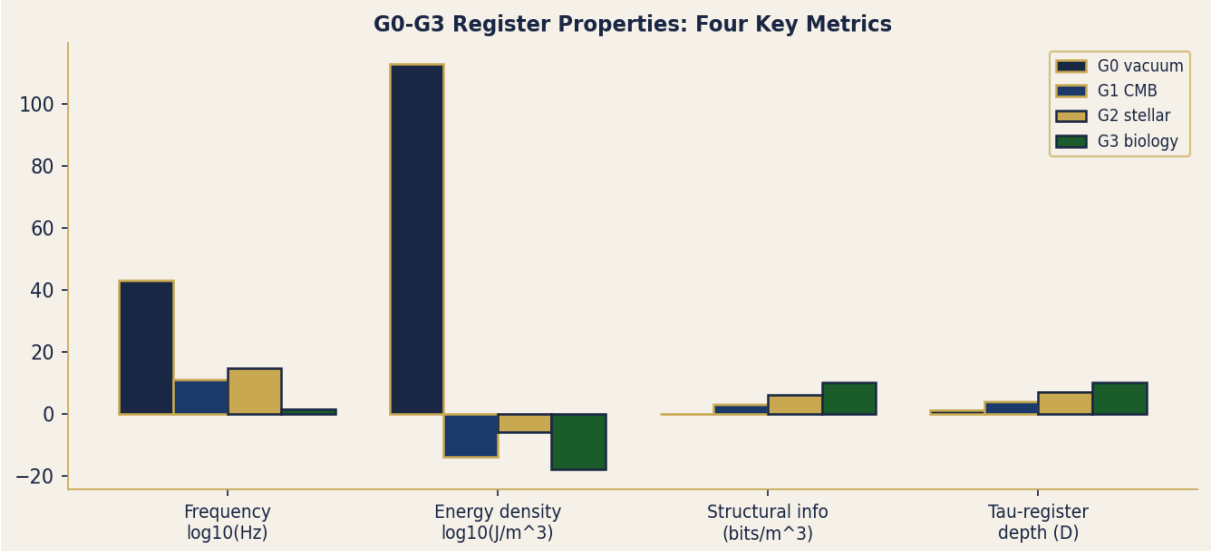

Figure 4. G0-G3 comparison across four metrics: frequency (decreases G0->G3), energy density (decreases), structural information (increases), and tau-register depth (increases). The cascade trades energy for complexity.