

# Nested Register Hierarchy

*How every scale of nature nests inside the same Tau-field template*

One of the most striking predictions of Universal Force of Time is that physical reality is not merely scale-invariant in an approximate or statistical sense — it is exactly nested. Every register level (atom, molecule, cell, organ, organism, planet) is a complete, self-contained Tau standing wave whose outer radius is the inner radius of the next level up. The scale factor between successive levels is  $\sqrt{2}$  — the same ratio that defines the FOT shell formula  $r(D) = 18 \times (\sqrt{2})^D$ .

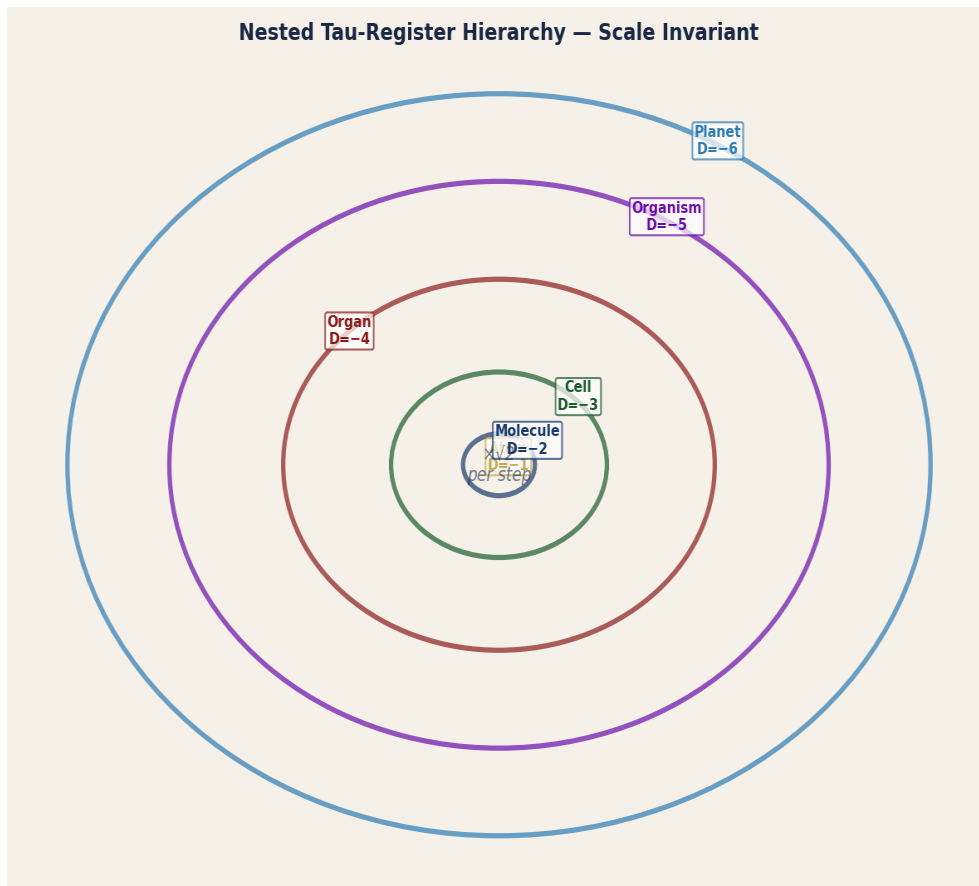


Figure 1. Nested Tau-register hierarchy. Each ring is one complete standing-wave register ( $D = -1$  to  $D = -6$ ). Successive radii scale by  $\sqrt{2}$  per D-level step.

## 1. The Nesting Principle

### P-NEST-1 — Each Register Level is a Complete Tau Wave

A Tau register is a closed standing wave with two nodes (Strand 1 and Strand 2) and one antinode. Every spatial scale at which stable matter persists — from atomic to planetary — forms such a register. The outer boundary of each register is the inner boundary of the next register up.

$r_{\{n+1\}} / r_n = \sqrt{2}$  for all adjacent register pairs

$r(D) = 18 \times (\sqrt{2})^D \times \text{scale\_factor}$  (same formula at all scales)

### **P-NEST-2 — Six Biological Registers**

The six main levels of biological organisation map exactly onto D-levels –1 through –6:

D = –1: atom ( $r \approx 0.1$  nm)

D = –2: molecule ( $r \approx 0.3$ –3 nm)

D = –3: cell ( $r \approx 10$   $\mu$ m)

D = –4: organ ( $r \approx 1$  cm)

D = –5: organism ( $r \approx 1$  m)

D = –6: planet/biosphere ( $r \approx 6,400$  km =  $6.4 \times 10^6$  m)

Each level is a stable Tau-standing-wave resonator. The formula  $r(D) = 18 \times (\sqrt{2})^D$  applies at every level with the appropriate scale factor.

## **2. Information Inheritance Across Levels**

### **P-NEST-3 — Tau-Address Inheritance**

A nested register inherits the Strand-2 (temporal/address) information of all its parent registers. A cell carries the Tau-address of the organism containing it, which carries the planetary Tau-address. This is why cellular biology is entrained to circadian (planetary rotation) and lunar rhythms — the cell's Strand-2 address includes the planetary clock.

Tau-address of cell = Tau-address of organism + Tau-address of planet + ...

Circadian period:  $T = 24$  h =  $2^3 \times 3$  h (a {2,3} lattice product)

### **P-NEST-4 — Scale-Invariant Force Law**

The same Tau-field force law applies at all D-levels. What conventional physics calls "gravity" at planetary scale, "electromagnetism" at atomic scale, and "strong force" at nuclear scale are all the same Strand-1 projection ( $\Pi_1$ ) evaluated at different D-levels. The apparent variation in coupling constants is the D-level dependence of  $\Pi_1$ , not the existence of four separate forces.