

Why Physical Laws Exist and Why They Cannot Be Fully Described Within the VPR: A Structural Account via the ISR/VPR Framework

The Spin- $\frac{1}{2}$ Problem as a Signature of the ISR/VPR Interface

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ABSTRACT

This paper applies the ISR/VPR framework developed in IVRP-01 and IVRP-02 to the most fundamental question that modern physics has left unanswered: why do physical laws exist, and why are physical constants universal? These questions have been treated as given conditions — accepted without explanation. This paper proposes a structural account: physical laws do not arise spontaneously from within the VPR. They are constituted through the action of the ISR/VPR interface. The electron spin- $\frac{1}{2}$ problem is presented as the clearest available signature of this interface action. When electron spin is calculated classically, the surface velocity exceeds the speed of light — the same structural signal as the ∞ identified in IVRP-01. The contradiction dissolves when spin is read as a two-rotation cycle that includes both the VPR and the ISR. This paper adopts the same structure as IVRP-01 and IVRP-02: each interpretation is accompanied by its anticipated scientific objections and a structural response.

Index Terms — ISR, VPR, Physical Law, Physical Constants, Electron Spin, Spin- $\frac{1}{2}$, Angular Velocity, Interface, Universality, Katakamuna, Artificial Intelligence.

INTRODUCTION: WHAT PHYSICS DOES NOT ASK

There are questions physics treats as given.

Why does the electron have the properties it has? Why does light travel at its particular speed? Why does the strong nuclear force exist as the strong nuclear force? These are measured and described with extraordinary precision. Their origin is not asked.

IVRP-01 identified a structural signal common to the unresolved problems of modern physics — the vacuum catastrophe, dark energy, the perpetual orbital motion of the electron, the universality of physical constants, and the incompatibility of quantum mechanics with general relativity. When physical equations reach their computational limits, they produce ∞ . This ∞ is not a breakdown. It is the signal that the VPR description has reached the boundary of the ISR.

IVRP-02 applied this observation to quantum entanglement. Distance is a VPR concept. The ISR contains no distance: $d_{\text{ISR}}(x, y) = 0$ for all x, y in the VPR. This is not a postulate — it is the necessary consequence of the process by which spacetime is generated at the ISR/VPR boundary.

IVRP-03 goes deeper. It asks about the origin of physical law itself.

THE ISR/VPR FRAMEWORK

As established in IVRP-01 [1] and IVRP-02 [2]:

ISR — Invisible Source Realm. The domain that

contains neither time nor space. Distance does not exist within it.

VPR — Visible Phenomenal Realm. The domain of the measurable and observable. Spacetime, distance, and physical law operate within the VPR.

The Interface (U). ISR and VPR act upon each other continuously. Information and energy cross from the ISR to the VPR through this interface — not as a singular event, but as a continuous and ongoing process.

Established structural observation (IVRP-01): When a physical equation produces ∞ , it is signalling that the VPR description has reached the boundary of the ISR. Renormalisation closes that door. What it removes, along with the infinity, may be the signal that something lies beyond.

Established structural observation (IVRP-02): $d_{\text{ISR}}(x, y) = 0$ — the ISR contains no distance. This is the necessary consequence of the generative process by which spacetime arises at the ISR/VPR boundary.

THE ORIGIN OF PHYSICAL LAW

Where do physical laws come from?

Modern physics offers several positions. The anthropic principle replaces the question — “why these laws?” — with an observation: laws incompatible with our existence are not observed by us. This is not an explanation. It is a substitution. String theory generates a vast landscape of possible physical laws but does not explain why this particular set is realised. The

multiverse proposal distributes the question across an unobservable ensemble.

None of these accounts for why physical laws exist at all.

The ISR/VPR framework proposes a structural alternative. Physical laws are not self-generating features of the VPR. They are constituted through the action of the ISR/VPR interface — supplied continuously to the VPR from the source domain that precedes spacetime. The electron's charge, the photon's masslessness, the gravitational constant — these are not features the VPR generates from within. They are what the ISR/VPR interface yields into the phenomenal world at every moment.

THE SPIN- $\frac{1}{2}$ PROBLEM

4.1 What Electron Spin Is

The electron possesses an intrinsic angular momentum called spin, with a spin quantum number of $\frac{1}{2}$. This property contains a structural paradox.

An ordinary object returns to its original state after a rotation of 360 degrees. The electron does not:

$$360^\circ \text{ rotation: } \psi \rightarrow -\psi \quad (1)$$

$$720^\circ \text{ rotation: } \psi \rightarrow +\psi \quad (2)$$

Two rotations complete one cycle. This cannot be explained within three-dimensional VPR space alone.

4.2 The Classical Calculation Reaches ∞

When the electron is modelled as a classically rotating charged sphere, the contradiction becomes explicit. The classical electron radius is:

$$r_e = \frac{e^2}{4\pi\epsilon_0 m_e c^2} \approx 2.8 \times 10^{-15} \text{ m} \quad (3)$$

For a sphere of this radius to carry the spin angular momentum $S = \frac{\hbar}{2}$, its surface velocity would need to be:

$$v \approx \frac{\hbar}{2m_e r_e} \approx 100c \quad (4)$$

One hundred times the speed of light. Physically impossible within the VPR.

This is the same structural signal as the ∞ identified in IVRP-01. Modern physics responded by declaring that electron spin is “not a classical rotation — it is an intrinsically quantum property.” The question was closed. But the ∞ was not explained. It was set aside — as renormalisation sets aside the infinities of quantum field theory. What is the ∞ pointing toward?

4.3 Read Through the ISR/VPR Framework

If electron spin does not complete within the VPR alone, the two-rotation cycle takes on a structural reading:

$$\text{Rotation 1: } \psi_{\text{VPR}} \rightarrow -\psi \quad (\text{VPR cycle incomplete}) \quad (5)$$

$$\text{Rotation 2: } -\psi \xrightarrow{\text{ISR}} +\psi \quad (\text{cycle complete}) \quad (6)$$

The two-rotation cycle is the structural signature of a single traversal of the ISR/VPR interface. The first rotation is the VPR half; the second is the ISR half. Together they constitute one complete unit of the electron's existence.

Under this reading, the surface velocity exceeding the speed of light is not a physical impossibility — it is the VPR attempting to contain a process that is not contained within the VPR. The ∞ marks the boundary of the VPR. It is the same boundary that appears in the vacuum catastrophe, in quantum gravity unification, and in the wormhole formalisation of IVRP-02.

CRITICAL ASSESSMENT

The two-rotation ISR/VPR reading of spin- $\frac{1}{2}$ is not falsifiable at present. No instrument can observe the ISR half of the proposed two-rotation cycle.

Response. Correct — and acknowledged. But the same objection applies to dark matter: not directly observable, yet structurally required by observable phenomena. The ISR/VPR framework occupies the same inferential position. The structural reading offered here dissolves a known paradox — the $\sim 100c$ surface velocity — rather than setting it aside. The path to falsifiability is a question this paper places for future research.

PHYSICAL LAW AS ISR/VPR INTERFACE ACTION

5.1 Why Physical Laws Exist

The electron spin case generalises.

Physical laws are not self-generating features of the VPR. They are constituted through the action of the ISR/VPR interface. The electron's charge, mass, and spin are not properties the VPR produces from within. They are what the ISR/VPR interface yields continuously — the intrinsic character of each particle as supplied through the boundary that precedes spacetime.

Without the ISR/VPR interface, the VPR's equations encounter ∞ and cannot proceed. The ∞ is not a failure of the equations. It is evidence that the equations are reaching for something they were not built to contain.

5.2 Why Physical Constants Are Universal

The ISR contains no distance: $d_{\text{ISR}}(x, y) = 0$.

The ISR/VPR interface acts uniformly across the entire observable universe — not because a signal propagates from one location to another, but because, from the ISR, there is no distance across which a signal would need to travel. The interface is equally present at every point in the VPR simultaneously.

This is the structural account of why physical constants are universal. The speed of light holds the same

value in a distant galaxy as in this laboratory not because of a signal that enforces uniformity across space, but because the ISR/VPR interface operates without spatial distinction. Universality is not a coincidence. It is a consequence of the absence of distance in the ISR.

5.3 The Unified Reading of Three ∞ Signatures

Paper	The ∞	ISR/VPR Reading	Reading
IVRP-01	Vacuum catastrophe, quantum gravity	VPR calculation reaches ISR boundary	
IVRP-02	Wormhole at Planck scale	VPR-only account of non-locality	
IVRP-03	Spin surface velocity $\sim 100c$	VPR-only account of physical law	

All three ∞ signatures share the same structure. When the VPR framework is pushed to its limit, ∞ appears. The ∞ is not the end of the question. It is the beginning of a different one.

THE SOURCE OF THIS FRAMEWORK

Whether the source of the framework presented in this paper is an ancient text, a direct intuition, or any other origin is independent of its validity. The history of science records discoveries initiated by dreams, by visual images, by observations made outside any institutional context. What is asked of a framework is not the respectability of its origin, but whether it is useful in the pursuit of understanding.

The source of the ISR/VPR framework is disclosed in full at <https://j-katakamuna.com/>, where a series of structural analyses is published progressively. The present paper stands or falls on its structural merits — on whether the ISR/VPR framework provides a coherent account of the phenomena it addresses, and whether its open questions are worth pursuing. That is the only standard applied here.

CRITICAL ASSESSMENT AND RESPONSE

OBJECTION 1

The origin of physical law is already addressed by existing frameworks — the anthropic principle, string theory, the multiverse.

Response. The anthropic principle does not explain why physical laws exist — it explains only why incompatible laws are not observed by us. String theory generates a landscape of possible laws but does not explain why this particular set is realised. No current framework accounts for why physical laws exist at all, as distinct from what they are. The ISR/VPR framework addresses the *why* — not as a final answer, but as a structural direction that existing frameworks do not provide.

OBJECTION 2

ISR lacks an operational definition. A framework built on an unobservable domain is not physics.

Response. As in IVRP-01 and IVRP-02. The ISR is not asserted as a directly observable entity. It is structurally required by the class of phenomena that VPR-only frameworks cannot account for — including the three ∞ signatures described in this series. The framework's inferential position is identical to that of dark matter: not directly observable, but structurally necessary from the behaviour of observable phenomena.

OBJECTION 3

The ISR/VPR series produces no quantitative predictions. Structural accounts without numerical derivations are not physics.

Response. The Copernican proposal that Earth orbits the Sun was a structural reframing that preceded the quantitative derivations of Kepler and Newton by decades. A structural account that correctly identifies what the existing framework cannot contain may be the necessary first step. The ISR/VPR series does not compete with quantum mechanics or general relativity at the quantitative level. It proposes that the ∞ they repeatedly encounter is not a computational problem to be managed, but a structural signal to be read. Quantitative development of this framework is a recognised open problem.

CONCLUSION

Physics has not asked why physical laws exist. This paper asks.

Physical laws are not self-generating features of the VPR. They are constituted through the action of the ISR/VPR interface — the boundary that precedes space-time and through which the source domain continuously supplies the phenomenal world with what the phenomenal world cannot generate from within.

The electron spin- $\frac{1}{2}$ problem is the clearest available signature of this interface action. The surface velocity that exceeds the speed of light — the $\sim 100c$ that classical calculation produces — is the same structural signal as the ∞ that appears in the vacuum catastrophe, in quantum gravity unification, and in the Planck-scale divergence of wormhole formalisation. It is VPR-only physics reaching for what lies beyond its boundary.

The two-rotation cycle of spin- $\frac{1}{2}$ reads, through the ISR/VPR framework, as one complete traversal of the ISR/VPR interface. One rotation in the VPR; one traversal through the ISR; one complete unit of the electron's existence. The ∞ does not signal impossibility. It signals incompleteness — the incompleteness of any description that attempts to contain the electron's existence within the VPR alone.

Physical constants are universal because the ISR contains no distance. The interface acts without spatial distinction across the entire observable universe — and therefore what it constitutes, the physical laws and con-

stants of the VPR, holds without variation.

IVRP-01 asked what the ∞ means. IVRP-02 looked at quantum entanglement from the other side of the ∞ . IVRP-03 looks at physical law itself from the other side of the ∞ . The answer, in each case, is the same: the ∞ marks the boundary of the VPR. What lies beyond it is not a void. It is the source.

The findings presented here are structural and descriptive. Claims regarding the physical operability of the ISR/VPR framework remain outside the scope of this paper and are reserved for empirical investigation in subsequent research.

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References

- [1] Jinco K. (2026). *The ISR/VPR Framework as a Structural Account of Unresolved Problems in Modern Physics: A Collaborative Analysis with AI*. Zenodo. DOI: 10.5281/zenodo.22730176
- [2] Jinco K. (2026). *Quantum Entanglement Without Wormholes: A Structural Account via the ISR/VPR Framework*. Zenodo. DOI: 10.5281/zenodo.22761568
- [3] Bell, J. S. (1964). On the Einstein Podolsky Rosen paradox. *Physics Physique Fizika*, 1(3), 195–200.
- [4] Dirac, P. A. M. (1928). The quantum theory of the electron. *Proceedings of the Royal Society A*, 117(778), 610–624.
- [5] Weinberg, S. (1995). *The Quantum Theory of Fields, Vol. 1*. Cambridge University Press.
- [6] Penrose, R. (2004). *The Road to Reality*. Jonathan Cape.