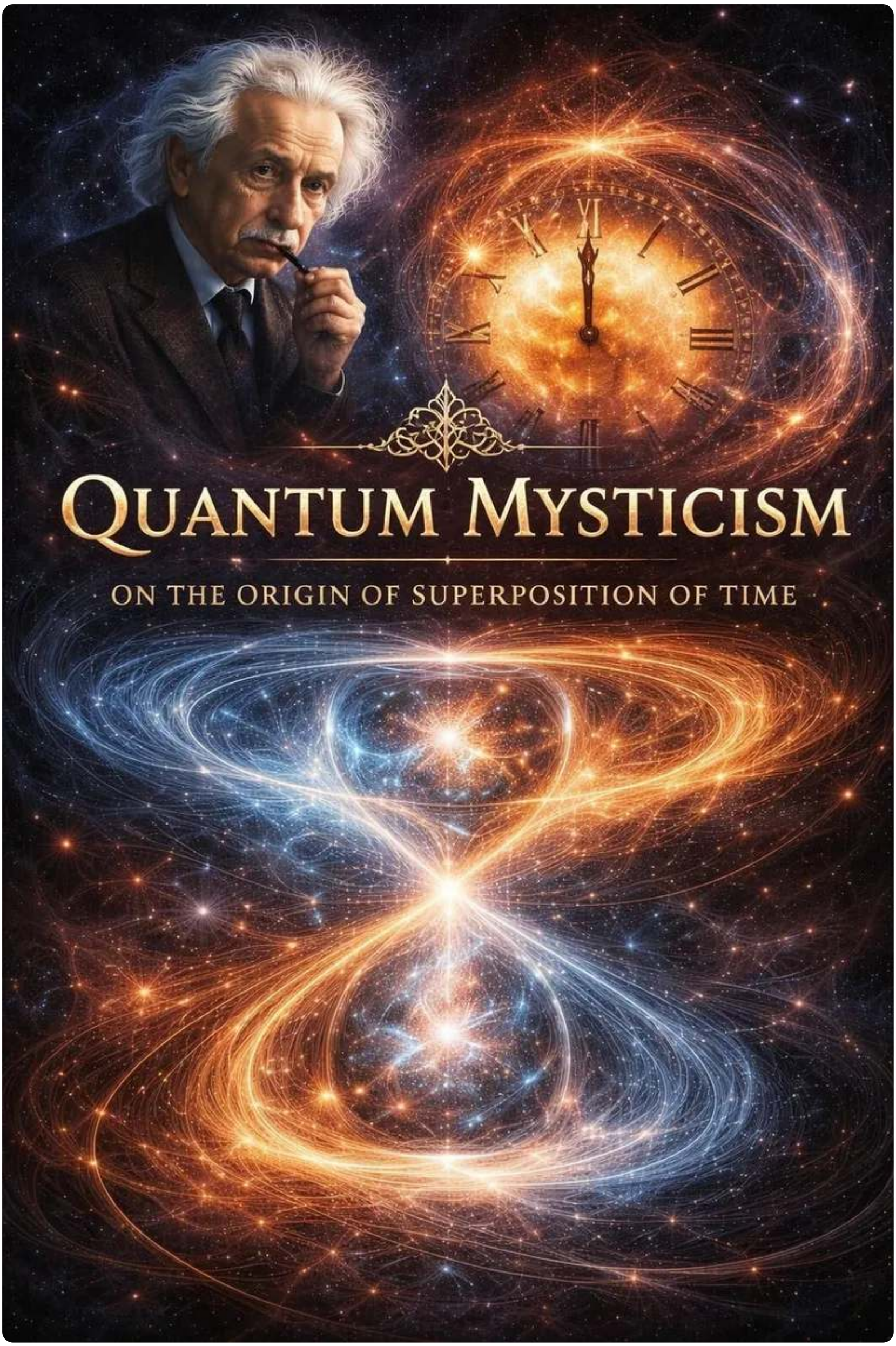
QUANTUM MYSTICISM
ON THE ORIGIN OF SUPERPOSITION OF TIME

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CHAPTER 1.

Quantum Mysticism

On the Origin of **Superposition of** 🕑 **Time**

In March 2026, the science media outlet Earth.com published an article summarizing the state of quantum physics:

> *“ Entangled particles share a connection that lets them "talk" to each other instantly. This means that measuring one particle **instantly affects** the state of the other, no matter how far apart they are. As incomprehensible as the concept of quantum entanglement seems, it's **no longer a matter of debate whether or not it's true**.*
>
> (2026) Quantum entanglement speed is measured for the first time - it's too fast to comprehend
> Source: Earth.com

The article popularized a study published in Physical Review Letters — the most prestigious journal in physics — authored by Prof. Joachim Burgdörfer, Prof. Iva Březinová, a team from TU Vienna, 🇦🇹 Austria and a team from 🇨🇳 China (W. Jiang et al.).

According to the researchers of the study, by measuring attosecond delays during photoionization, a process that involves a laser striking an atom, knocking an electron free and leaving an ion behind, they captured the *"birth"* of quantum entanglement. And because their mathematical model could not define or predict a single departure time, they concluded that the electron exists in a *"superposition of different birth times"*.

Phys.org and TU Vienna quoted the researchers stating the following ontic claims:

> *“ This means that the **birth time of the electron that flies away is not known in principle**. You could say that **the electron itself doesn't know** when it left the atom. It is in a quantum-physical **superposition** of different states. It has left the atom at both an earlier and a later point in time.*

And:

> *“ Which point in time it "really" was **cannot be answered** — the "actual" answer to this question simply **does not exist in quantum physics**.*

An examination of the study's logical framework reveals profound logical fallacies and an internal contradiction.

CHAPTER 1.1.

Violation of Mathematics

The foundation of the study's extraordinary claim relies on a violation of mathematics.

In standard quantum formalism, 🕑 time is strictly a parameter. It is the external coordinate against which a system evolves. It is not, and has never been, a quantum observable. There is no self-adjoint *"time operator"* with eigenstates.

To claim that an electron is in a *"superposition of times"* is to treat time as a physical observable with specific eigenstates (an *"earlier"* state and a *"later"* state). The authors bypass the foundational mathematical definitions of their own field to reify a coordinate parameter into a physical paradox. This is treated not as a formal error, but as settled science by a top-tier journal.

CHAPTER 1.2.

The Empirical Trap

Beyond the mathematical violation, the study's central claim creates an inescapable logical trap regarding its own empirical data.

The experiment utilizes a laser disruption event that functions as a defined reference 🕰️ clock for the system. Upon measurement, this system yields highly specific, coherent quantum values — specifically, a repeatable correlation of an average ~232 attoseconds tied to the residual ion's energy state.

The authors use this ~232 attosecond correlation as the primary empirical signature of their theory. Yet, in the same breath, they assert that the actual birth time *"simply does not exist in quantum physics."*

This forces the study into a fatal logical fork:

- **Path A (Logical Consistency):** The birth time exists complementary to ion energy. The fundamental invasiveness of measurement prevents the simultaneous specification of both, but the correlation between them is measurable.
- **Path B (The Author's Choice):** The birth time does not exist and the electron is in a superposition of multiple times.

The flaw in Path B: If a property does not exist, measurement cannot yield a coherent correlation *regarding* that property. A ~232 attosecond correlation cannot be measured if there is no actual time to correlate.

CHAPTER 1.3.

Mystical Thinking

The empirical trap is triggered by a categorical error regarding the fundamental invasiveness of measurement. To know the birth time, an observer would need to passively witness the electron's departure. Because measurement requires interaction, this is physically impossible.

Faced with this unavoidable empirical limit, the authors execute a specific sequence of logical errors that is characteristic of mystical thinking:

1. **Hit the limit:** Acknowledge that *a priori* knowledge of the birth time is impossible **without mentioning** that the available explanation for this fundamental inability is that empirical measurement is invasive.
2. **Refuse the logical resolution:** Reject the logically consistent view that the property exists but cannot be simultaneously specified due to complementarity.
3. **Invent a paradox:** Instead, speculate that the electron physically occupies multiple times simultaneously.
4. **Erase the value:** Declare the *"actual"* birth time *"does not exist in quantum physics"*.

Professor Burgdörfer:

> *You could say that **the electron itself doesn't know** when it left the atom. It is in a quantum-physical **superposition** of different states. It has left the atom at both an earlier and a later point in time.*

CHAPTER 1.4.

The Dogma of Completeness

The sequence of logical errors is not an accident of interpretation. It is a motivated defense mechanism protecting a core institutional mandate of physics: the Dogma of Completeness.

The historical origin of this dogma lies in a famous 1935 paper by Einstein, Podolsky, and Rosen (EPR) that posed the following question: *"Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?"*

The subsequent Einstein-Bohr debate was framed fundamentally around completeness. Einstein argued that because quantum math only provided probabilities, it was logically incomplete — it was missing variables. The institutional response, championed by Niels Bohr, argued that quantum mechanics is complete, but that we must accept reality lacks definite properties prior to measurement. Bohr's view became the prevailing mandate.

This mandate rests on the presumption of Mathematical Realism: the belief that the mathematical formalism is not merely a predictive tool, but can represent a literal description of the universe.

The logical consequence of this dogma is rigid: if the formalism is presumed complete, then any failure of the math to yield a definite answer cannot be blamed on the math. The failure must be projected onto physical reality. This is the motivation behind the observed mystical thinking.

By declaring the actual birth time value *"does not exist in quantum physics"*, the authors of the PRL study use the completeness dogma to protect the math from being labeled incomplete.

CHAPTER 1.5.

Conclusion

When the most prestigious physics journal in the world publishes a study that requires negating its own empirical data to sustain a *"multiple simultaneous times"* paradox, and when mainstream science media codifies this exact same logic by declaring the quantum entanglement debate *"over"*, it demonstrates that quantum mysticism is not an anomaly but the status quo.

> *When your theory requires electrons to forget their own history to fit the equations, you have not discovered the nature of the electron—you have exposed the limitation of the equation.*
>
> — Philosopher of quantum physics (2026)

Reference Study: Time Delays as Attosecond Probe of Interelectronic Coherence and Entanglement (Physical Review Letters)

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