ACTA SCIENTIAE

actascientiae.org

The Two Theories That Stumble Science

Vesselin C. Noninski[1]

[1]New York Sofia Institute,
149 West 12th Street,
New York, NY 10011

Subject Areas:
Theoretical Physics, Foundations of Physics, Philosophy of Science

Keywords:
Quantum Mechanics, Relativity, Mathematical Consistency, Philosophy of Science, Scientific Funding

Author for correspondence:
Vesselin C. Noninski
koooyyy@hotmail.com

Quantum mechanics (QM) and relativity, foundational to modern physics, are undermined by mathematical inconsistencies. This study demonstrates that QM's position eigenfunction equation is invalid due to the delta function's undefined nature, while relativity's Lorentz transformations yield contradictory physical definitions. Building on prior critiques [1–5], these flaws invalidate applications such as quantum computing and relativity-based cosmology. The findings highlight the need for rigorous reevaluation of physics' foundations and public funding priorities, advocating for logic-driven scientific inquiry. This work advances the epistemology of science by exposing persistent mathematical flaws, urging policymakers to scrutinize funding for invalid theories.

ORCID: 0000-0002-4455-6209

1. Introduction

Quantum mechanics (QM) and relativity are considered as foundational pillars of modern physics, shaping our understanding of the universe and driving purported technological advancements such as quantum computing and GPS. However, historical critiques have questioned their logical and mathematical consistency [1–5]. This study builds on these critiques, demonstrating that both theories suffer from irreconcilable mathematical flaws that undermine their validity and applications. Specifically, QM's position eigenfunction equation is mathematically inconsistent, and relativity's Lorentz transformations introduce contradictory physical definitions. These issues, previously submitted to the US Congress [4], necessitate a reevaluation of physics' foundations and public funding priorities. By exposing these flaws, this work advances the epistemology of science, advocating for logic-driven inquiry over institutional dogma.

2. Mathematical Inconsistencies in Relativity

Relativity, particularly through the Lorentz transformations, introduces contradictions that render it untenable. The transformations are defined as:

$$x' = \gamma(x - vt), \quad t' = \gamma\left(t - \frac{vx}{c^2}\right), \quad \gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}. \tag{2.1}$$

These yield velocity and acceleration definitions:

$$u' = \frac{u - v}{1 - \frac{vu}{c^2}}, \quad a' = \frac{a}{\gamma^3\left(1 - \frac{uv}{c^2}\right)^3}, \tag{2.2}$$

which inappropriately introduce variables external to frame K′ (u, a from frame K, and relative velocity v). These definitions conflict with the only possible, absolutely unavoidable, singularly true kinematic definitions:

$$u' = \frac{dx'}{dt'}, \quad a' = \frac{du'}{dt'}, \tag{2.3}$$

resulting in irreconcilable contradictions, because a single quantity cannot have two different definitions.

Furthermore, applying the Lorentz transformations to a rod's endpoints in frame K′: x'_1, x'_2 at t',

$$\Delta t' = 0, \tag{2.4}$$

(the way the definition of length requires) yields:

$$t = \gamma\left(t' + \frac{vx'}{c^2}\right), \quad \Delta t = \gamma\left(\frac{vx'_2 - vx'_1}{c^2}\right) \neq 0, \tag{2.5}$$

disrupting simultaneity and rendering length undefined, since physical length requires simultaneous endpoints.

These inconsistencies, detailed in [4], invalidate relativity's foundational claims. No experimental adjustments, such as GPS corrections due to finite speed of signals, resolve these logical contradictions.

3. Mathematical Inconsistencies in Quantum Mechanics

Quantum mechanics' foundational position eigenfunction equation in position space, $\hat{x}\psi_x(x) = a\psi_x(x)$, or:

$$x\psi_x(x) = a\psi_x(x), \tag{3.1}$$

posits the delta function $\delta(x-a)$ as the eigenfunction $\psi_x(x)$, leading to:

$$x\delta(x-a) = a\delta(x-a). \tag{3.2}$$

This equation is mathematically inconsistent for three reasons, as shown in Figure 1:

- It is undefined pointwise, meaningful only under integration, since $\delta(x-a)$ is a distribution, not a classical function.
- It is tautological under integrals: $\int_{-\infty}^{+\infty} x\delta(x-a)\,dx = \int_{-\infty}^{+\infty} a\delta(x-a)\,dx \Rightarrow a = a$.
- It relies on test functions for consistency: $\int_{-\infty}^{+\infty} x\delta(x-a)f(x)\,dx = af(a) = a\int_{-\infty}^{+\infty} \delta(x-a)f(x)\,dx$, impermissibly altering the equation's structure.

Three-Level Collapse of QM's Eigenfunction Equation

Level 1: Undefined Pointwise

$$x\delta(x-a) = a\delta(x-a)$$

Invalid outside integrals due to
delta function's undefined pointwise behavior

Level 2: Tautological Under Integrals

$$\int_{-\infty}^{+\infty} x\delta(x-a)\,dx = \int_{-\infty}^{+\infty} a\delta(x-a)\,dx \Rightarrow a = a$$

Trivial identity, provides no new information

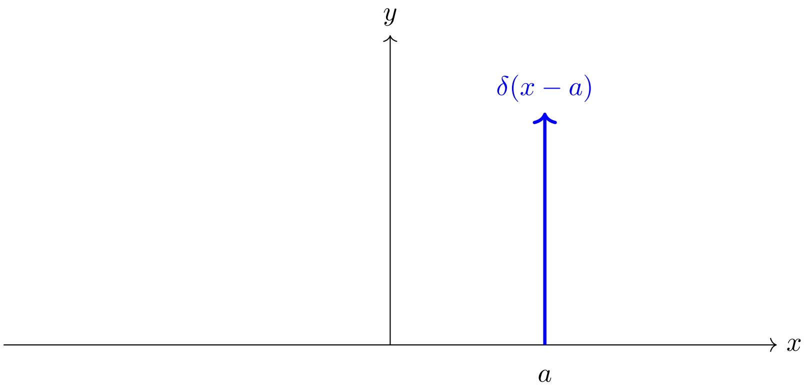
Level 3: Tampered with Using Test Functions

$$\int_{-\infty}^{+\infty} x\delta(x-a)f(x)\,dx = af(a) = a\int_{-\infty}^{+\infty} \delta(x-a)f(x)\,dx$$

Requires test functions, altering equation structure

Figure 1. Mathematical inconsistency of quantum mechanics' position eigenfunction equation, $x\delta(x-a) = a\delta(x-a)$, due to its undefined pointwise nature, tautological integral form, and reliance on test functions, invalidating the $L^2(\mathbb{R})$ framework.

This inconsistency, first noted by V. C. Noninski [7], extends to all eigenfunction equations in QM's $L^2(\mathbb{R})$ framework, undermining concepts like superposition, entanglement, and interference. Figure 2 illustrates the delta function's problematic nature.



$\delta(x - a)$: Defined only under integrals.
$x\,\delta(x - a)$: Undefined pointwise.

Figure 2. The delta function in QM's position eigenfunction equation is undefined pointwise and relies on inconsistent mathematical adjustments, rendering the $L^2(\mathbb{R})$ framework invalid.

Experimental successes (e.g., double-slit experiment) rely on empirical fitting, not mathematical validity [7]. Classical explanations following from experiments such as Couder's [8] prove these phenomena are macroscopic, not quantum.

4. Implications for Quantum Computing

Quantum computing, reliant on QM's $L^2(\mathbb{R})$ framework, is invalid due to the collapse of its foundational equations. While finite-dimensional Hilbert spaces ($\mathbb{C}^2$) used in qubit models operate correctly via linear algebra, they are detached from QM's flawed $L^2(\mathbb{R})$ structure. Algorithms like Grover's [9] and Shor's [10] are simulable classically, lacking true quantum advantage. Institutional claims of quantum supremacy by Google and IBM, published in journals like *Nature*, mask this detachment, misleading funding agencies. Figure 3 illustrates the scale of misallocated resources.

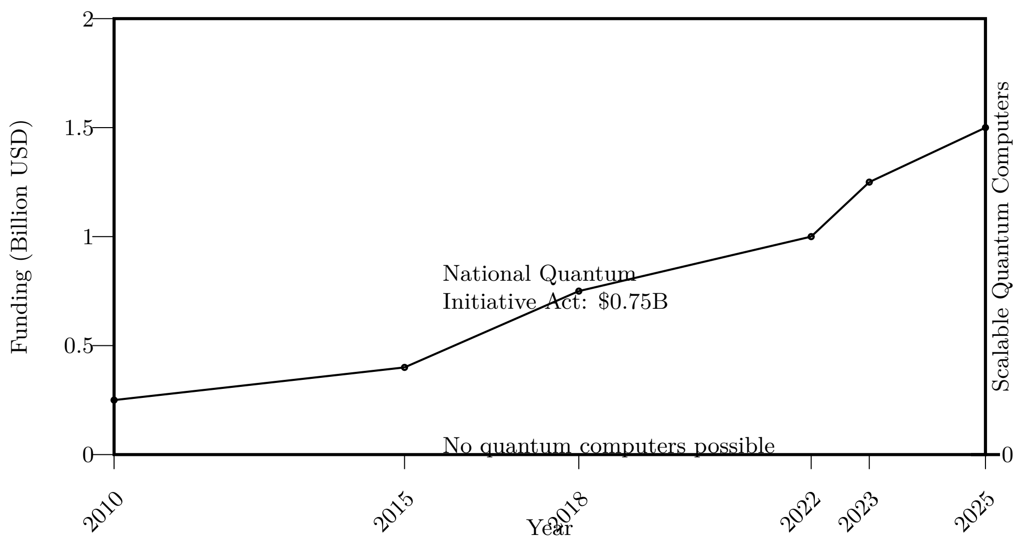


Figure 3. Federal funding for quantum mechanics and quantum computing (2010—2025) reflects significant investment in a mathematically invalid framework, necessitating reevaluation of funding priorities. Data estimated from NSF, DOE, and NASA budgets.

5. Discussion

The mathematical inconsistencies in QM's position eigenfunction equation and relativity's Lorentz transformations, detailed in Sections 2—3, undermine their scientific validity. Prior critiques [1–5] highlighted conceptual issues, but this study provides a rigorous mathematical analysis, showing that QM's $L^2(\mathbb{R})$ framework and relativity's kinematic definitions are logically untenable. These flaws invalidate applications like quantum computing and relativity-based cosmology, causing the disproportion shown in Figure 4.

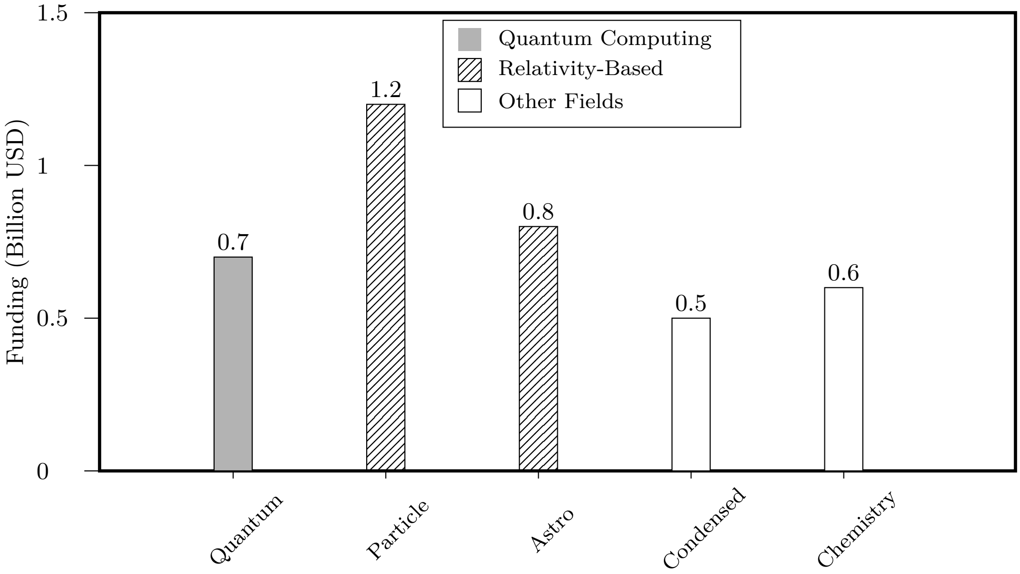


Figure 4. Federal funding for physics subfields in 2025 highlights resources allocated to quantum mechanics and relativity-based fields, despite their mathematical inconsistencies. Reevaluation of funding priorities is warranted. Data estimated from NSF, DOE, and NASA budgets.

The persistence of these theories reflects institutional inertia, not scientific merit. Funding agencies, as urged in prior submissions to the US Congress [4], must scrutinize investments in invalid theories. Future research should explore alternative frameworks grounded in logical consistency, such as classical derivations of quantum phenomena [5,8].

6. Conclusion

This study demonstrates that quantum mechanics and relativity are mathematically inconsistent, with QM's position eigenfunction equation and relativity's Lorentz transformations yielding irreconcilable contradictions. These flaws, supported by prior critiques [4,5], invalidate applications like quantum computing and necessitate a reevaluation of public funding. By exposing these issues, this work advocates for a logic-driven approach to scientific inquiry, urging policymakers and scientists to prioritize rigorous foundations over established narratives.

References

1. Bergson H. 1922 *Durée et Simultanéité*, Presses Universitaires de France. Translated in *Duration and Simultaneity*, Bobbs-Merrill Co., 1965.
2. Nordenson H. 1969 *Relativity, Time and Reality*, Allen and Unwin.
3. Dingle H. 1972 *Science at the Crossroads*, Martin Brian & O'Keeffe, London, p. 112.
4. Noninski VC. 2025 *The Unthinkable—Definitions of Velocity and Acceleration Under Attack, Destroyed by Lorentz Transformations*, submitted to the US Congress on April 29, 2025.
5. Noninski CI. 1964 *Energy and Heat of the Particles of a Thermodynamic System*, *Khimiya i Industriya (Sofia)*, **6**, 172–177.
6. Planck M. 1901 *Ueber das Gesetz der Energieverteilung im Normalspectrum*, *Ann. der Physik*, **4**, 553–566.
7. Noninski VC. 2011 *Foundations of Quantum Mechanics Revisited*, http://actascientiae.org/8pLANCK_net.pdf.

8. Couder Y, Protière S, Fort E, Boudaoud A. 2005 *Dynamical phenomena: Walking and orbiting droplets*, *Nature*, **437**, 208.
9. Grover LK. 1996 *A fast quantum mechanical algorithm for database search*, Proceedings of the 28th Annual ACM Symposium on Theory of Computing (STOC), pp. 212–219.
10. Shor PW. 1994 *Algorithms for quantum computation: discrete logarithms and factoring*, Proceedings 35th Annual Symposium on Foundations of Computer Science (IEEE), pp. 124–134.

Acknowledgment

The author thanks Prof. Judith M. Ciottone for insightful discussions. Editorial polishing was assisted by Grok 3 (xAI); all scientific content and ideas are the author's.