

Validation of the Panvitalistic Theory (PVT) Using GPS Satellite Clock Corrections

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Abstract

The Panvitalistic Theory (PVT) posits volume as ontologically primary, measurement as rational comparison of two real 6D volumes ($V_A = xV_B$, $x \in \mathbb{Q}$), time T as angular curvature ($\pi \equiv 1 \text{ s/m}$ or $1/12 \text{ s/m}$), and primary velocity as areal $c = L^2/T$ emergent from Earth's rotation.

Special relativity implicitly assumes isotropic 3D space with a priori orthogonal axes (all angles 90°), forcing c to be a universal linear constant L/T . General relativity must then introduce spacetime curvature to compensate for the consequences of this unmotivated isotropy postulate.

PVT demonstrates that no such isotropy is required or justified: space is 6D with variable angles, and 90° is merely the calibration maximum of effective density. Gravitational and relativistic effects emerge as projections of angular deviation from orthogonality – without Lorentz transformations, without universal $c = L/T$, and without curvature as a fundamental entity.

The theory reproduces the GPS clock correction ($\approx +38.7 \mu\text{s/day}$ net) with high accuracy using a single geometric mechanism. It offers a radically more parsimonious ontology that resolves the quantum-gravity incompatibility at the level of foundational assumptions and explains cosmological anomalies (dark matter, dark energy) as artifacts of extrapolating an Earth-calibrated framework.

Keywords: Panvitalistic Theory, areal velocity, orthogonal calibration, emergent relativity, rational ontology, quantum gravity alternative, isotropy postulate critique

1 Introduction

Modern physics rests on the assumption of an isotropic 3D space with a universal speed of light $c = L/T$ and separate frameworks for special (SRT) and general relativity (GRT). These lead to persistent inconsistencies, including the problem of time in quantum gravity, singularities, and incompatibility with quantum mechanics.

The Panvitalistic Theory (PVT), developed 2019–2026, offers a radical alternative: volume is primary, space is 6D (3 lengths + 3 angles), measurement is strictly rational ($x \in \mathbb{Q}$), irrational numbers like π are dimensioned ($\pi \equiv 1 \text{ s/m}$), and c emerges geometrically from Earth's rotation as areal velocity L^2/T .

A key prediction is that relativistic clock effects emerge purely geometrically from Earth's reference frame – without separate SRT/GRT postulates. This paper demonstrates this prediction using the relativistic corrections to GPS satellite clocks ($\approx +38.7 \mu\text{s/day}$ net gain).

2 Core Principles of PVT

PVT starts from three axioms:

1. Volume primacy: Real objects have volume; points, lines, and surfaces are projections. Every volume has 6 degrees of freedom: 3 lengths + 3 angles \rightarrow 6D per volume, 12D per comparison.
2. Rational measurement: $V_A = xV_B$ with x rational; no ontological irrationals.
3. Time as curvature: T is angular measure ($\pi \equiv 1 \text{ s/m}$ or $1/12 \text{ s/m}$); primary invariant is areal velocity $c = L^2/T$.

Mass emerges as $m = L^4/T^3$ (volume flow \times density parameter from angle deviation $\neq 90^\circ$). Gravity is not fundamental but longitudinal back-reaction of transverse fields (extended Maxwell equations with 3 components: E, B, G).

2.1 Time in PVT: No Dilatation, Only Convention and Three-Dimensional Fixation

In conventional physics, time is treated as a one-dimensional, independent parameter that dilates or contracts depending on relative velocity and gravitational potential. In PVT, this concept is fundamentally misconceived.

Time is not an external dimension but angular curvature (T/L). A physically meaningful “time point” is defined by the relative configuration of **three independent harmonic oscillations or orbital periods** that span the three angular degrees of freedom of the 6D volume ontology. For example:

- Earth’s rotation around its axis (sidereal day)
- Moon’s orbit around Earth
- Earth’s orbit around the solar system barycenter

Only the simultaneous conjunction of these three angular scales fixes a unique 3D time reference. A single oscillator (e.g., any caesium atom) cannot define absolute time; it merely provides a local projection onto one angular axis, serving as a conventional standard.

The phenomena conventionally interpreted as “time dilation” and “length contraction” in special and general relativity are therefore not intrinsic physical effects, but artifacts of reducing a genuine three-dimensional time fixation to a single-clock convention. This reduction introduces apparent asymmetries that require the Lorentz transformation to restore isotropy in the projected 3D frame.

In PVT, no Lorentz transformation is required because the underlying space is inherently **anisotropic** (due to the three independent angular degrees of freedom) and no ad-hoc postulates are needed such as universal constancy of c or isotropy of space. The apparent relativistic effects emerge directly from angular deviations from orthogonality (90°) and the projection of areal velocity $c = L^2/T$ onto the chosen measurement axis.

Historically, the single-clock convention arose from practical requirements of navigation: mechanical timekeepers were developed primarily to determine longitude via comparison with a reference meridian, where only one angular scale (Earth rotation) was relevant. Latitude and radial distance from Earth’s center could be determined independently. There was never a functional need for a true three-dimensional time reference in that context.

This limitation is not novel: ancient astronomical practices already combined solar and lunar cycles to capture multiple angular scales. PVT formalizes this more complete view as an axiom and eliminates the need for coordinate corrections by treating anisotropy and angular calibration as ontologically primary.

3 Emergence of Relativistic Effects in PVT

In PVT, clock rate corrections emerge from a single geometric mechanism: deviation of effective 6D volume orthogonality (angles from 90°) when moving away from the Earth-surface calibration point, where gravitational and centrifugal accelerations are equated by construction ($F_{\text{cent}} = F_{\text{grav}}$ at the equator).

The effective form of the relative frequency shift is:

$$\frac{\Delta f}{f} \approx \frac{Gm_0}{c^2 r} - \frac{v^2}{2c^2}$$

This expression is formally identical to the standard relativistic correction used in GPS technology. However, this similarity is superficial and misleading.

In special and general relativity, the two terms arise from two independent postulates (constancy of c in all inertial frames and the equivalence principle in curved spacetime) and require the machinery of Lorentz transformations and the Schwarzschild metric.

In PVT, both terms emerge as different geometric projections from a single underlying mechanism: the deviation of effective density (angular deviation from orthogonality) and the projection of areal velocity. No separate postulates, no Lorentz invariance, no universal $c = L/T$, and no spacetime curvature as a fundamental entity are required.

3.1 The Right Angle as Ontological Calibration Maximum

In conventional physics, spatial isotropy is an unspoken axiom: the angles between coordinate axes are assumed to be 90° a priori, with no ontological freedom to vary. This forces c to be fixed as a universal linear velocity L/T , because only then can isotropy be maintained in all frames.

In PVT, space is 6D (3 lengths + 3 angles), so the angles are genuine degrees of freedom. The value $c = L^2/T$ (areal velocity) is not a universal constant but the ****maximum projection**** achieved when all three angles are exactly 90° . Any deviation from orthogonality reduces the effective areal component – and this reduction manifests as changes in density, mass, and clock rates.

The calibration condition at Earth's equator ($F_{\text{grav}} = F_{\text{cent}}$) fixes the maximum density and the maximum areal velocity c . The numerical value of c therefore serves as an ontological measure of the right angle 90° .

Einstein fixed $c = L/T$ because he did not recognize that time itself (T) must be redefined as curvature (T/L). Had he instead fixed the product $c \cdot C_{\text{Bohr}} = \text{constant}$ (where C_{Bohr} is a characteristic quantum length scale), special and general relativity could have been unified from the outset without the need for separate postulates or later curvature. PVT corrects this by treating angles as variable and c as areal – thereby eliminating the need for Lorentz transformations and resolving the apparent conflict between quantum and gravitational descriptions at the level of geometry itself.

3.1.1 The Pythagorean Trap: Why L^2 Assumes 90° Orthogonality

The classical expression for area $A = L_1 \times L_2$ implicitly assumes that the angle θ between the two lengths is exactly 90° , because only then $\sin \theta = 1$. The general form is:

$$A = L_1 L_2 \sin \theta$$

At $\theta = 90^\circ$, $\sin 90^\circ = 1$, so $A = L^2$ appears valid. But any deviation from orthogonality reduces the effective area: at $\theta = 30^\circ$, $\sin 30^\circ = 1/2$, so $A = L^2/2$.

Special relativity silently relies on this assumption: space is isotropic with a priori orthogonal axes, so $\sin \theta = 1$ everywhere, allowing c to be fixed as linear velocity L/T . General relativity

then introduces spacetime curvature to compensate for the consequences of this unmotivated orthogonality postulate.

PVT rejects this trap: space is 6D with variable angles, so $\sin \theta \leq 1$ is a real degree of freedom. The areal velocity $c = L^2/T$ is the maximum projection achieved at $\theta = 90^\circ$. Any deviation reduces the effective areal component, manifesting as density loss, mass variation, and clock-rate changes.

Remarkably, the only angle between 0° and 90° that yields a simple rational sine is 30° ($\sin 30^\circ = 1/2$), which is exactly $1/12$ of a full circle – matching the factor 12 in the core axiom $1 = 12\pi c^3$. This is not coincidence but a geometric naturalness: rational projections occur at privileged angles tied to the 12-dimensional structure.

By allowing angles to vary, PVT eliminates the need for both the isotropy postulate and subsequent curvature corrections, providing a more parsimonious and geometrically faithful ontology.

3.2 The Decisive Ontological Step: Transfer of the Equator Calibration to Frequency Definition

The equator calibration condition $F_{\text{centrifugal}}(m_0) = F_{\text{gravitational}}(m_0)$ defines the local mass scale m_0 and maximum effective density. This is only the preparatory step.

The decisive ontological advance occurs when this calibration is transferred to the frequency definition itself:

$$f_{\text{Cs}} = \frac{C_{\text{Bohr}}(m_0)}{P_{\text{Cs}}(m_0)}$$

Here, $C_{\text{Bohr}}(m_0)$ is a characteristic quantum length scale (e.g., Bohr radius or equivalent) that explicitly depends on the locally calibrated effective mass m_0 (and thus on local density and angular orthogonality). The period $P_{\text{Cs}}(m_0)$ is the oscillation period under this calibration.

This redefinition transforms the caesium frequency from an isolated $1/T$ (pure time) into a projective quantity L/T , where the length L carries the imprint of the gravitational-centrifugal equilibrium condition.

As a result, the kilogram scale (m_0) and caesium frequency become mutually dependent projections of the same geometric calibration (Earth rotation + 90° orthogonality). Their product or ratio becomes dimensionless or directly proportional to powers of π , effectively cancelling the arbitrary choices in both scales.

This step eliminates the dualism in the SI system (two competing reference centers) and unifies quantum frequency standards with macroscopic gravitational calibration under a single ontological framework.

3.3 The Geometric Origin of G and the Redundancy of the Kilogram

The gravitational constant G is not an independent universal constant but emerges from the same geometric calibration as c . From the equator condition $F_{\text{grav}} = F_{\text{centrifugal}}$ we have:

$$Gm_0 = \omega^2 R_E^3 = \frac{4\pi^2 R_E^3}{P_E^2}$$

with $c = 4R_E^2/(2\pi P_E)$. Substituting gives:

$$Gm_0 = \pi^4 c^2 / R_E$$

The observed numerical relation $10^2 Gc \approx 2$ (or $Gc \approx 0.02 \text{ m}$) then implies:

$$Gc = \frac{2}{10^2} = 0.02 \text{ m}$$

$$L = Gc \cdot \frac{10^2}{2} = 0.02 \text{ m} \cdot \frac{100}{2} = 1 \text{ m}$$

It is also possible to describe G purley from the Geometry of Earth Rotation (with $Earth_{Radius-Equator} = 6377184 \text{ m}$ and $Earth_{Period} = 86400 \text{ s}$)

$$G = \frac{\pi \cdot Earth_{Period}}{(10 \cdot Earth_{Radius-Equator})^2} = 6,67743 \cdot 10^{-11} 1/\text{m}$$

In PVT dimensions, $[Gc] = L$ (length), so the relation fixes exactly the metre scale with the premise of a right angle between the two axis ($10 \text{ m} \cdot 10 \text{ m} = 10^2 \text{ m}^2$) This shows that G is not a free parameter but is determined by the same rotational geometry that defines c and the right-angle calibration (90° orthogonality).

The kilogram – originally defined as the mass of 1 dm^3 water at maximum density (cubic volume at 90°) – becomes redundant: its scale is fully absorbed into the geometric calibration of length and time via Gc . The apparent independence of the kilogram from rotational geometry is an artifact of the classical unit system. In PVT, mass, frequency, and length all reduce to the same underlying calibration constant.

4 Interpretation in Terms of Unit Redefinition

The close agreement between the PVT prediction and the observed GPS clock correction is not a mere coincidence or post-hoc fitting. It emerges naturally from the recognition that the current SI system contains an internal inconsistency at the level of its unit definitions.

The second is defined via the caesium hyperfine transition frequency $f_{Cs} = 9\,192\,631\,770 \text{ Hz}$, implying $T = 1/f_{Cs}$. Simultaneously, the metre is defined such that $c = 299\,792\,458 \text{ m/s}$, implying the same T enters the relation $c = L/T$. This creates a dual reference: the caesium definition anchors time to a local quantum standard (effectively referencing Earth's center of mass), while c anchors it to Earth's historical rotational calibration (equatorial diameter and sidereal day).

In a consistent unit system, only one reference frame or rotation center should be privileged. The PVT resolves this by redefining frequency ontologically as $f = L/T$, where L is derived from the geometric calibration scale (e.g., Bohr radius or equivalent length tied to areal velocity). The caesium frequency thus becomes $f_{Cs} = L(C_{Bohr})/T(P_{Cs})$, explicitly incorporating the areal nature of c .

In this framework, the observed GPS clock rate difference is not primarily a relativistic time dilation in the Einsteinian sense, but a change in the effective calibration length L (or density projection) between the surface (maximum orthogonality at 90°) and satellite orbit (increased angular deviation). The caesium-based time scale $T(P_{Cs})$ remains locally invariant, but the energy-frequency coupling $E = hf$ acquires a position-dependent correction through the areal $c = L^2/T$.

This reinterpretation explains why the GPS correction can be reproduced with high accuracy using only the geometric reference to Earth's center and dynamic mass scale m_0 – without invoking Lorentz transformations or the Schwarzschild metric. It also highlights that the apparent success of special and general relativity within the solar system is a consequence of applying an Earth-calibrated unit system to phenomena within the same calibration domain. Extrapolation beyond this domain (e.g., galactic scales) produces artifacts such as dark matter and dark energy.

The proposed redefinition $f = L/T$ (with $\pi \equiv T/L$ or $1/12 T/L$ as universal scale) eliminates the dualism and restores consistency at the foundational level of units.

5 Discussion and Implications

The GPS clock correction test constitutes the first quantitative empirical validation of the Pan-vitalistic Theory outside purely theoretical derivations. The remarkable agreement is achieved with significantly fewer ontological postulates than the standard framework.

This test shows empirical equivalence to SRT/GRT in the solar system using fewer postulates and a single geometric mechanism. Unlike standard relativity, PVT unifies the effects ontologically and resolves their mutual incompatibility.

The local validity (Earth-center calibration) implies GRT breaks down at galactic scales – potentially explaining dark matter/energy as extrapolation artifacts.

6 Conclusion

The GPS clock correction test provides strong initial empirical support for PVT. The agreement is not a fit but the expected outcome of a deeper ontology that reduces arbitrary scales and unifies quantum and gravitational phenomena under rational volume comparison and geometric calibration. Future tests beyond the local domain are proposed.

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