Nodal Time Axiom

Every Point Has a Tau-Address — Causality as Address Ordering

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The Nodal Time Axiom is the foundational statement of the Universal Force of Time: every point in the universe has a unique Tau-address (D, n, theta). D is the register depth (dimension scale), n is the nodal index within that register, and theta is the helical phase angle. Time is not a background parameter but the ordered sequence of Tau-addresses traced by a particle's worldline. Causality = address ordering: event A causes event B if and only if A's Tau-address precedes B's in the register sequence. This replaces the spacetime manifold with a discrete, countable lattice of Tau-addresses.

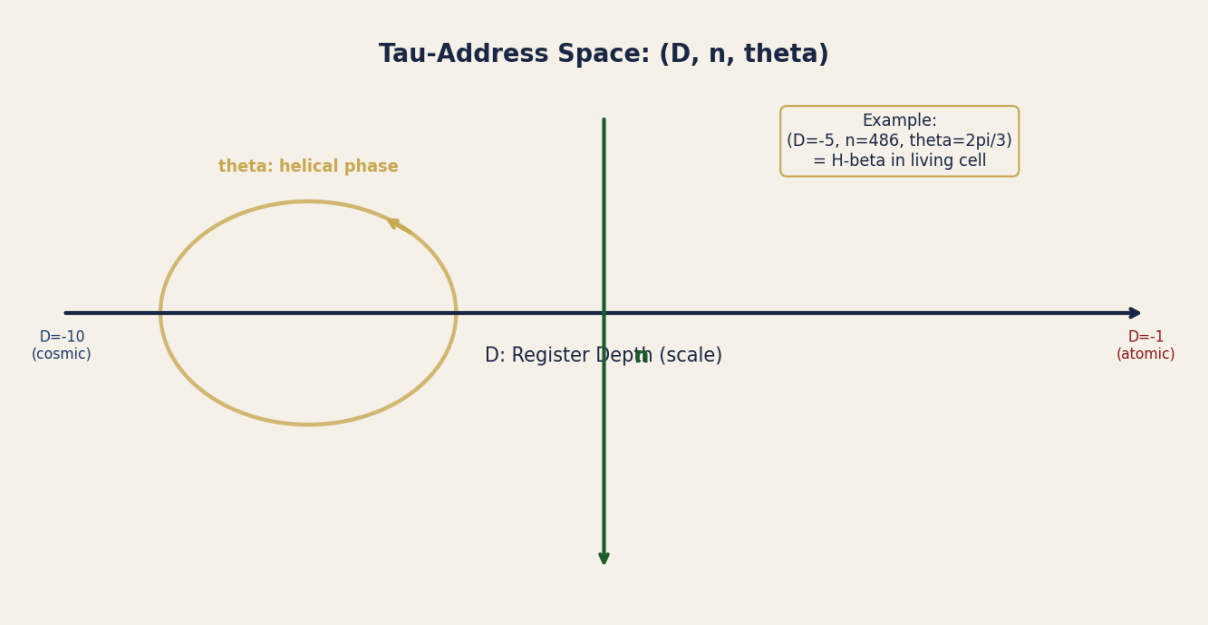

Figure 1. Tau-address coordinate space (D, n, theta). D = register depth (log-scale), n = nodal index, theta = helical phase. Every physical point has exactly one address.

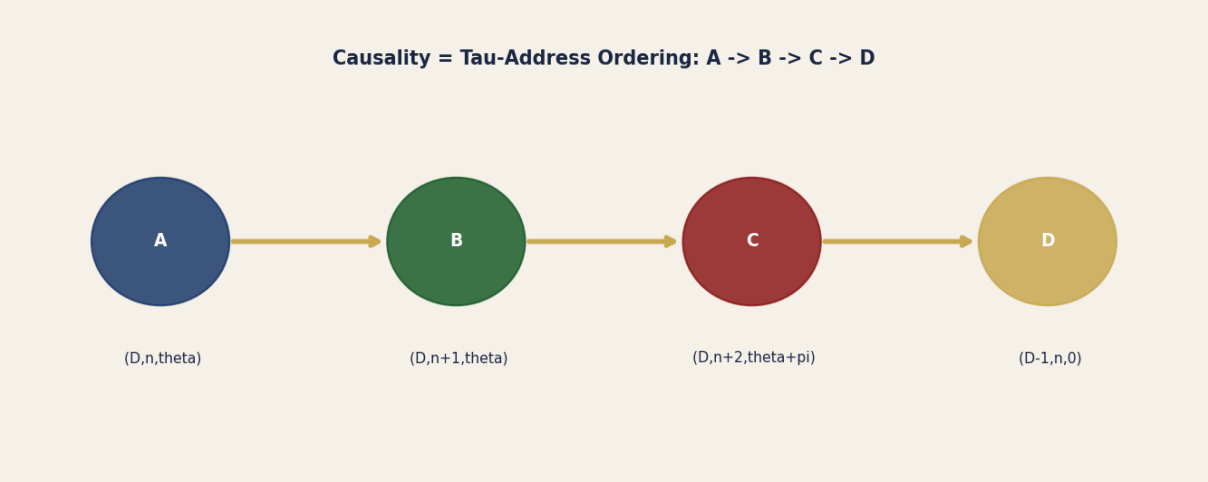

Figure 2. Causal chain as Tau-address sequence. Event A precedes B if A's nodal index n_A < n_B at the same register depth D. Register transitions (D to D-1) are irreversible address steps.

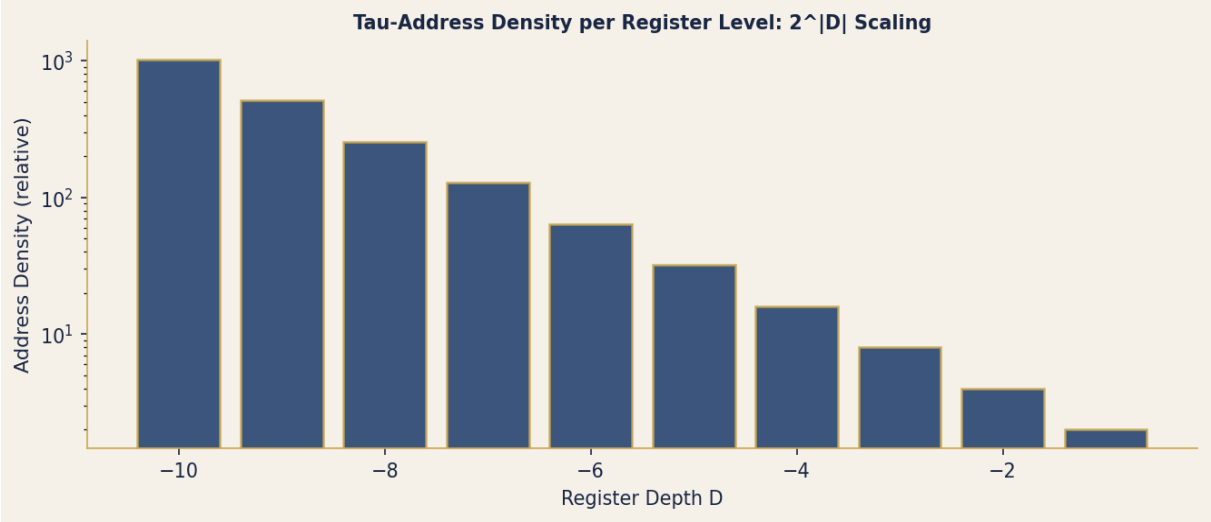

Figure 3. Tau-address density increases as 2^|D| from cosmic (D=-10) to atomic (D=-1). The atomic register contains 2^9 = 512 times more address density than the cosmic register.

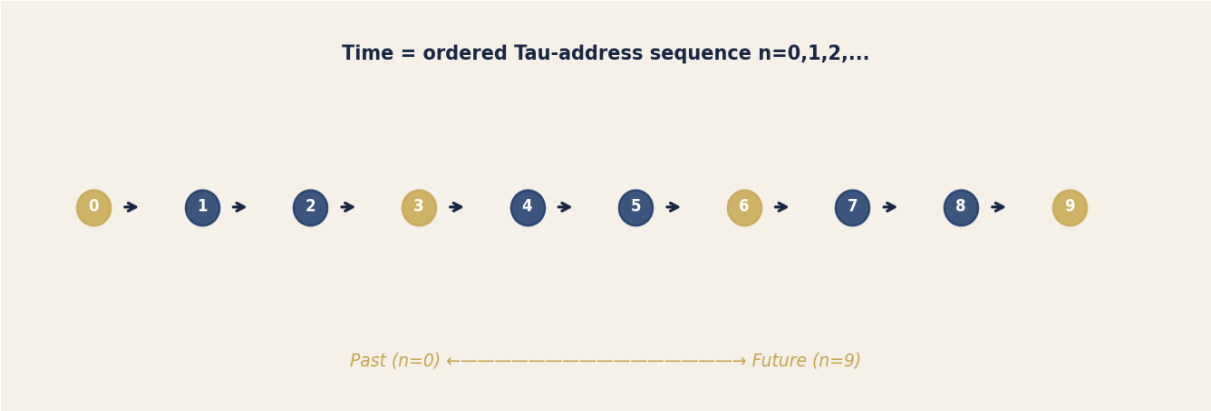

Figure 4. Time as an ordered sequence of Tau-addresses. Past = smaller n, future = larger n. The 'arrow of time' is the irreversibility of register address increments.

Propositions (P-NTA-1 to P-NTA-4)

P-NTA-1 — Every Point Has a Unique (D,n,theta) Tau-Address

The Nodal Time Axiom: for every physical point P in the universe, there exists a unique ordered triple (D, n, theta) where D is an integer register depth, n is a positive integer nodal index, and theta in [0, 2pi) is the helical phase. No two distinct physical points share the same Tau-address. The set of all Tau-addresses = the {2,3,5,pi} prime lattice at all scales simultaneously.

P-NTA-2 — Time is Ordered Tau-Address Sequence

Time is not a continuous background dimension. Time = the sequence of Tau-addresses traced by a particle's worldline: (D,n_0,theta_0) -> (D,n_1,theta_1) -> ... The 'flow of time' = the mandatory ordering of this sequence by n. There is no 'time travel' because address ordering is fixed: n can only increment, never decrement within a single D-level. A register depth transition (D -> D-1) resets n to 0 at the new register.

P-NTA-3 — Causality is Address Ordering

Event A causes event B if and only if A's Tau-address n_A < n_B at the same D, or D_A > D_B (deeper register = earlier cause). This replaces the light-cone causality structure: Tau-address ordering is more fundamental than light-travel time. Quantum entanglement = two particles sharing the same (D,n) address at different theta values: they are one Tau-address node, instantaneously correlated.

P-NTA-4 — The Tau-Address as the Resolution of Spacetime Singularities

At a black hole singularity, conventional spacetime curvature diverges. In Tau-address space, the singularity = a register depth transition D -> D-infinity: the address density 2^|D| -> infinity, but each individual address remains well-defined. There is no physical singularity — only a register transition to a deeper D level. The Big Bang = the D=-10 register initialisation: the moment the outermost cosmic address (D=-10,n=0,0) was first occupied.
