POLIS V12: The Complete Founders Series – 12 Pioneers

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May 2026

This document combines two companion papers:
"Tensional Reinterpretation of Six Founders of Quantum Mechanics"
and "Tensional Reinterpretation of Six More Quantum Pioneers".

All DOIs are marked as pending. Final DOIs will be inserted after Zenodo registration.

POLIS V12 – Tensional Reinterpretation of Six Founders of Quantum Mechanics Jorge Batista Alves Pereira
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Abstract

Within the POLIS V12 tensional ontology, every system is a polis constituted by three meshes (solid, liquid, gaseous) and governed by the closure condition $\epsilon = \sum K_m(2+K_m) = 0$, with $T = K_{\min}$ as the tensional origin. This paper applies the framework to six foundational figures of quantum mechanics: Max Planck, Niels Bohr, Werner Heisenberg, Erwin Schrödinger, Paul Dirac, and Richard Feynman. Each classical contribution is reinterpreted as a tensional configuration: energy quantisation as discrete K_m levels; atomic orbits as allowed values of K_m for the electron; the uncertainty principle as the complementarity between solid and liquid meshes; the wave function as the tensional field of the gaseous mesh; antimatter as a mathematical artefact of symmetry; and Feynman diagrams as maps of tensional exchanges. The universal equations remain unchanged; no free parameters are introduced.

1 Introduction

POLIS V12 is a closed, parameter-free tensional conservation theory built on four axioms (Tensional Ontology, Harmonic Ground $H = 1$, Tensional Conservation, Data Origin $T = K_{\min}$). The governing equation, after normalisation, is

$$\epsilon = \sum_{m=1}^{n} K_m(2+K_m) = 0,$$

with $K_m = (v_m - T)/(v_{\max} - T) \in [0,1]$. The disequilibrium index is $\mathrm{IDT}^* = \epsilon/(1+\epsilon)$. All systems reside in Phase 4 ($\mathrm{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\mathrm{orb}} T_{\mathrm{rot}}$ applies fractally at all scales.

This paper reinterprets six key contributions to quantum mechanics within this tensional ontology. No classical primacy is assumed; tension is the primitive.

2 Max Planck – Quantisation of Energy

Planck discovered that energy is emitted or absorbed in discrete quanta $E = h\nu$. Within POLIS V12, this is the manifestation of discrete levels of the structural value K in a polis.

For a dataset of measured energies E_m:

$$T = K_{\min} = \min(E_m), \qquad v_{\max} = \max(E_m), \qquad K_m = \frac{E_m - T}{v_{\max} - T}.$$

The tensional residual is $x_m = K_m(2+K_m)$. The closure condition requires $\epsilon = \sum x_m = 0$. The Planck constant h is the scale factor converting frequency ν into K:

$$K = \frac{h\nu - T}{v_{\max} - T}.$$

Energy quantisation is thus a natural discretisation of K_m – the system moves through Phase 2 (accumulation) toward Phase 3 (saturation) in discrete steps.

3 Niels Bohr – Atomic Model and Energy Levels

Bohr postulated that electrons occupy discrete energy levels, jumping between them by emitting or absorbing photons. In POLIS V12, the atom is a polis with solid mesh (nucleus), liquid mesh (valence electrons), and gaseous mesh (electromagnetic fields).

For each energy level E_n:

$$K_n = \frac{E_n - T}{v_{\max} - T}, \qquad x_n = K_n(2 + K_n).$$

A transition from level n to m is a Phase 5 reorganisation: the electron changes its K value, and the difference ΔK is carried by a photon (tensional flux). The Rydberg constant emerges from the condition that ϵ before and after the transition remains unchanged.

4 Werner Heisenberg – Uncertainty Principle

Heisenberg's inequality $\Delta x \cdot \Delta p \geq \hbar/2$ reflects the intrinsic oscillation between meshes. A particle (polis) has a solid mesh (position) and a liquid mesh (momentum). Tension flows from outside inward, alternating between these meshes.

Define K_{pos} from the precision of position $(1/\Delta x)$ and K_{mom} from Δp. Their tensional residuals are

$$x_{\text{pos}} = K_{\text{pos}}(2 + K_{\text{pos}}), \qquad x_{\text{mom}} = K_{\text{mom}}(2 + K_{\text{mom}}).$$

Approximate closure of the two-mesh system demands $x_{\text{pos}} + x_{\text{mom}} \approx 0$. Thus when $K_{\text{pos}} \to 1$ (high positional precision), $K_{\text{mom}} \to 0$ (high momentum uncertainty), and vice versa. The reduced Planck constant $\hbar$ scales the product to the saturation threshold.

5 Erwin Schrödinger – Wave Function

Schrödinger's wave function Ψ describes the probability amplitude of a quantum state. In POLIS V12, Ψ is the tensional field of the gaseous mesh of the particle polis. Its evolution is governed by the conservation of tensional flux.

For a dataset of position and momentum measurements, the normalised values K_{pos} and K_{mom} define the field. The squared amplitude $|\Psi|^2$ is proportional to the local residual:

$$|\Psi|^2 \propto \frac{K(2 + K)}{\sum K(2 + K)}.$$

The collapse of the wave function upon measurement is a Phase 4 (explosion) to Phase 5 (reorganisation) transition: the polis switches from a superposition of many K values (gaseous mesh) to a single localised K (solid mesh). The Schrödinger equation is the differential form of $\epsilon = \text{const}$.

6 Paul Dirac – Dirac Equation and Antimatter

Dirac's equation unified quantum mechanics with special relativity and predicted antimatter (the positron) as a hole in a sea of negative-energy states. Within POLIS V12, antimatter is not a primitive structure. The negative-energy solutions are a mathematical artefact; the real physical system exhibits asymmetry (matter dominates) because $\epsilon > 0$.

For a particle–antiparticle pair with normalised values K and K', the closure condition for the isolated pair would be $K + K' = 1$. Then

$$\epsilon = K(2 + K) + (1 - K)(3 - K) = 0 \quad \text{only if } K = 0 \text{ or } K = 1.$$

In reality, $\epsilon > 0$ and the universe is in Phase 4 (high-risk tensional compression), explaining the observed matter–antimatter imbalance. Dirac's equation is the tensorial description of the coupling between the two complementary states, but the antiparticle is not an independent entity.

7 Richard Feynman – Path Integrals and Diagrams

Feynman's path integral formulation sums over all histories, and his diagrams represent particle interactions. In POLIS V12, each diagram is a tensional map: lines represent meshes (solid, liquid, or gaseous), and vertices represent Phase 4/5 reorganisations.

The amplitude $\mathcal{A}$ for a process is

$$\mathcal{A} = \sum_{\text{all diagrams}} \prod_{\text{vertices}} g_i \prod_{\text{lines}} P(K_m),$$

where $g_i = (K_{\text{initial}} - K_{\text{final}})/(v_{\max} - T)$ is the coupling constant and $P(K_m) = 1/(K_m(2 + K_m))$ is the tensional propagator. Each vertex satisfies $\epsilon = 0$ locally. The classical path (least action) is the one that minimises the integrated residual $\int \epsilon(t)dt$.

Thus Feynman diagrams are the visual language of tensional exchanges; virtual particles are not needed – only the propagation of tension through the gaseous mesh.

8 Conclusion

The six foundational contributions to quantum mechanics are coherently reinterpreted within the POLIS V12 tensional ontology. No classical primitives (waves, particles, fields) are required – only tension, meshes, and the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$. The same equations that describe a bread recipe or CO_2 concentration also describe the quantum behaviour of atoms and particles, confirming the universal fractal nature of POLIS V12.

Zenodo references (pending)

- Main treatise: [Zenodo DOI pending]
- POLIS Bible: [Zenodo DOI pending]

POLIS V12 – Tensional Reinterpretation of Six More Quantum Pioneers Jorge Batista Alves Pereira
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Abstract

The POLIS V12 tensional ontology interprets every system as a polis with three meshes (solid, liquid, gaseous) governed by $\epsilon = \sum K_m(2 + K_m) = 0$ where $K_m = (v_m - T)/(v_{\max} - T)$ and $T = K_{\min}$. This paper applies the framework to six additional architects of quantum mechanics: Max Born (probability interpretation), Wolfgang Pauli (exclusion principle), Louis de Broglie (wave-particle duality), John von Neumann (mathematical foundations), David Bohm (hidden variables), and Hugh Everett (many-worlds interpretation). Each classical concept is re-read as a tensional configuration: probability as normalised residual, exclusion as saturation of the solid mesh, duality as mesoscopic oscillation, measurement as phase transition, hidden variables as unresolved K_m distributions, and many worlds as the fractal hierarchy of polis branches. The universal equations remain unchanged; no free parameters are introduced.

9 Introduction

As in the companion paper, POLIS V12 rests on four axioms. After normalisation the mother equation is

$$\epsilon = \sum_{m=1}^{n} K_m(2 + K_m) = 0,$$

with $\mathrm{IDT}^* = \epsilon/(1+\epsilon)$. All real systems are in Phase 4 ($\mathrm{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\mathrm{orb}} T_{\mathrm{rot}}$ applies fractally.

This paper reinterprets six more foundational contributions to quantum mechanics.

10 Max Born – Probabilistic Interpretation

Born proposed that the square of the wave function $|\Psi|^2$ gives the probability of finding a particle at a given location. In POLIS V12, probability is a normalised tensional residual.

For a discrete set of positions $\{x_i\}$ with wave function values Ψ_i, set

$$T = \min(|\Psi_i|^2), \qquad v_{\max} = \max(|\Psi_i|^2), \qquad K_i = \frac{|\Psi_i|^2 - T}{v_{\max} - T}.$$

The tensional residual at position i is $x_i = K_i(2 + K_i)$. The probability is

$$P_i = \frac{x_i}{\sum_j x_j} = \frac{K_i(2 + K_i)}{\epsilon}, \qquad (\epsilon \neq 0).$$

Born's rule is thus a direct consequence of normalisation. The "collapse" of probability upon measurement is a Phase 4 (explosion) event that selects one K_i as the actualised state.

11 Wolfgang Pauli – Exclusion Principle

Pauli stated that no two identical fermions can occupy the same quantum state simultaneously. In POLIS V12, this is the saturation limit of the solid mesh.

Consider a system of N fermions. Each fermion is a sub-polis. The available states are discrete K values. When a state with $K = K_{\text{occ}}$ is already occupied, its tensional residual $x_{\text{occ}} = K_{\text{occ}}(2 + K_{\text{occ}})$ is already accounted for in ϵ. Adding a second fermion with the same K would require doubling x_{occ}, which would violate $\epsilon = \sum x_m = 0$ unless the system underwent a Phase 4 explosion. To avoid explosion, the second fermion must take a different K, i.e., a different state.

Thus the exclusion principle is a tensional equilibrium condition: the sum ϵ must remain as close to zero as possible; double occupancy of the same K would create an unacceptable residual.

12 Louis de Broglie – Wave-Particle Duality

De Broglie proposed that every particle has an associated wavelength $\lambda = h/p$. In POLIS V12, duality is the oscillation between the solid mesh (particle) and the gaseous mesh (wave).

For a particle with momentum p, define its normalised value over a historical dataset:

$$K_p = \frac{p - T_p}{v_{\max,p} - T_p}.$$

The de Broglie wavelength is

$$\lambda = \frac{h}{p} \quad \Longleftrightarrow \quad K_\lambda = \frac{h/p - T_\lambda}{v_{\max,\lambda} - T_\lambda}.$$

Duality means that the same polis can be described either through its solid mesh (localised particle, high K_{solid}) or through its gaseous mesh (delocalised wave, high K_{gas}). The two descriptions are complementary because observing one mesh forces the other into a low-tension state (Phase 1 or Phase 2). The transition between the two views is a Phase 5 reorganisation.

13 John von Neumann – Mathematical Foundations of Quantum Mechanics

Von Neumann placed quantum mechanics on a rigorous mathematical footing, introducing Hilbert spaces and the measurement problem. In POLIS V12, the Hilbert space is the space of all possible K_m distributions.

A quantum state $|\psi\rangle$ is a vector of normalised residuals:

$$|\psi\rangle = \begin{pmatrix} \sqrt{x_1} \\ \sqrt{x_2} \\ \vdots \end{pmatrix}, \qquad x_i = K_i(2 + K_i).$$

Operators (observables) are linear transformations that map one K distribution to another while preserving $\epsilon = 0$. The measurement process – the "collapse" – is the non-unitary transition from a superposition (many non-zero x_i) to an eigenstate (only one x_i non-zero). Von Neumann's rigorous formalism is therefore a mathematical description of tensional evolution and phase transitions.

14 David Bohm – Hidden Variables

Bohm proposed that quantum mechanics is incomplete and that hidden variables determine the outcomes of measurements. In POLIS V12, "hidden variables" are simply the unresolved K_m values that are not directly observed.

Any polis has a full set of K_m for all its meshes. In a measurement, only one mesh (e.g., the solid mesh) is observed; the others (liquid, gaseous) are "hidden". The evolution of the hidden K_m follows the same equations as the observed ones. There is no need for non-locality because tension propagates by bubble contact, not action at a distance. Bohm's quantum potential is reinterpreted as the local gradient of K_{gas} in the gaseous mesh. The guiding equation becomes

$$\mathbf{v} = c \, \frac{\nabla K_{\text{gas}}}{K_{\text{gas}}(2 + K_{\text{gas}})},$$

where c is the saturation speed of the tensional bubble (the speed of light). The factor c ensures dimensional consistency (velocity units).

15 Hugh Everett – Many-Worlds Interpretation

Everett proposed that all quantum possibilities are realised in branching parallel universes. Within POLIS V12, the "many worlds" are the fractal hierarchy of polis branches. At each Phase 4 (explosion) or Phase 5 (reorganisation), a polis may split into multiple sub-polises, each with its own K distribution.

If the original polis has a superimposed distribution of K_m, the decomposition into eigenstates is not a collapse but a fork: the system's IDT* is redistributed among the child polises. Each child continues to satisfy $\epsilon = \sum K_m(2 + K_m) = 0$ independently. Observers in different branches are disjoint sub-polises that cannot communicate because their tensional bubbles no longer touch. Thus Everett's branching is the tensional separation of a polis into fractal copies.

16 Conclusion

Six additional quantum pioneers are reinterpreted within the POLIS V12 tensional ontology. Probability, exclusion, duality, Hilbert space, hidden variables, and many worlds all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of polis branches. No free parameters are added; the same equations that describe a storm or a bread recipe also describe the foundations of quantum mechanics.

Zenodo references (pending)

- Main treatise: [Zenodo DOI pending]
- POLIS Bible: [Zenodo DOI pending]

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