Void Transit: Between the Register Shells

Universal Force of Time — Field Mechanics Series

The void is the region between adjacent D-level register shells where the Tau-standing-wave amplitude falls below the node-sustaining threshold. Every register transition — chemical bonding, nuclear decay, quantum tunnelling, Hawking radiation — involves void transit. The void is not empty space; it is the inter-register gap of width $\Delta r(D) = r(D)\times(\sqrt{2}-1)$, and it carries Strand-2 address information without Strand-1 spatial embedding.

1. The Void as Inter-Register Gap

P-VOID-1 — Void Definition
The void at register D is the annular region between r(D) and r(D+1). Width: $\Delta r(D) = r(D+1) - r(D) = 18\times(\sqrt{2})^{D} \times (\sqrt{2} - 1) = 18\times(\sqrt{2})^{D} \times 0.41421356237\ldots$. Within the void no Tau-standing-wave node exists. A particle in the void has no Strand-1 embedding — it exists only as a Strand-2 address record.

P-VOID-2 — Void Transit Carries Strand-2 Only
During void transit the Strand-1 spatial co-ordinate is undefined (the wave node does not exist). The Strand-2 address (quantum numbers, phase, temporal identity) is conserved exactly throughout the transit. Re-materialisation occurs when the Strand-2 address finds a compatible Strand-1 node at the destination register.

2. Physical Processes as Void Transit

P-VOID-3 — Quantum Tunnelling = Void Transit
A particle tunnelling through a classically forbidden barrier transits the void annulus between two D-level shells. The tunnelling probability is proportional to $\exp(-\Delta r(D)/\lambda_{dB})$, where λ_{dB} is the de Broglie wavelength. The exponential decay of tunnelling probability with barrier width is the direct measurement of void width.

P-VOID-4 — Chemical Bond Formation = Void Transit + Re-embedding
When two atoms form a chemical bond, their electron clouds transit the void between the D=−3 (atomic) and D=−2 (molecular) registers. The bond energy is the Tau-field energy released when the Strand-2 addresses of the two atoms merge into a single D=−2 node. Bond breaking is the reverse: energy input drives void transit back to separate D=−3 nodes.

P-VOID-5 — Nuclear Decay = D=−4 Void Transit
Alpha decay, beta decay, and nuclear fission are void transit events at the D=−4 (nuclear) register. The decay half-life is determined by the Tau-field amplitude ratio across the D=−4 void annulus: $t_{1/2} \propto \exp(2\times\Delta r(D=-4)/\lambda_{nuclear})$. The Geiger–Nuttall law is a direct consequence of this void-width scaling.

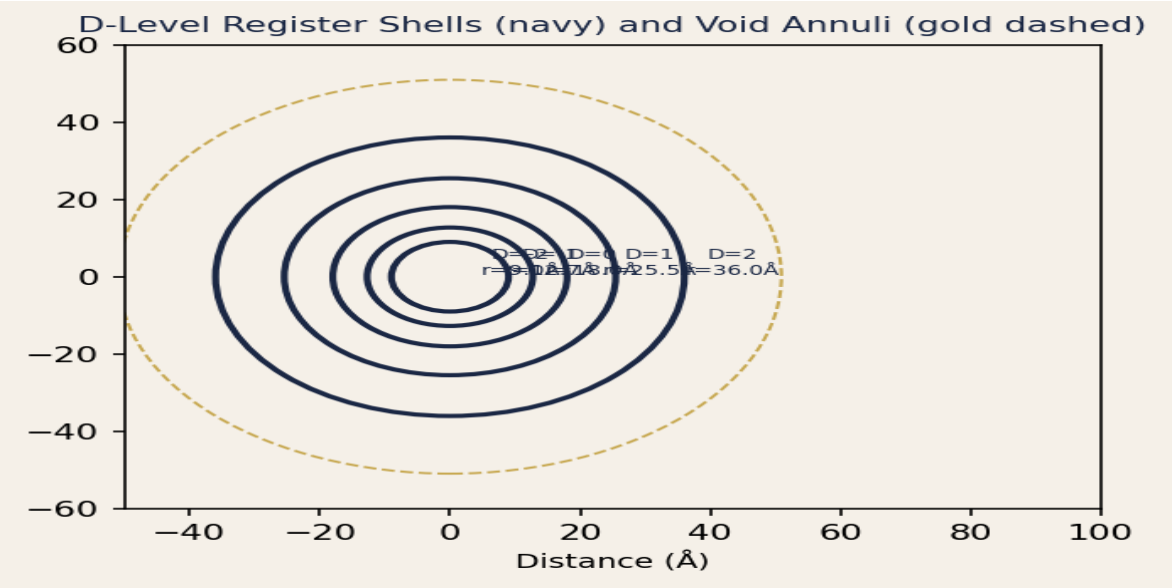

Figure 1. Concentric register shells r(D) = 18×(√2)^D (navy solid) and their void annuli of width (√2−1)×r(D) (gold dashed). Every physical transition crosses one of these voids.