

# The Three Storeys of the Feldtheorie — Die drei Stockwerke der Feldtheorie

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It Is All One — Notes. July 2026 (working draft)

**Abstract.** This note is a map, not a result. The series now spans thirty-seven documents across six chapters, and a reader entering it deserves to know that the whole edifice has exactly three storeys, that every paper lives on one of them (or is a staircase between two), and that the compression separating the storeys is not a convenience of notation but a piece of physics — the seal, which cuts off the interior of every condensed object and lets only the conserved ledger leak out. The storeys: the **Foundation** (geometry — the space quaternion, the winding, the condensation, the full apparatus); the **Structure** (the knot — mass as a stable construct of condensed space, floored against collapse); and the **Facade** (the state quaternion — the interface of few numbers through which the world couples to the knot without dragging its interior along). The note assigns every paper its room, names the staircases, explains why chemistry never needs the cellar, and records where the one unbuilt staircase — the State Octonion programme — must go. One page of architecture, so that the reader may enter by the right door.

## 1. Why a Map

A theory that runs from the Hubble radius to the attometre accumulates rooms faster than corridors. The papers of this series were written as the ground was won — cosmology first, then the quantum rungs, then the strong interior, then the condensation arc — and their order of writing is not their order of logic. The order of logic is vertical, and it has three levels. Stating them once, with every paper assigned its floor, spares each future paper from restating its place.

## 2. The Three Storeys

**The Foundation — Geometry.** The space quaternion and its three postulates: all is quaternion-valued with time on the real axis (P1); no force, only curvature, carried affordably by winding (P2); the stage eternal, the play ticking (P3). Here lives the full apparatus — the field  $U(x)$ , the profile functions, the metric  $D$ , the tension medium, the infinite-dimensional machinery of condensation. This storey is where anything is *derived*. It is also the most expensive place to work: whoever computes here carries, in the words that named this note, the whole Rattenschwanz of the condensation.

**The Structure — the Knot.** Mass as a stable construct of condensed space. The middle storey holds the *objects*: windings that closed, caught at their floors — the soliton computed in the particle paper ( $B = 1$ , the Derrick virial in balance, 863 MeV), the trinity wedged at the closure angle, the ladder of condensation from the electron's  $10^{44}$  down to the universe's exact 1. This storey answers "what exists and why it persists." Its guardians — pair creation,

the tetrahedral wedge, Pauli pressure, the exit cone, torsion — are the Floors note's staircase of catchers.

**The Facade — the State Quaternion.** The interface. When a knot is sealed, the world outside couples to it through a handful of numbers only: energy, charge, spin, angular momentum — the eight axes, the ledger. The state quaternion (and, behind the colour door, the state octonion) is that handful, formalized. It is the storey on which conservation is bookkept axis by axis, on which the hydrogen spectrum follows from a product of  $e_1$  components, on which neutron decay balances in eight rows. Everything on this storey is *cheap* — and the third section explains why the cheapness is honest.

### 3. The Seal: Why the Compression Is Physics

The facade is not an approximation adopted for convenience. It is enforced by the geometry of the middle storey. Every condensed object in this series is a bubble bounded by its own exponential seal — the same  $e^{(-r/R)}$  that walls the weak fiber, tails the hydrogen atom, and lapses the cosmos. The interior of the knot — the profile, the winding details, the Rattenschwanz — does not pass the seal. What passes is exactly what is conserved: the projections onto the ledger axes. The Pauli paper stated it as *wells within wells* — each level projects upward as nothing more than charge, mass, spin; the Metrics note stated it as the particle's own horizon. This note states it architecturally: **the Rattenschwanz is not dropped; it is cut off by the seal.** The state quaternion is what the seal lets through. Nature herself computes with the facade whenever she is outside the bubble — which is why chemistry, conducted entirely outside the seals of its atoms, never needed to know the atom's interior to fill a periodic table.

In the trade of soliton physics the same move carries the name *collective coordinates*: the reduction of a knot's infinite freedoms to its position, orientation, and conserved charges — the exact step by which Adkins, Nauenberg and Witten turned the computed Skyrmion into the nucleon and the Delta. The state quaternion is the collective-coordinate summary of the knot, issued as an identity card.

### 4. The Staircases

Three papers of the series are not rooms but stairs — each one performs, as a derivation, the compression or construction that connects two storeys:

- **Foundation — Structure: the particle paper** (*From Space Quaternion to Particle*). The knot built from the field: Derrick's wall, the stiffness catch, the hedgehog solved. Ascent by construction.
- **Foundation — Facade: the Schrödinger note** (*Schrödinger from the Geometry*). The fast winding factored out — the shutter — leaving the slow envelope and its quantum mechanics. The compression performed as algebra: this staircase is why the facade's equations are *derivable* rather than postulated. The Tick Count note is the same staircase descended on the classical side.

- **Structure → Facade: the Four Quanta note.** The identity  $m_p \cdot c \cdot r_p = 4\hbar$  — the whole strong-interior compressed to five characters, an entire storey's machinery summarized in one measurable line on the facade.

**The unbuilt staircase, named.** Between the dynamical dictionary (foundation: axes as rotation planes, energy as shutter rate, charge as fiber winding) and the ledger dictionary (facade: axes as conservation slots) the series has long flagged a seam — *which windings fill which slots*. This note relocates the seam correctly: it is not a defect in the fabric but the missing staircase between two storeys, and the map across it is an integration — coarse-graining over the sealed interior — not a relabeling. That is why it was never trivial, and why it is a calculation (the State Octonion programme) rather than a dictionary entry.

## 5. The Room Assignment

| Storey                       | Papers                                                                                                                                                                                                                                                                                       |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Foundation</b> (geometry) | Allgemeine Feldtheorie; Paper 1 (Complex Quaternion Spacetime); Paper 2 (Redshift as Infall); Four Calculations; De Sitter or Metric D; Ledger of the Way; Tension Medium I–VI; Frame Quaternion Field Equations; Metrics of the Living Spaces; The Quaternion Screw; The Delay That Makes G |
| <b>Structure</b> (the knot)  | The Floors of Condensation; From Space Quaternion to Particle; Neutron Decay as Octonion Algebra; The Strong Force as Geometric Necessity; Why the Orbits Are Discrete; Radii of the Worlds; Algebra Budget                                                                                  |
| <b>Facade</b> (the ledger)   | The State Quaternion; The State Octonion; Pauli Exclusion; The Quantum Leap; Electron–Proton Collision; Matter Meets Space; Four Quanta of the Proton; the Chemistry chapter (Chemical Floor; Shape and Switch); Tick Count                                                                  |
| <b>The stairwell</b>         | Schrödinger from the Geometry (Foundation→Facade); From Space Quaternion to Particle doubles as Foundation→Structure; Four Quanta as Structure→Facade                                                                                                                                        |
| <b>The observer's annex</b>  | Chasing Shadows — not a storey of the building but the note on the instrument that surveys it: the Cartesian brain, the projection, the catalogue of those who chased the shadow                                                                                                             |

Several papers straddle floors — Matter Meets Space carries curvature (foundation) and per-axis bookkeeping (facade); the Quantum Leap's transfiguration is foundation physics read on facade states. Assignments name the centre of gravity, not a fence.

## 6. Where Each Science Lives

| Science         | Storey it works on | What it needs                                                                        |
|-----------------|--------------------|--------------------------------------------------------------------------------------|
| Chemistry       | Facade only        | the state quaternion; the $e_1$ product law; the $\alpha$ -ladder — never the cellar |
| Spectroscopy    | Facade             | transitions as per-axis bookkeeping, $f = \Delta E/h$                                |
| Nuclear physics | Structure          | the closure angle, the wedge, the funnel                                             |
| Particle masses | Foundation         | the full condensation; the one unpaid stiffness                                      |
| Cosmology       | Foundation         | metric D, the medium, the seals at the top rung                                      |

The table is the practical payoff of the architecture: it says, for each working scientist, how deep they must dig — and it explains, without embarrassment, why most of physics runs beautifully on the facade. The facade is not shallow; it is what the seals make true.

## 7. A Remark on Language, Recorded Once

This note closes the week in which the series learned to say its own architecture, and it happened across two languages. The observation deserves one paragraph of record, in the series' spirit of naming its instruments. The publication language of this corpus is English, because readers are the point; the thinking language of its author is German, because depth is the point — and the relation between the two is precisely the relation between the storeys: **the English paper is the state quaternion of the thought — the compression that passes the seal; the mother tongue is the condensation beneath it.** The series honours both: it publishes facades in the language of transmission, and where a concept was born deep enough to resist translation it keeps the German word and lets the world learn it — as physics learned *Eigenwert*, *Ansatz*, *Gedankenexperiment*, *Zitterbewegung* — a tradition this corpus continues with the *Flimmer* and inherits with Einstein's *Mollusk*. What was scattered in 1933 survives as fossils in every textbook; a series titled in German and written in English is one small continuation of that seam.

## 8. The Sentence

The Feldtheorie is geometry in the foundation, knot in the structure, ledger on the facade — three storeys separated by seals that nature herself enforces, connected by staircases that are theorems, with one staircase still to build; and the reader who knows which floor a question lives on already knows how much of the Rattenschwanz it will cost to answer.

## References

The papers and notes of this series, as assigned to their rooms in Section 5; G. S. Adkins, C. R. Nauenberg and E. Witten, Nucl. Phys. B 228, 552 (1983) — collective coordinates as the trade's name for the compression; and the conversation of July 2026 in which the architecture was first said aloud, in German. (*The literature-verification pass — caveat (ix) of the foundations paper — applies throughout the series.*)

*Acknowledgment: drafting assistance by machine (Claude, Anthropic); the architecture — including the sentence that named it, "um nicht den gesamten Rattenschwanz der Kondensierung mitzuschleifen, haben wir das State Quaternion" — is the author's.*