



New Insights into the Holy Grail of Physics – or What Do Rabbits Have to Do with the Cosmos?

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Abstract

This paper develops a unified physical model in which electrons are not point-like charges but real toroidal current structures with intrinsic rotation. The coupling of translational and rotational motion yields a Pythagorean velocity relation that extends from the electron to cosmic Birkeland currents and is structurally governed by the Golden Ratio. The classical interpretation of the Lorentz transformation is identified as a misconception: the spacetime interval does not describe a four-dimensional metric but orthogonal components of motion within three-dimensional space. Under strong electromagnetic fields, electrons contract to proton-scale toroidal structures, allowing nuclear forces to be interpreted as purely electromagnetic effects. The neutron emerges as a bound state of a proton and a contracted electron. Experiments such as SAFIRE support the possibility of nuclear transformations at moderate energies. Overall, the model leads to a simplified and more intuitive physics that unifies relativity, quantum theory, nuclear physics, and cosmology within a geometric–dynamic framework

The “Holy Grail of physics” is commonly understood as a theory that describes the micro- and macrocosm within a single unified framework. The first idea in this direction was proposed in 1956 by Hugh Everett III, a doctoral student of John Archibald Wheeler. In his dissertation *The Theory of the Universal Wave Function*, Everett introduced an interpretation of quantum mechanics that immediately met resistance, as it contradicted the then-dominant Copenhagen interpretation formulated largely by Niels Bohr. In 1957 Everett postulated “relative” quantum states. Physicist Bryce DeWitt later popularized this approach in the 1960s and 1970s under the name *Many Worlds*, referring to the different possible states of a quantum system after a measurement. His aim was to avoid the collapse of the wave function and to explain its apparent subjective collapse through the mechanism of quantum decoherence. This was intended to resolve the paradoxes of quantum theory—such as the EPR paradox and Schrödinger’s cat—by asserting that every possible outcome and every event is realized in its own world.

In this essay, a wave function of the electron is presented that requires no interpretation, does not collapse, and whose real superpositions allow an extension across many orders of magnitude—from the interior of the atom to Birkeland currents.

1. The Mystery of the Electron and the Cosmos

1.1 The Wave Function of the Electron

Since Thomson's "plum pudding model" of the atom around 1903, physicists have imagined electrons as point charges or small solid spheres endowed with spin, but whose wave function cannot be spatially localized. On the other hand, electricity is viewed macroscopically as a ring current in an electrical circuit. These two pictures do not fit together. This discrepancy has long gone unnoticed because engineers and physicists inhabit two different worlds, each with its own mathematics. But as circuits shrink due to microelectronics, the tension between these worlds has become increasingly severe.

Physically, spin is a torque, not a dimensionless quantum number. This means that an electric charge cannot be considered a point. A point cannot possess rotation. Moreover, point charges of the same sign could never combine into a current; they would repel each other and fly apart. Consequently, a rotating charge must have spatial extent.

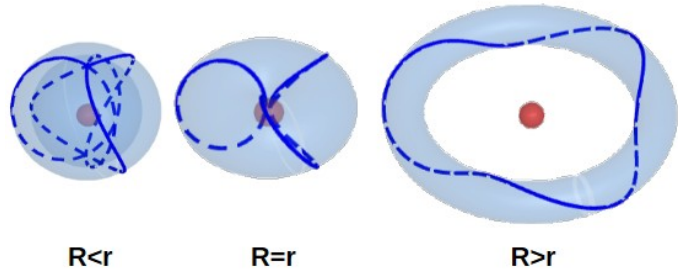


Figure 1 Different tori

However, when a charged sphere rotates, it loses its spherical shape: it flattens and constricts. An electron can therefore be represented as a wave function on a torus, as shown in Figure 1 on the right. The result is a torus with two radii: the radius of the current loop and the radius r of the current filament. The radii R of the current loops can vary over many orders of magnitude. Because a charge occupies a finite volume, the radius of the current filament becomes smaller and its tension increases. Yet by superimposing several tori, the strength of the current filaments can be increased. Unlike a potential vortex, an electrical vortex maintains a constant angular velocity of spin across its radius.

If such an electron is placed in an external electric field, its energy consists of the translational energy in the field and the rotational rest energy of its intrinsic spin:

$$2 E = m \cdot v_{trans}^2 + \Theta \cdot \omega^2 \quad (1)$$

The moment of inertia of the torus is

$$\Theta = m \cdot \left(\frac{3}{4} \cdot r^2 + R_e^2 \right) \quad \text{für } r \ll R_e \rightarrow \quad \Theta = m \cdot R_e^2 \quad (2)$$

Substituting (2) into (1) yields:

$$2 E = m \cdot v_{trans}^2 + m \cdot R_e^2 \cdot \omega^2 \quad (3)$$

From this follows the equation of motion for an electron:

$$c^2 > v_{trans}^2 + R_e^2 \cdot \omega^2 \quad (4)$$

The vector $\vec{R}_e \cdot \omega$ is the radial velocity, perpendicular to the transverse velocity v_{trans} . R_e is therefore the radius of the current loop around the atomic nucleus—and thus also the radius of a loop antenna that emits an electromagnetic pulse when the current loop is interrupted.

1.2 The Distribution of Energy Between Translation and Electron Spin

An interesting question now arises: how are translational and rotational energy distributed, for example in Birkeland currents? Here the German astronomer and mathematician Johannes Kepler may be of help. According to his description, the motions of the celestial bodies produce a *perennis quidam concentus rationalis, non vocalis* (a certain unceasing rational, non-acoustic harmony).¹ He explicitly aligned himself with the Pythagorean tradition and sought to renew it by applying its core idea to his heliocentric model. Kepler famously stated:

*“Geometry has two great treasures: one is the theorem of Pythagoras; the other is the division of a line into extreme and mean ratio. The first may be compared to a measure of gold; the second we may call a precious jewel.”*²

However, he did not return to the ancient idea that planetary motions produce an audible harmony. Instead, he argued that they are governed by numerical ratios analogous to musical harmony. He did not consider the distances of the planets from the Sun, but the ratio between their smallest and largest angular velocities. Now we may set

$$R^2 \cdot \omega^2 = a^2.$$

From the Pythagorean theorem $a^2 + b^2 = c^2$ with $b = a \sqrt{q}$ ³ and $c = aq$, we obtain:

$$a^2 + q \cdot a^2 = q^2 \cdot a^2$$

Thus the ratio $q = \frac{AB}{AS}$ of the geometric sequence must satisfy the condition

$$1 + q = q^2.$$

This is precisely the defining equation of the Golden Ratio ϕ . Therefore, $q = \phi$: $\phi = \frac{1 + \sqrt{5}}{2}$

A right triangle in Euclidean space is a Kepler triangle exactly when it is similar to a triangle with side lengths 1, $\sqrt{\phi}$, and ϕ . In this way, we find a structural similarity extending from the individual electron all the way to the Birkeland currents of the cosmos. And it goes even further. Kepler would have been delighted had he been able to see the images of spiral galaxies that the Hubble Space Telescope and the James Webb Space Telescope provide today.

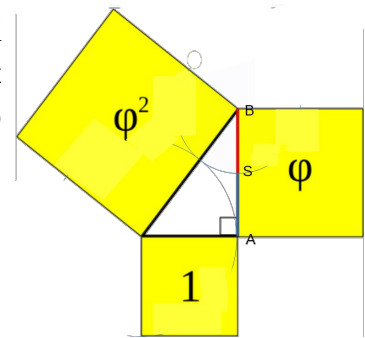


Figure 2: Kepler-triangle

1.3 Structural Considerations

To explain the world, we do not need increasingly complicated mathematics. It is like in the story of *Indiana Jones and the Last Crusade* in Spielberg’s film of the same name, in which Indiana Jones must choose the correct chalice to bring his father the water of life.⁴ Indy deliberately chooses a

1 J. Kepler - *Harmonice mundi* 5,7

2 E. Ch. Wittman - *Elementargeometrie und Wirklichkeit: Einführung in geometrisches Denken*, Springer-Verlag, 2013, S. 147 Quelle: <https://beruhmte-zitate.de/autoren/johannes-kepler/>

3 b is similar to the Kepler constant v/r , where v is the orbital velocity of the planets and r is their mean distance from the Sun. [The Mystery of Gravity – The Thunderbolts Project™](#)

4 [Notes on the Holy Grail of Modern Physics – The Thunderbolts Project™](#)

simple cup for the water of life — and likewise, we must choose simple, practical mathematics that has something to do with life, far from academic hubris.

What is an old mathematical problem that has something to do with life? Exactly — the problem of calculating the growth of a rabbit population. It appears in the famous book *Liber Abaci*⁵ by the mathematically gifted merchant Leonardo of Pisa, known as Fibonacci.

The book was published in 1202 AD and introduced the Indo-Arabic numerals to Europe, greatly simplifying calculation. Among other things, it contained a problem concerning the growth of a rabbit population. In the first month, there is only one pair of rabbits, not yet capable of reproduction. In the second month, it produces another pair. Assuming that no rabbit dies and that each pair produces a new pair every month starting from its second month of life, the question is: how many rabbit pairs exist in the sixth month?

In general terms, this is a structural growth problem for bipolar elements — just as we find them in the theory of Electric universe.

A remarkable connection exists between the Fibonacci spiral and the Golden Ratio: the ratio of two successive terms of the sequence approaches ϕ after only nine steps, accurate to three decimal places:

$2/1=2$, $3/2=1.5$, $5/3=1.666$, $8/5=1.600$, $13/8=1.625$, $21/13=1.615$, $34/21=1.619$

$$\lim_{n \rightarrow \infty} \frac{f_{n+1}}{f_n} = (1 + \sqrt{5})/2 \approx 1.618 = \phi$$

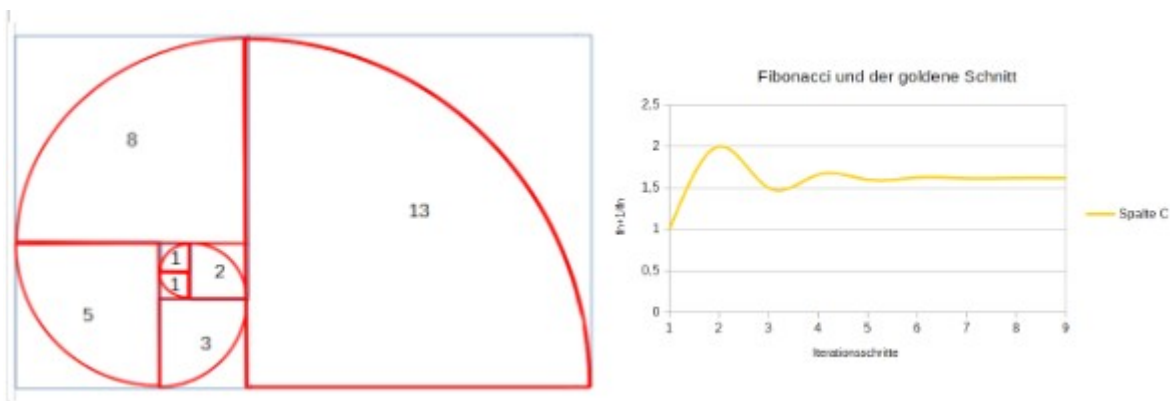


Figure 3: The Fibonacci spiral and the golden ratio

We have established that, from the electron to the macrocosm, the structural properties of matter are determined by the Pythagorean theorem and the golden ratio. But what about down to the atomic nucleus?

5 [Liber Abaci - Fibonacci | PDF](#)

2. The Mystery of the Electron and the Atomic Nucleus

2.1 Historical Background

When René Descartes laid out his methods of scientific inquiry and the search for truth in the *Traité de la monde* in 1637, Isaac Newton had not yet been born. Descartes described the motion of the solar system as a great vortex, unaware that this vortex itself lies within an even greater one—the Milky Way—whose motion is driven by the electromagnetic properties of electrons and ions. James Clerk Maxwell later formulated the laws governing the motion of this ether. This led to disputes about whether the ether was at rest or carried along by the solar system. The decisive error was the assumption that matter and ether were distinct.

The last major advocate of a material ether was Hendrik Antoon Lorentz, who received the Nobel Prize in 1902 for his contributions. Today, within the Electric Universe framework, the ether is understood as the plasma current that carries our solar system around the Milky Way. Lorentz expressed it as follows:

»“That one cannot speak of an absolute rest of the ether is self-evident; the expression would not even make sense. When I say for brevity that the ether is at rest, I mean only that one part of this medium does not move relative to another, and that all perceptible motions of celestial bodies are motions relative to the ether.«.⁶

Lorentz developed his transformation laws to describe the dynamics of electrons in electromagnetic fields. The transformation served to preserve the form of Maxwell’s equations under changes of inertial frames and was not intended as a statement about the structure of space and time.⁷ From his Nobel lecture, the following remark is preserved:

»About ponderable matter I shall have very little to say, but all the more about the ether and electrons.« — Hendrik Antoon Lorentz

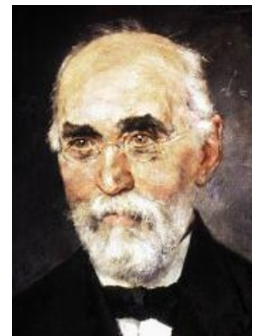


Figure 4:
Hendric Antoon Lorentz,
the misunderstood genius

Because the ether was imagined as a medium separate from the matter surrounding us, Albert Einstein felt compelled in his 1905 paper⁸ to demand the source-freeness of the electric field in order to symmetrize Maxwell’s equations. In doing so, he removed the dynamical character of the equations and eliminated the ether as a physical substrate in the sense of Newton’s idea of action at a distance. In the next step, his former teacher at the Zurich Polytechnic, Hermann Minkowski, gave the theory a mathematical form as a projective transformation. Although the mathematical elegance of his presentation impressed many contemporaries, this step severed the connection between electromagnetic processes and their underlying medium. Minkowski’s introduction of a constant spacetime interval,

$$s^2 = x^2 + y^2 + z^2 - c^2t^2 \quad (5)$$

6 H.A. Lorentz - *Versuch einer Theorie der electrischen und optischen Erscheinungen in bewegten Körpern* https://de.wikisource.org/wiki/Versuch_einer_Theorie_der_electrischen_und_optischen_Erscheinungen_in_bewegt_en_K%C3%B6rpern/Einleitung

7 H. A. Lorentz - “*The Theory of Electrons and Its Applications to the Phenomena of Light and Radiant Heat*“, Leipzig: Teubner, 1909.

8 A. Einstein, - “Zur Elektrodynamik bewegter Körper,” *Annalen der Physik* **17**, 891–921 (1905).

creates the illusion of a metric of a four-dimensional manifold.⁹ As a result, the spacetime interval s^2 is mistakenly regarded as a four-dimensional vector space, with our world interpreted as a three-dimensional projection of this space, even though only three dimensions actually exist. This reinterpretation has shaped modern physics but obscures the physical origin of the Lorentz factor.

3. Reinterpreting the Spacetime Interval

The interval s in equation (5) is traditionally regarded as the invariant length of a four-vector that is supposed to represent a metric in a four-dimensional space (4D). However, its structure can be understood more appropriately as a Pythagorean relationship between two orthogonal components of motion (Figure 5). A true metric exists only without the last term. For a 4D metric, ct would have to be independent of the other coordinates. But the speed of light is a velocity in three-dimensional space. One could also call ct a *light-second*, meaning the distance in 3D space that light travels in one second.

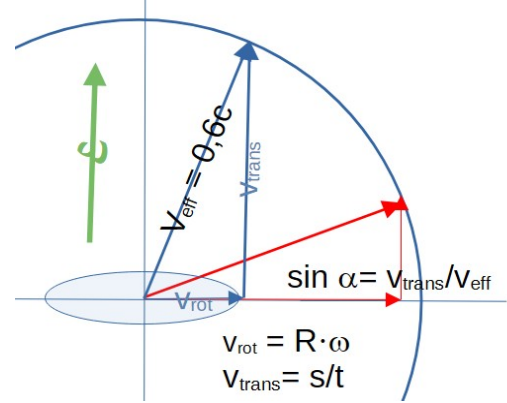


Figure 5 Deutung des Raumzeitintervalls als Elektronenradius.

We now want to rearrange the equation slightly and restore to it a physical meaning in the sense intended by Lorentz. For $x^2+y^2+z^2$ we may write R_{3D}^2 , since the expression represents the radius of a sphere and is precisely the metric of 3D space. Thus we have:

$$s^2 = R_{3D}^2 - c^2t^2$$

Naturally, we can divide this expression by the square of time. We identify s/t as a rotational velocity and write:

$$c^2 = \frac{R_{3D}^2}{t^2} - \frac{s^2}{t^2} \rightarrow c^2 = v_{trans}^2 + R_e^2 \omega^2 \tag{6}$$

Comparing equation (6) with equation (4), the inequality becomes an equality, and the direction of rotation is reversed.

Since the spin velocity is perpendicular to the translational velocity, as shown in Figure 6, equation (6) forms a triangle, and we obtain: $v_{trans} = c \sin \alpha$. where α is the pitch angle of the helix in the external field. Solving equation (6) for R_e we obtain:

$$R_e = \sqrt{\frac{c^2 - v_{trans}^2}{\omega^2}} \tag{7}$$

Equation (7) provides the limiting value for the radius of the electron's wave function.

9 H. Minkowski, - "Raum und Zeit," *Physikalische Zeitschrift* **10**, 104–111 (1909).

4. The Electron as a Structured Physical Object

The electron possesses a magnetic moment, which implies a circulating current. The simplest stable geometry for such a current is a torus. A spherical “guiding field” of a moving charge is not only flattened by centrifugal forces but also constricted at the center by the pinch effect. Thus, the guiding field of the electron becomes a torus with the major radius $R=R_e$ and the minor radius r of the current filament. This makes R from equation (3) a real physical parameter of the electron, and its structure provides a natural explanation for spin as an actual rotation rather than an abstract quantum number. We can now write the wave function of an individual electron following David Bohm’s idea^{10 11}.

$$\Psi_{p,q}(R,r,\theta,\phi) = \begin{pmatrix} [R+r \cdot \cos(q \cdot \phi)] \cdot \cos(p \cdot \theta) \\ [R+r \cdot \cos(q \cdot \phi)] \cdot \sin(p \cdot \theta) \\ -r \cdot \sin(q \cdot \phi) \end{pmatrix} \quad (8)$$

The parameters p and q are internal parameters controlling the waviness of the torus, while the angles θ and ϕ determine its motion. Bohm’s interpretation of the wave function as a real field is consistent with the toroidal model. The wave function describes the geometry and internal dynamics of the electron, not merely probability amplitudes—an interpretation already criticized by Gerrit Birkhoff and John von Neumann.¹²

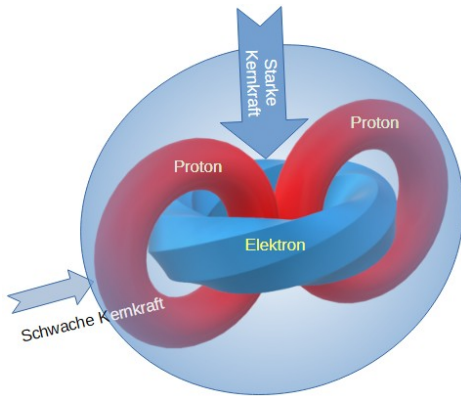


Abbildung 6: Elementarmagnet als Kernbaustein

In strong electromagnetic fields, the torus radius R_e of the electron decreases, as seen from equation (7). This effect becomes significant in plasma double layers and nuclear environments, where electrons can shrink by several orders of magnitude. In the atomic shell, $R_e \gg r$, but in the atomic nucleus, R_e shrinks to approximately the size of a proton. The

proton, which has its own magnetic moment, can likewise be modeled as a torus with opposite charge. A neutron forms naturally when a shrunken electron becomes embedded in the structure of a proton, since the neutron’s size is comparable to that of the proton. A neutron is said to have a magnetic moment but no charge—physically impossible, since a magnetic field requires an electric current. In this framework, nuclear forces arise from constriction effects, ring currents, and topological knotting of toroidal structures. As shown in Figure 6, both types of nuclear forces emerge naturally from magnetism. This eliminates the need for a separate “strong force” and avoids the conceptual difficulties of quark confinement in quantum chromodynamics.¹³

It is reasonable to assume that when electrons from the atomic shell are captured during radioactive beta decay, they also exist within the nucleus and shrink there to the size of a proton.¹⁴ We may

10 D. Bohm - a.e. - *An Ontological Foundation for the Quantum Theory*; Department of Physics, Birkbeck College, University of London; PHYSICS REPORTS (Review Section of Physics Letters) 144, No. 6 (1987) 32L-375. North-Holland, Amsterdam http://www.weylmann.com/bohm_1986.pdf (7.02.26)

11 D. Bohm & B. J. Hiley, *The Undivided Universe: An Ontological Interpretation of Quantum Theory*, Routledge, London, 1993.

12 G. Birkhoff & J. von Neumann, “The Logic of Quantum Mechanics,” *Annals of Mathematics* 37, 823–843 (1936).

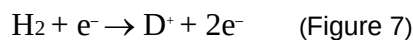
13 H. Fritzsche*, u.a. Advantages of the Color Octet Gluon Picture https://www.academia.edu/81144388/Advantages_of_the_color_octet_gluon_picture (13.02.26)

14 L.W Alvarez,.; *The Capture of Orbital Electrons by Nuclei* Phys. Rev. 54 (1938) 486;

therefore assume that the nucleus contains only protons and nuclear electrons of roughly equal size. There, only $R_e > r$ applies. Since the proton also has charge and spin, it too must be a torus, and two protons can be linked with one electron into a stable knot, as shown in Figure 3. This knot behaves like an elementary magnet with two different force orientations depending on whether it acts axially or laterally. From these elementary magnets, stable atomic structures can be built.¹⁵

6. Experimental Support: The SAFIRE Project

The well-documented SAFIRE experiment by Montgomery Childs¹⁶, designed to study electrodynamic nuclear fusion processes on the Sun, demonstrated real nuclear transmutations in 2019. This supports the hypothesis that electron shrinkage enables nuclear processes at moderate energies, and that the observed reaction



occurs under conditions far below the temperatures required by thermonuclear models, with freshly formed atoms condensing on the anode.¹⁷ For this to occur, electrons must shrink in the external field. Experience shows that the wavelengths of emitted radiation—from acoustics to microwaves—reliably indicate the size of the oscillating object. There is no reason to distrust this principle at shorter wavelengths. The prerequisite for shrinkage is a double layer that presents a barrier to electrons, slowing them sharply and causing them to release internal energy as radiation.

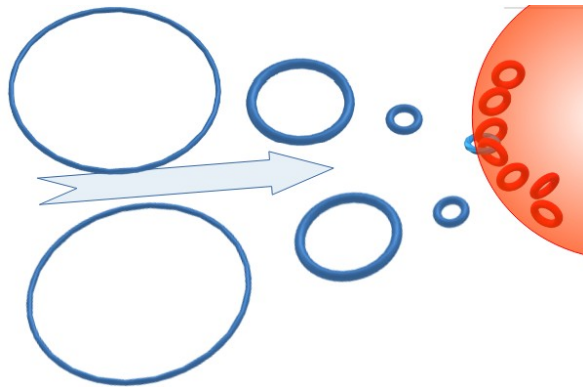


Figure 7: Schrumpfung der Elektronen an einer Doppelschicht

If no external field is present, the pitch angle of the current filament helix is $\alpha=0$, and thus $v_{trans}=0$ relative to the central proton. The shrinkage ratio between nuclear electrons and shell electrons without an external field is assumed to be on the order of 1/100,000, corresponding to the ratio of gamma radiation to visible light. From this, we obtain the radius ratio between nuclear and shell electrons using equation (9):

$$\frac{1}{100000} = \sqrt{\frac{c^2 - v_{trans}^2}{c^2}} = \sqrt{1 - \frac{v_{trans}^2}{c^2}} \quad (9)$$

This allows us to compute the relative velocity required for a free proton and an electron to collide in an electric field. Nearly the speed of light is required. Note that the relative velocities of negative and positive charges add during collision. The shrinkage factor from equation (9) is simply the inverse Lorentz factor $1/\gamma$, and the relative impact velocity is:

15 M. Hufner - *Dynamische Strukturen in unbelebter Materie*; Verlag: Books on Demand 2022 ISBN-13: 9783756293513

16 SAFIRE Project (Aureon Energy Ltd.), *Experimental Results on Plasma Double Layers and Transmutation Phenomena*, Technical Reports 2017–2023.

17 M. Hufner - *Was hat die Entropie mit der Sonne und der Kernfusion zu tun?*
<https://blog.mugglebibliothek.de/category/category10/>

$$v_{trans} = c \cdot \sqrt{1 - \frac{1}{10^{10}}}$$

It should also be noted that protons and neutrons are listed as being three orders of magnitude smaller than they should be according to this calculation. Their radii should lie in the picometer range. Since no measurable quantities other than the speed of light enter the calculation, the error must lie in the stated proton radius.

7. Conclusions for Modern Physics:

The conceptual gap between relativity theory and quantum theory is based on a misinterpretation of the Lorentz transformation. By restoring its original physical meaning, we regain an ontological framework in which electrons possess real internal structure and nuclear forces arise naturally. Furthermore, the following conclusions emerge:

Relativity Theory:

Relativity theory is mathematically inconsistent and loses its ontological significance. Spacetime becomes a computational tool rather than a physical entity. Linking space and time is physically a process occurring in 3D space.

Quantum Theory:

Spin and wave function regain their physical meaning. Quantum behavior arises from the geometry and dynamics of structured particles.

Nuclear Physics:

Nuclear forces are interpreted as electromagnetic in origin. The neutron is reinterpreted as an unstable composite of a proton and an electron.

Cosmology:

Electromagnetic processes—especially in plasmas—gain far greater importance than gravitational models in shaping cosmic phenomena.

These conclusions will profoundly transform physics, making it simpler and more intuitive once again.