Qeios

General Balance in the Six-Dimensions of Space-Time

Seyed Kazem Mousavi[1]

Department of Physics University of isfahan

Abstract:

This paper presents a comprehensive theory that expresses the theories of quantum mechanics and general relativity in a unified framework. The study investigates events over a specific duration in the Euclidean six-dimensional space-time ($R6=x1+x2+x3+t1+t2+t3$). Notably, the relationship between the inherent properties of matter, fundamental constants, and quantum mechanics phenomena with space-time geometry has not been thoroughly explored in previous research. The proposed theory provides deterministic predictions for the probabilistic outcomes of quantum mechanics. This prediction is based on a metric derived from the Eccentricity of the Ellipse, influenced by the density of objects over time. Furthermore, the article presents novel insights into the cause and nature of dark matter and dark energy.

Keywords: quantum mechanics, general relativity, space-time geometry, dark matter, dark energy

[1] *Correspondence: kazem.mousavi92@yahoo.com*

https://doi.org/10.32388/QT9EZE

1. Introduction

In the past century, significant efforts have been dedicated to reconciling quantum mechanics and general relativity. The inherent non-deterministic nature of quantum mechanical phenomena has posed a fundamental challenge to the compatibility of these two pillars of modern physics. At the heart of this incompatibility lies the unreality of quantum mechanical phenomena, which stands in stark contrast to the deterministic framework of general relativity. This discrepancy has been a subject of intense theoretical and experimental investigation, reflecting the profound implications for our understanding of the fundamental nature of reality. Albert Einstein, a key figure in the development of both quantum mechanics and general relativity, articulated a perspective that sheds light on this fundamental issue. According to Einstein, the reality of a physical quantity is contingent upon the ability to predict that reality with certainty, without inducing any disruption or disorder within the system. This criterion, rooted in the classical determinism of physics, underscores the challenge posed by the inherently probabilistic nature of quantum mechanics [1].

To unite two theories, the two theories must share identical attitudes towards physical quantities. Understanding the phenomenon of quantum mechanics can be achieved through a comprehensive knowledge of the origins of mass, spin, electric charge, and other related factors. This understanding is crucial for the integration of theories and the advancement of scientific knowledge in the field.[2][3][4][5][6]. The exploration of time's nature has become increasingly crucial in the ongoing development of the theory of everything, particularly in light of the remarkable successes of quantum mechanics. As we strive towards a comprehensive understanding of the universe, it is imperative to consider the fundamental nature of time and its role in shaping the fabric of reality. By delving into the intricacies of temporal dynamics, we can gain valuable insights that may ultimately lead to a more unified and comprehensive theoretical framework. This endeavor holds great promise for advancing our understanding of the cosmos and represents a pivotal strategy in the evolution of scientific thought [7]

A new approach to understanding quantum mechanics phenomena involves reexamining the nature of space-time. Describing events outside of the constraints of time is a novel area of study that offers a fresh perspective in the field of physics. This new outlook provides a different vantage point from which to explore the universe. Research and scholarly work in this area is centered on defining different metrics within a six-dimensional space. This shift in perspective opens up new possibilities for comprehending the fundamental principles that govern the behavior of particles at the quantum level [8][9][10][11][12]. The incorporation of six-dimensional space as a framework for understanding space-time presents certain challenges, yet it proves to be highly advantageous in elucidating various phenomena within the realm of quantum mechanics [13]. The concept of space-time metric, described in terms of elliptical eccentricity, offers a compelling solution to several longstanding problems in the field of astrophysics and cosmology. This innovative approach provides a new framework for understanding the fundamental nature of space-time and its impact on the behavior of celestial bodies. One of the key advantages of employing elliptical eccentricity in the metric description of space-time is its ability to account for the non-uniform distribution of mass and energy throughout the universe. Traditional models often struggle to accurately represent the complex gravitational interactions that occur in systems with significant

https://doi.org/10.32388/QT9EZE

asymmetry or irregularity. By incorporating elliptical eccentricity into the metric, scientists can more effectively capture the dynamic and intricate nature of these systems, leading to more accurate predictions and explanations of observed phenomena.

Furthermore, this approach has the potential to address discrepancies between theoretical predictions and observational data related to the motion of celestial bodies. The incorporation of elliptical eccentricity into the space-time metric offers a more nuanced understanding of gravitational effects, allowing for better alignment between theoretical calculations and empirical evidence. This has significant implications for our ability to model and interpret the behavior of objects ranging from individual stars to entire galaxies. In addition, the use of elliptical eccentricity in the metric description of space-time has implications for our understanding of the fundamental structure of the universe. By providing a more comprehensive framework for incorporating the effects of mass and energy distribution, this approach has the potential to shed light on longstanding mysteries such as dark matter and dark energy. It may also offer new insights into the behavior of black holes and other exotic astronomical phenomena. Overall, the incorporation of elliptical eccentricity into the metric description of space-time represents a promising avenue for advancing our understanding of the cosmos. By providing a more accurate and comprehensive model of gravitational interactions, this approach has the potential to revolutionize our ability to explain and predict a wide range of astrophysical phenomena. As researchers continue to explore and refine this innovative framework, it is likely to yield discoveries and deepen our appreciation for the intricate interplay between space, time, and the forces that shape the universe [14][15]. In this six-dimensional space-time framework, quantum mechanics offers a comprehensive and elegant way to describe the behavior of particles and their interactions. By incorporating both the three dimensions of space and the three dimensions of time, this approach provides a more complete picture of the dynamics of quantum systems. The concept of six-dimensional space-time has profound implications for our understanding of phenomena such as quantum entanglement, particle-wave duality, and the behavior of subatomic particles. It allows for a more nuanced and sophisticated description of these phenomena, shedding light on the underlying principles that govern the behavior of the quantum world [16]. The concept of time as an independent dimension from space allows for the definition of a unique type of 'motion' in time itself. When considering extrinsic geometry, this motion in time can be understood as a 'real' distance. The unidirectional nature of time is expressed by the time arrow, and it is observed that objects move at varying speeds within this dimension. The rate of an object's movement through time is directly related to its mass, with denser objects moving more slowly in the time dimension. This relationship between mass and movement through time is further exemplified by phenomena such as gravitational time dilation and time dilation for moving objects. These occurrences express the change in density of an object within the space-time continuum, resulting in a slower movement through time for denser objects. The balance theory delves into the equilibrium of events and quantities across the three dimensions of time and the three dimensions of space within the six dimensions of space-time [17]. This theory provides a framework for understanding the interplay between temporal and spatial dimensions, offering insights into the dynamic nature of the universe. In conclusion, the consideration of time as an independent dimension opens up new avenues for understanding

https://doi.org/10.32388/QT9EZE

motion and the interplay between mass, space, and time. It provides a framework for exploring the intricacies of the universe and offers valuable insights into the fundamental nature of reality. The paper addresses several key defects in a particular theory, aiming to establish a balance and parity between time, space, and physical quantities. Its theories the concept of mass resulting from movement in both time dimensions and space, emphasizing the interconnectedness of these fundamental aspects. The proposition that time can be disregarded in the sub-atomic realm is explored, with examples illustrating particle behavior within different time dimensions. Furthermore, the paper discusses the relationship between particle state entanglement and higher dimensions, highlighting the intriguing closeness of particles despite spatial separation. Additionally, the article explores the potential independence of three-time dimensions from three space dimensions and their deep interconnections for analyzing quantum mechanics and general relativity phenomena. The nature and cause of quantum mechanical phenomena are attributed to the relationship between fundamental constants and key mathematical numbers. Finally, the paper emphasizes the significance of a geometrical interpretation for unifying quantum mechanics with general relativity.

2. Six-dimensional space-time

Space-time is a Euclidean space 3+3 consisting of three space dimensions (x, y, z) and three-time dimensions (t-, t, t+). (2.1). Time dimensions are imaginary 3-dimensional from the perspective of a supervisor and they are observed only in one dimension. (1.2) (2.2)

$$X = (x_1, x_2, x_3, t_1, t_2, t_3) \in R^6 \qquad 1.2$$

$$ds^2 = {dx_1}^2 + {dx_2}^2 + {dx_3}^2 - (c^2{dt_1}^2 + c^2{dt_2}^2 + c^2{dt_3}^2) \qquad 2.2$$

The dimensions y and z are imaginary for creatures one-dimensional on a circle. This circle is embedded in the surface of a 3-dimensional sphere. Also, this sphere is expanding. Figure 1. Consequently, of the parallaxes of one -dimensional creatures, two imaginary dimensions are observed in the direction of one imaginary dimension. also, Time has an internal dimension as well.

https://doi.org/10.32388/QT9EZE

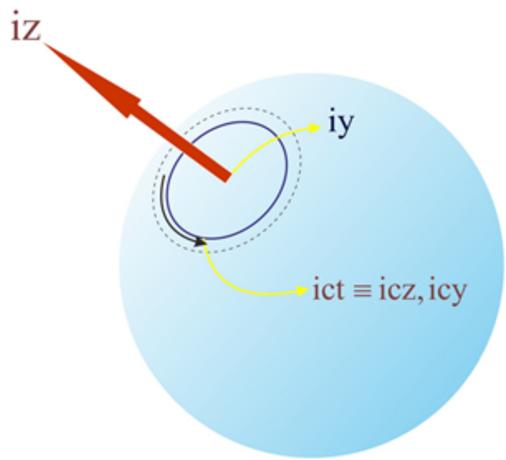


Figure 1. The circle on the surface of the sphere is also expanded with the expansion of the sphere, and as a result, the dimensions y & z are observed from the perspective of the points on the circle's surface in the form of an imaginary dimension.

Time dilation depends on the mass and speed of the observer. Time dilation (the speed of movement in the time dimension) depends on the mass and speed of the observer. The mass and speed of the observer are directly related to the eccentricity of the ellipse. Figure 2. Eccentricity in the space dimensions has an effect on the time dimensions as well. From the perspective of extrinsic geometry, the time dilation of the moving object and also Gravitational time dilation in the gravitational field are expressed based on the angle θ. (2.3). Figure 2. Density or speed can create eccentricity in space-time dimensions.

$$\sqrt{1-\frac{v^2}{c^2}} = \sin(\cos^{-1}(\frac{v}{c})) \quad t = \frac{t_0}{\sin\theta} \quad t = t_0\sqrt{1-\frac{2GM}{rc^2}} \qquad 2.3$$

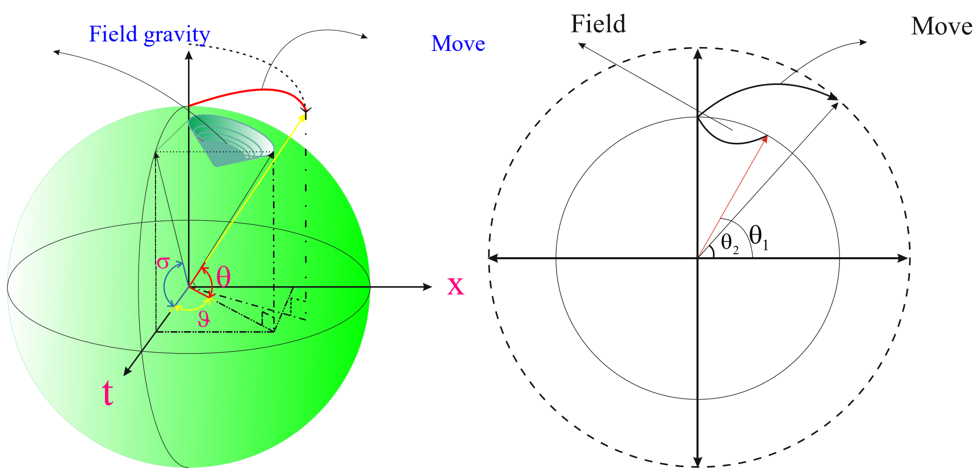


Figure 2: Time dilation of the moving object and gravitational time dilation express the direct relationship between mass & density with time.

The passed distance in space is real six-dimensional from the perspective of space-time. But the distance from the perspective of 4 or 5-dimensional space-time is expressed in hyperbolic geometry. (2.4) (2.5)

https://doi.org/10.32388/QT9EZE

$$intrinsic\ geometry, ds^2 = dx_1{}^2 + dx_2{}^2 + dx_3{}^2 + c^2dt_1{}^2 + c^2dt_2{}^2 - c^2dt_3{}^2 \qquad 2.4$$

$$extrinsic\ geometry, ds^2 = dx_1{}^2 + dx_2{}^2 + dx_3{}^2 + dt_1{}^2 + dt_2{}^2 + dt_3{}^2 \qquad 2.5$$

Eccentricity in one axis causes eccentricity in other axes. As a result of this eccentricity, the path traversed in space-time has a rotation equal to ¼ of the circumference of the hypothetical circle with the radius of the density (field). Figure 3

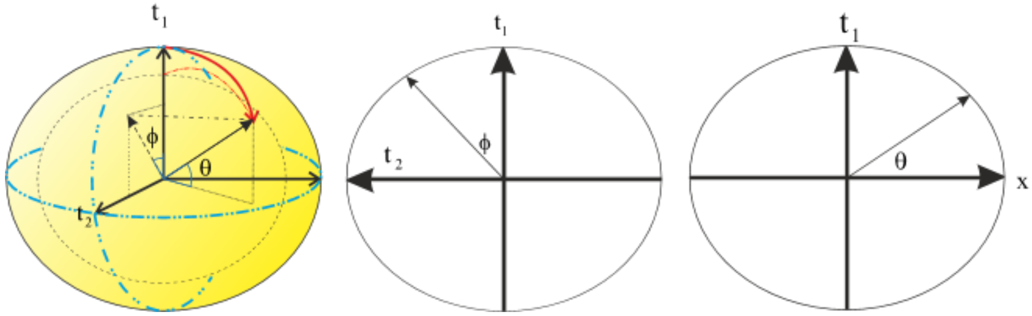


Figure 3: Eccentricity in space causes to create time dilation for the moving object compared to the 2-time axles.

As a result of defining the passed distance in space-time, is dependent on the space-time expansion, the light speed as well as eccentricity in six-dimensional space-time. (2.6)

$$\eta = sin(cos^{-1}(\frac{\Delta x}{c}))\ , \mu = cos(cos^{-1}(\frac{\Delta x}{c}))$$

$$\mu = sin(cos^{-1}(\frac{\Delta t}{c}))\ , \eta = cos(cos^{-1}(\frac{\Delta t}{c})) \qquad 2.6$$

$$\theta + \phi = 90 \Rightarrow \sin^2\theta\, sin^2\phi = (\sin\theta\cos\phi)(\sin\phi cos\theta) = cos^2\theta\, cos^2\phi$$

$$cos^2\theta = sin^2(90-\theta) \Rightarrow \phi = 90-\theta$$

In six-dimensional space, there are five degrees of freedom. From the perspective of 4–dimensional space-time, two-time dimensions are observed in one dimension. Consequently, the two angles, related to eccentricity are expressed by the angle θ. The angle κ is also for expansion and final movement in time. Figure 4

https://doi.org/10.32388/QT9EZE

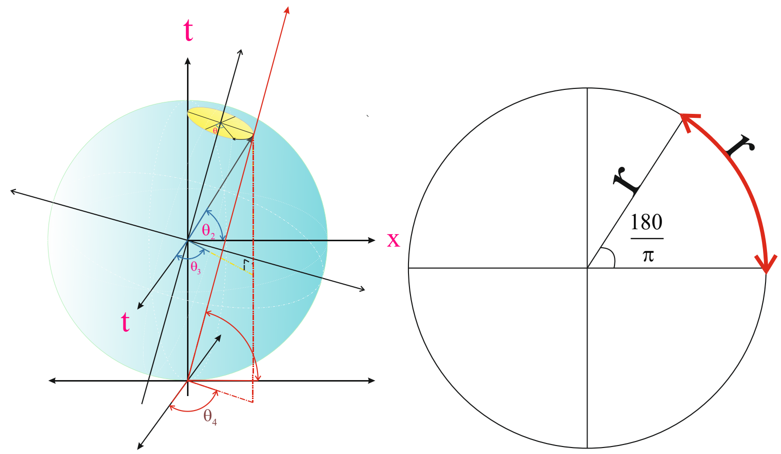


Figure 4: The density of each object has a length in the time dimension and it is embedded around a sphere with a radius equal to the density which is called a "mass field".

While moving the rigid object in space, the radius of the field and object lengths change which is proportional to density. The angles related to eccentricity exist in equilibrium in the two-time dimensions. (2.7)

$$\theta = \frac{180}{\pi} \;,\quad \phi = 90 - \frac{180}{\pi} \qquad 2.7$$

$$\sin\left(90 - \frac{180}{\pi}\right) = \cos\left(\frac{180}{\pi}\right) ,\; cos\left(90 - \frac{180}{\pi}\right) = sin\left(\frac{180}{\pi}\right)$$

With consideration of the two-time axles, the matter is stressed by space–time. The exerted stress on the matter from time dimensions is twice the exerted stress from space dimensions. This twice proportion has a direct connection with the golden constant. (2.8)

$$\varphi = \frac{x + \sqrt{x^2 + (2x)^2}}{2x} = \frac{\vec{F}_X + \sqrt{\vec{F}_X{}^2 + \vec{F}_t{}^2}}{\vec{F}_t} \qquad 2.8$$

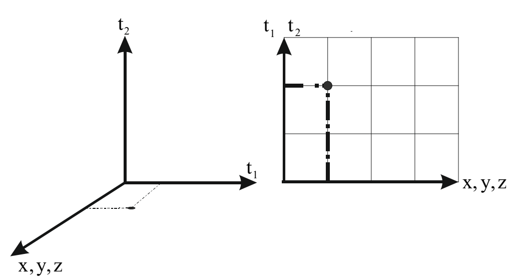


Figure 5: Two dimensions of time are seen from the perspective of three-dimensional space in one dimension, and as a result, this causes the material to experience double stress from the time dimensions.

From the perspective of extrinsic geometry, the illusory dimension of time is a real dimension. And the distance traveled in space-time is a real path over time. (2.9)

https://doi.org/10.32388/QT9EZE

$$(r(\cos(\theta)) + isin(\theta)))(r(\cos(\theta)) - isin(\theta))) = r^2 \quad 2.9$$

$$\eta c = \Delta t \quad , \quad \mu c = \Delta x \quad \Rightarrow \Delta x^2 + \Delta t^2 = c^2 \Rightarrow ds^2 = c^2 dt^2 - dx_1^2 - dx_2^2 - dx_3^2$$

The angles θ and ϕ indicate the extent of eccentricity. The metric of space-time is expressed based on the two angles of θ, according to the surface metric of the sphere (3sphere). (2.10)

$$S^3 \longrightarrow ds^2 = r^2 d\theta^2 + r^2 sin^2\theta \ d\phi^2 + r^2 sin^2\theta \ sin^2\phi d\kappa^2 \quad 2.10$$

$$sin\theta = cos\phi, cos\theta = sin\phi \rightarrow$$

$$t_- \ , \ t_+ \ \in t \ \Rightarrow \ d\acute{s}^2 = a^2 r^2 d\theta^2 + a^2 r^2 cos^2\theta \ d\phi^2 + r \ a^2 \ cos^2\theta \ cos^2\phi d\kappa^2 \ ,$$

$$ds^2 = ra^2 cos^2\theta \ cos^2\phi d\kappa^2 + r^2 a^2 cos^2\theta d\phi^2 + r^2 a^2 d\theta^2 + a^2 r^2 d\theta^2 + a^2 r^2 sin^2\theta \ d\phi^2$$

$$+ar^2 sin^2\theta \ sin^2\phi d\kappa^2$$

$$g_{\mu\nu} = \begin{bmatrix} ra^2 cos^2\theta \ cos^2\phi & 0 & 0 & 0 & 0 & 0 \\ 0 & r^2 a^2 cos^2\theta & 0 & 0 & 0 & 0 \\ 0 & 0 & r^2 a^2 & 0 & 0 & 0 \\ 0 & 0 & 0 & a^2 r^2 & 0 & 0 \\ 0 & 0 & 0 & 0 & a^2 r^2 sin^2\theta & 0 \\ 0 & 0 & 0 & 0 & 0 & a \ r^2 sin^2\theta \ sin^2\phi \end{bmatrix}$$

The matter with a 3-dimensional nature creates heterogeneity in the space density with higher dimensions. As a result of this heterogeneity, matter moves in space–time. Meanwhile, heterogeneity is a factor in creating eccentricity and stress to the material. Based on creating heterogeneity in space–time structure by matter and energy, density can be expressed in the form of passed distance in space–time. The oscillation of heterogeneity in space-time creates gravitational mass. Mass cannot exist in the past or future; therefore, expressing negative density is necessary for the Energy momentum tensor (2.11).

$$\sin 0 = 0 \Rightarrow x, t \neq c \quad \xi = \sin(\cos^{-1}(\frac{\Delta x}{c})) + sin\,(cos^{-1}(\frac{\Delta y}{c})) + sin\,(cos^{-1}(\frac{\Delta z}{c}))$$

$$t = \frac{t_0}{\xi} \equiv t = t_0\sqrt{1 - \frac{2GM}{rc^2}} \Rightarrow c(\eta^2{}_1 + \eta^2{}_2 + \eta^2{}_3) = r_{x,\rho}c \Rightarrow \sin(\cos^{-1}(\frac{\sqrt{2GM}}{c\sqrt{r}})) \equiv sin\phi$$

$$t = \frac{t_0}{\eta} \ , \qquad l = \frac{l_0}{\eta} \ , \qquad m = \frac{m_0}{\eta} \quad m^t = \frac{h\nu}{c^2} \ , (\ \rho c)^{\frac{1}{2}} = \Delta\acute{x} \ , r_{x,\rho} = \Delta x + \Delta\acute{x} \ ,$$

$$(m^t + m_x) = \frac{m^t}{\eta} \ \rightarrow sin\theta = \frac{m^t}{m^t + m_x} \quad 2.11$$

$$(\rho c) = \Delta\acute{x}^2 \ , \qquad \left(\frac{c}{\rho}\right) = \Delta\acute{t}^2$$

https://doi.org/10.32388/QT9EZE

$$\rho = \left(\frac{m^t}{2\pi^2 r^3}\right) \ , m/\rho = \frac{2\pi^2 r^3}{\eta}$$

$$T_{\mu\nu} = \begin{bmatrix} -\rho & 0 & 0 & 0 & 0 & 0 \\ 0 & -\rho & 0 & 0 & 0 & 0 \\ 0 & 0 & \rho & 0 & 0 & 0 \\ 0 & 0 & 0 & P & 0 & 0 \\ 0 & 0 & 0 & 0 & P & 0 \\ 0 & 0 & 0 & 0 & 0 & P \end{bmatrix} \qquad 2.11$$

Möbius space is a concept that transfers the properties of lower dimensions to higher dimensions. This phenomenon is similar to the Möbius strip, a famous example of a two-dimensional structure existing in three-dimensional space. The Möbius strip is constructed by taking a long strip of paper, giving it a half-twist, and then joining the ends together. The Möbius strip is a tangible representation of Möbius space, In Möbius space, the properties of lower dimensions with rotating are "transferred" to higher dimensions, leading to unexpected and counterintuitive phenomena. This concept has profound implications for our understanding of space, time, and the fundamental nature of reality.

Objects in space-time rotate around a field with a radius that matches their density radius in higher dimensions. This radius is equivalent to the density in two dimensions of one radian. Figure 6. The matter field is rotating and moving simultaneously by rotating around a field its radius varies with space expansion as well. Figure 7. The length of density or heterogeneity is like the length of one Radian on the circle circumference. A sum of density and the negative of density in the 2-dimensions is equal to ¼ of the circle circumference. Based on Figure 3, the object route in one dimension is changed in the direction of geodesics of space–time in another dimension as well. Thus, the object rotates equal to ¼ of the circle circumference in 3-dimensional space. This rotation was generalized to higher dimensions. (2.12). This rotation is due to the constancy of object density and causes to create eccentricity in other space–time expansion axles. Figure 3

$$L = \left({}^{\theta}/_{360}\right) 2\pi r \qquad \theta = 90 \Rightarrow L = \left(\frac{1}{4}\right) 2\pi r \Rightarrow \left(\frac{1}{2\pi}\right) = \left({}^{180}/_{\pi}/_{360}\right) = 1Rad$$

$$\left(\frac{90-\frac{180}{\pi}}{360}\right) = \left(\frac{1}{4}\right) - 1Rad = \left(\frac{\pi-2}{4\pi}\right) \Rightarrow \left(\frac{\pi-2}{4\pi}\right) + \left(\frac{1}{2\pi}\right) = \left(\frac{1}{4}\right) \qquad 2.12$$

$$\left(\frac{1}{2}\right)^2 2\pi r \quad \left(\frac{1}{2}\right)^3 4\pi r^2 \quad \left(\frac{1}{2}\right)^4 2\pi^2 r^3 \quad \left(\frac{1}{2}\right)^5 \frac{8}{3}\pi^2 r^4 \quad \left(\frac{1}{2}\right)^6 \pi^3 r^5$$

$$a_{\mu\nu} = \begin{bmatrix} cos^2\theta \ cos^2\phi & 0 & 0 \\ 0 & cos^2\theta & 0 \\ 0 & 0 & 1 \end{bmatrix} \Rightarrow |a_{\mu\nu}| = cos^2(60)cos^2(120)cos^2(120) = \left(\frac{1}{2}\right)^6$$

https://doi.org/10.32388/QT9EZE

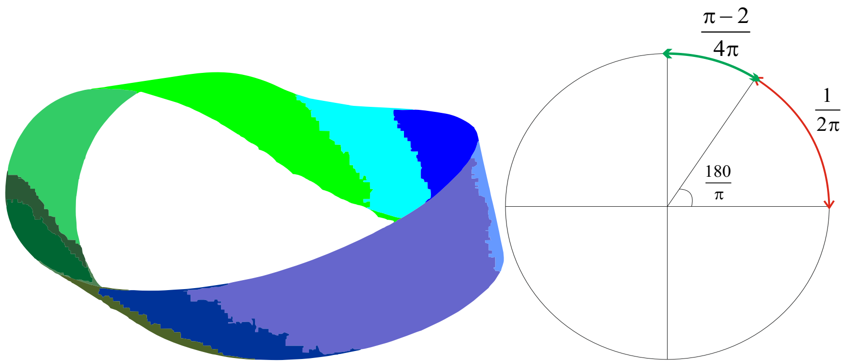


Figure 6: The rigid body is rotating in a field with a radius equal to the object density simultaneously by space–time expansion. Negative density is meaningful with time. Also, Möbius space is a concept that transfers the properties of lower dimensions to higher dimensions

3. Geometry and fundamental constants of physics

The rotating of objects in 5-dimensional space was expressed by the Golden proportion. (3.13) Golden constant, π, and e have a geometrical connection with physics fundamental constants like the gravity constant and Planck constant in 6-dimensional space-time. (3.13)

$$\pi^3 r^5 \in \left(\frac{1}{6}\right)\pi^3 r^6 \quad , \quad \ln(\varphi) \approx \left(\frac{1}{2}\right)^6 \pi^3$$

$$\left(\frac{\left(\frac{tan^{-1}(\varphi)-\left(\frac{180}{\pi}\right)}{2\pi}\right)^3 \left(\frac{1}{6}\right)\pi^3}{c}\right) = 6.6765834 \times 10^{-11} \cong G \qquad 3.13$$

$$\left(\frac{\left(\frac{1}{2\pi}\right)^3 + \left(\frac{1}{2}\right)^6 \pi^3 e^{\tan\left(\frac{180}{\pi}\right)}}{c^2}\right)^2 = 6.5693903027 \times 10^{-34} \cong h$$

$$\left(\frac{\left(\frac{3\pi-6}{2\pi}\right)^2 \left(\frac{\pi\varphi}{3}\right)^2}{c^4}\right) = 1.05597784887 \times 10^{-34} = \hbar \quad , \quad \left(\frac{90 - {180}/{\pi}}{1 \div 6}\right) = \left(\frac{3\pi-6}{2\pi}\right)$$

The resulting force from rotating objects around the field and then the performed work in six-dimensional space were calculated by the Planck constant coefficient. (3.14) The Planck constant is about object movement in space-time and the gravity constant is about object resistance versus expansion of space-time. Figure7

$$F = m\left(\frac{\partial^2 x}{\partial t^2}\right) = m\left(\frac{\Delta x^2}{r}\right) \quad , \quad E = m(\Delta x^2 + \Delta t^2) \quad , \quad W_x = F.d_x \quad , \quad W^t = F.d^t$$

https://doi.org/10.32388/QT9EZE

$\frac{h\nu}{c^2} = m^t \quad , \quad \frac{F}{a} = m_x \ , \quad h = \frac{W}{c^4} \quad \Rightarrow \quad m^t = \frac{W\nu}{c^6}$ 3.14

$F = m\left(\frac{v^2}{r}\right) \Rightarrow W = F.\Delta L \rightarrow L = \left(\theta/_{360}\right)2\pi r \quad , \quad F = ae^{\pm i\theta} = a(cos\theta + isin\theta)$

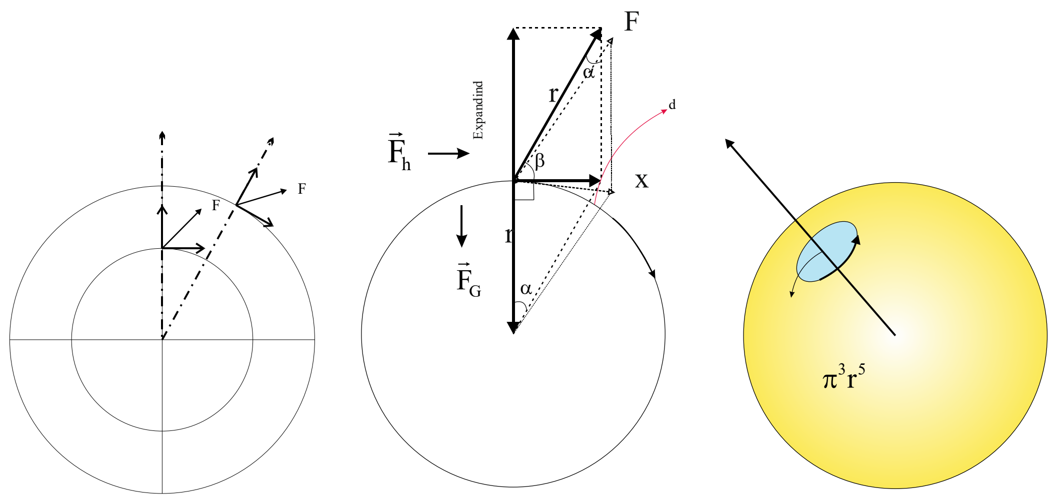


Figure 7: The object field in the space-time expanding is rotating and moving by the two forces perpendicular to each other.

Two forces are exerted on the rigid object by the higher dimensions. One force causes the object to move perpendicular to the axis of expansion, and the other force applies force to the object against the direction of expansion of space-time. As a whole, the object is rotating around a field, and the field is also rotating around an expanding sphere. Changing angles of α and β indicate rigid object motion around a field with higher dimensions. (3.15)

$\left(\frac{\overrightarrow{F_x}+c}{\overrightarrow{F_t}}\right) = \varphi \Rightarrow \tan^{-1}(2) = 63.4349488^{\circ}, \left(\frac{(\cos\theta + isin\theta)^2 d^3}{c^4}\right) = h \Rightarrow d = cot\ (30.50389)$

$90 - 63.43 = 26.57 \Rightarrow 30.50389 - 26.57 = 3.933 \Rightarrow \alpha = 26.57 \rightarrow \alpha + 3.933^{\circ}$

$\left(\frac{(cos\,\theta + isin\theta)^3 d^3}{c}\right) = G \Rightarrow d = \cos(59.99)\,, \quad 63.43 - 59.99 = 3.4346$ 3.15

Cosmology constant has a direct connection with the Planck constant, the gravity constant, and 3 natural numbers. (3.16)

$h^2G^2e^{(\varphi)^2\pi^3} = \Lambda$ 3.16

Observations related to the planet's movement express a deep geometrical relationship between fundamental constants. (3.17)

$\left(\frac{\pi-2}{2}\right)^6\left(\frac{he}{c}\right) = \frac{8\pi G}{c^4} \Rightarrow \left(\frac{\pi-2}{2}\right)^6 \cong \frac{8\pi G}{c^3 he}$ 3.17

https://doi.org/10.32388/QT9EZE

The radius of the object field in space–time has a direct relationship with exerted force by the higher dimensions. Due to this direct relationship, the proportions between these forces have a constant with density. These proportions follow the golden constant, Euler's number, and π.

Figure 8

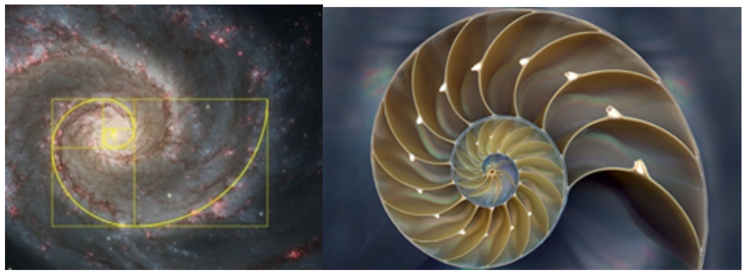


Figure 8: The proportion of exerted stress from space–time has a relationship with the object density. This proportion has a relationship with three natural numbers of π, e, and φ.

4. Wave function

The wave function in quantum mechanics has expanded over time. Concerning the object field, the eccentricity of space-time dimensional, negative density, object rotation around the field, and field rotation, the structure of wave function was expressed in the 6-dimensional space-time (4.18) Quantization depends on two types of rotations in space. Figure 9

$$\int_{-\rho}^{+\rho}\int_{-t}^{+t}\int_{-\infty}^{+\infty}|\psi(\rho,t,x)|^2 d\rho dt dx = 1 \quad , \quad |\Psi\rangle = b_1|\tilde{\psi}_1\rangle + b_2|\tilde{\psi}_2\rangle + \cdots + b_n|\tilde{\psi}_n\rangle$$

$$|\tilde{\psi}\rangle = \alpha_1|A_1\rangle + \alpha_2|A_2\rangle + \alpha_3|A_3\rangle + \alpha_4|A_4\rangle + \alpha_5|A_5\rangle + \alpha_6|A_6\rangle$$

$$b_\mu = x_\mu + ti \;\; , \quad X_\mu = (x_1, x_2, x_3, x_4, x_5, x_6) \Rightarrow b_\mu {b_\mu}^* = (\tfrac{1}{3}) \qquad 4.18$$

$$\int_0^{2\pi}|\psi(x,t))|^2 dx = 1 \rightarrow \frac{2\pi}{6} \Longrightarrow \left\{\left(\frac{\pi}{3}\right) + i\left(\frac{2\pi}{3}\right)\right\}, \left\{\left(\frac{2\pi}{3}\right) + i\left(\frac{4\pi}{3}\right)\right\}, \{(\pi) + (i)\}, \left\{\left(\frac{4\pi}{3}\right) + i\left(\frac{5\pi}{3}\right)\right\}, \left\{\left(\frac{5\pi}{3}\right) + i(1)\right\}, \{(2\pi) + i(2\pi)\}$$

$$A_1 = \pm\left(\frac{\pi}{3}\right) + iz, A_2 = \pm\left(\frac{2\pi}{3}\right) + iz, \; A_3 = \pm(\pi) + iz \;, A_4 = \pm\left(\frac{4\pi}{3}\right) \; + iz, \; A_5 = \pm\left(\frac{5\pi}{3}\right) + iz, A_6 = \pm(2\pi) + iz,$$

$$\sigma = 1,2,3,4,5,6$$

https://doi.org/10.32388/QT9EZE

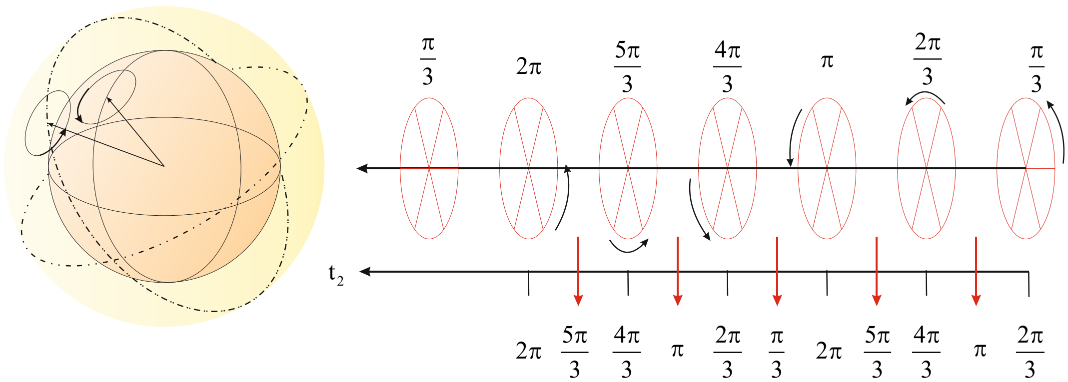


Figure 9: Quantization has been entangled in space-time structure, and it depends on the object's momentum.

Concerning affine transformation, elliptic parametric equation, Fourier Series eccentricity of elliptic, and metric of 6-dimensional space-time, the relationship between wave function and wave tensor was expressed. (4.19) Meanwhile, the tensor Ψ expresses the created rotation stress by space-time to the matter. (4.19). Positive and negative amounts that have a relationship with object rotation in higher dimensions are variable depending on the phase, speed, and density.

$$\Psi(x) = a_0 + \sum_{n=1}^{\infty}\left[a_n \cos\frac{2\pi n x}{L} + b_n \sin\frac{2\pi n x}{L} + \cdots\right] \rightarrow \Psi(x) = \sqrt{\frac{1}{2\pi}}\int_{-\infty}^{+\infty}\phi(k)\, e^{-ikx}dk$$

$$\Psi_{\mu\nu} = \begin{bmatrix} cos^2\theta\ \ cos^2\phi & A_\iota & A_\iota & A_\iota & A_\iota & A_\iota \\ A_\iota & cos^2\phi & A_\iota & A_\iota & A_\iota & A_\iota \\ A_\iota & A_\iota & e^{-i\pi\varphi} & A_\iota & A_\iota & A_\iota \\ A_\iota & A_\iota & A_\iota & e^{i\pi\varphi} & A_\iota & A_\iota \\ A_\iota & A_\iota & A_\iota & A_\iota & sin^2\theta & A_\iota \\ \square\square_\iota & A_\iota & A_\iota & A_\iota & A_\iota & sin^2\theta\ \ sin^2\phi \end{bmatrix} \qquad 4.19$$

$A_\sigma = \pm\left(\frac{\pi}{3}\right) + iz, A_2 = \pm\left(\frac{2\pi}{3}\right) + iz,\ A_3 = \pm(\pi) + iz\ , A_4 = \pm\left(\frac{4\pi}{3}\right) + iz,\ A_5 = \pm\left(\frac{5\pi}{3}\right) + iz, A_6 = \pm(2\pi) + iz$

$\sigma = 1,2,3,4,5,6$

5. Field structure and force

The electrical load has a direct relationship with the phase of object field rotation. Particles with no mass or without loads have two opposite rotation phases. Photons transport energy and follow from the geodesics of quantized space-time. the photons can be decomposed into a pair couple of electron-positron fields. Each pack of energy has a particular geometric structure, and on this basis, the field radius and the 2nd radius can be calculated with consideration of the performed work in space and time. (5.20) Electrical load has a direct relationship with the phase of the field in higher dimensions. Figure 10

https://doi.org/10.32388/QT9EZE

$$hv = mc^2 \Rightarrow (\rho c) = \Delta\acute{x}^2 \ , \qquad \rho = \left(\frac{m^t}{2\pi^2 r^3}\right) \Rightarrow m^t = \frac{2\pi^2 r^3 \Delta\acute{x}^2}{c} = \frac{hv}{c^2}$$

$$hv = 2\pi^2 c r^3 \Delta\acute{x}^2 \Rightarrow \frac{2\pi^2 r^3 c}{\Delta\acute{t}^2} = m^t, E = \frac{2\pi^2 r^3 c^3}{\Delta\acute{t}^2} \ , \qquad E^2 = \frac{\Delta\acute{x}^2}{\Delta\acute{t}^2} = 4\pi^4 r^6 c^4 (cot^2 \left(\cos^{-1}(\frac{v}{c})\right)$$

$$hv = 2\pi^2 r^3 c^4 (\cot\theta) \ , \Delta\acute{x}^2 = \left(\frac{mc}{2\pi^2 r^3}\right)^{\frac{1}{2}} \qquad 5.20$$

$$W = F.d = m\left(\frac{\Delta x^2}{r}\right).d$$

$$W_x = m\left(\frac{\Delta x^2}{r}\right).\Delta\acute{x} \ , \qquad W_t = m\left(\frac{\Delta t^2}{r}\right).\Delta t \ \Rightarrow hc^4 = m\left(\frac{\Delta x^2}{r_t}\right).e^{\pm ikx}$$

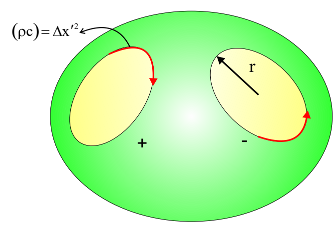
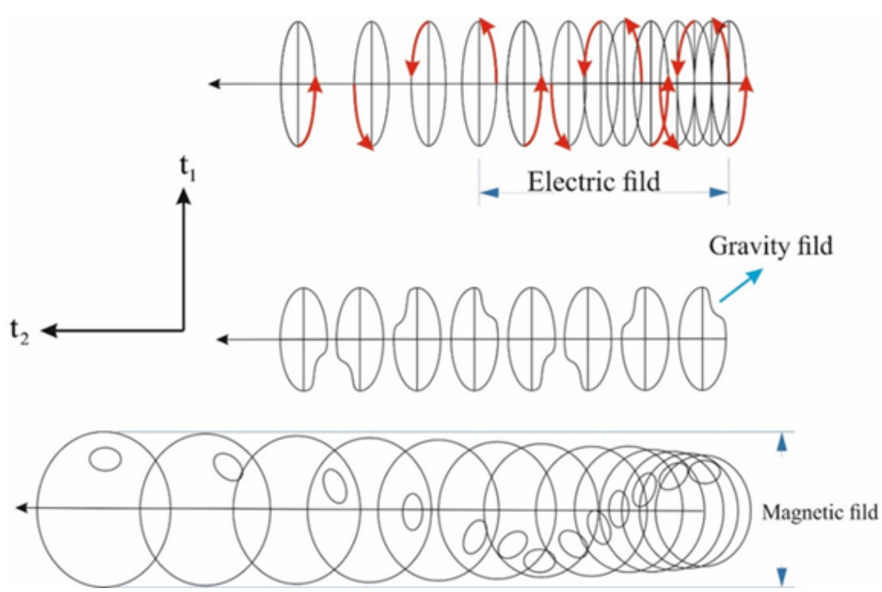


Figure 10: Electrical load results from the density phase in higher dimensions. Chargeless particles consist of two particles with opposite phases.

Changing the speed of rotation phases in the electromagnetic field is more than other space-time points. Each particle follows space-time geodesics within the limits of an electrical field. Eccentricity, in the gravitational field and electromagnetic fields, creates phase-changing speed. Figure 11



https://doi.org/10.32388/QT9EZE

Figure 11: Phase changing speed is greater in electrical and magnetic fields compared to the gravitational field, and the effective range of the gravitational field is more compared to electrical and magnetic fields.

The mass obtained from motion in space is (inertial mass) and the mass obtained from motion in time is (gravitational mass). The exerted stress from space-time to matter concerns the Planck constant and gravitation constant. This stress intensity is very insignificant. However, the exerted stress is observable concerning the rotation around the field and the passage of time. Tensor for space-time stress based on Planck constant, gravitation constant, and cosmology constant indicate the quantum Structure of space-time. (5.21) (5.22). The "K" tensor expresses the exerted stress to matter in space-time with higher dimensions. This Stress is, therefore, a factor in producing spin, electrical load & electromagnetic fields. K tensor has a direct relationship with wavelength and cosmology constant. (5.22) The radius equal to density length (field radius) is 'r_x' and the radius for the variable of field rotation is 'r_t'. It is not able to be greater than a specific amount that is dependent on the object's mass. Consequently, 'r_t' is periodic.

$$r_s = \frac{2GM}{c^2}\ , \qquad M = 1 \Rightarrow r_s = \frac{1}{24.989c^3} = 1.485213 \times 10^{-27}, \qquad e^{\pi} + \varphi = 24.758$$

$$r_s = \frac{M}{2\pi^2 c^3\sqrt{\varphi}} \rightarrow \frac{h}{\lambda v 2\pi^2 c^3\sqrt{\varphi}} = \frac{2GM}{c^2} = \frac{\rho^{\gamma}}{\sqrt{\varphi}} \rightarrow \rho^{\gamma} = \frac{h}{\lambda v 2\pi^2 c^3} \rightarrow \rho^{\gamma} c = \frac{h}{\lambda v 2\pi^2 c^2} = \Delta x^2$$

$$h = \frac{W}{c^4} \Rightarrow m = \frac{W\nu}{c^6} \rightarrow c^8 h = \frac{\nu}{m} \rightarrow c^5 = \frac{W}{m\lambda}\ \Rightarrow$$

$$hc^4 = m\left(\frac{\Delta x^2}{r_t}\right).e^{\pm ikx}\ ,\ P = n\left(\frac{\hbar}{r}\right)\ ,\ m = \frac{Fr}{\Delta\acute{x}^2} \Longrightarrow \vec{F} = \overrightarrow{Ge^{\pi^3}} \times \overrightarrow{he^{\varphi^2}}\ \Rightarrow m = \frac{he^{\varphi^2}Ge^{\pi^3}r}{\Delta\acute{x}^2}\ \Rightarrow$$

$$m = \frac{2GM}{c^2}\frac{he^{\varphi^2}Ge^{\pi^3}r}{\Delta\acute{x}^2} = \frac{2h^2G^2e^{(\varphi)^2\pi^3}\nu}{c^4\Delta\acute{x}^2} = \frac{2\Lambda c}{c^4\lambda\Delta\acute{x}^2} \Rightarrow \frac{\Lambda}{\Delta\acute{x}^3c^3\pi} \qquad 5.21$$

$$K_{\mu\nu} = \begin{bmatrix} \frac{r_t}{\pi c} & A_\iota & A_\iota & A_\iota & A_\iota & A_\iota \\ A_\iota & \frac{r_t h e^{\pi^3}}{c} & A_\iota & A_\iota & A_\iota & A_\iota \\ A_\iota & A_\iota & \frac{r_t\sqrt{G}he^{\varphi^2}}{c} & A_\iota & A_\iota & A_\iota \\ A_\iota & A_\iota & A_\iota & \frac{\sqrt{G}}{r_x} & A_\iota & A_\iota \\ A_\iota & A_\iota & A_\iota & A_\iota & \frac{\sqrt{G}}{r_x} & A_\iota \\ A_\iota & A_\iota & A_\iota & A_\iota & A_\iota & \frac{\sqrt{G}}{r_x} \end{bmatrix} \qquad 5.22$$

$$A_\iota \rightarrow 0 \Rightarrow$$

$$|K_{\mu\nu}| = \left(\frac{{r_t}^3}{\pi c^3 {r_x}^3}\right)h^2G^2e^{(\varphi)^2\pi^3} = \left(\frac{{r_t}^3}{\pi c^3 {r_x}^3}\right)3.5104354766 \times 10^{-52} = \Lambda$$

https://doi.org/10.32388/QT9EZE

Based on Movement in time dimensions and also work definition, the relationship of the Planck constant and gravitational constant is specified with the cosmology constant. (5.23)

$$\frac{F^2.d^3}{c} = G \ , \quad m = \frac{W\nu}{c^6} \ , \quad 2\vec{F}_x = \vec{F}_t \Rightarrow \vec{F}_t = \hbar e^{-i\pi x} \quad , \quad \vec{F}_x = Ge^{\varphi x}, F = ce^{\pm i\frac{P}{\hbar}2\pi r}$$

$$\Lambda = \left(\frac{F^3.d^3}{c}\right)^2 \to \left(\frac{(\cos\theta + isin\theta)^2 d^3}{c^4}\right)^2 e^{(\varphi)^2\pi^3} \ ,$$

$$m = \frac{\Lambda}{\Delta\acute{x}^3 c^3 \pi} \Rightarrow \Lambda = \frac{w\nu\Delta\acute{x}^3\pi}{c^3} = \frac{W\Delta\acute{x}^2}{2c^2} \qquad 5.23$$

The type and intensity of electrical load and magnetic field depend on other components of the k tensor. Momentum tensor and energy with new coefficient make the general relativity equation more complete. (5.24). Mass in space-time can cause inhomogeneity, which is represented by negative density. (5.25)

$$\left(\frac{\pi-2}{2}\right) = \Pi \ , \qquad L_{\mu\nu} = \begin{bmatrix} \Pi & 0 & 0 & 0 & 0 & 0 \\ 0 & \Pi & 0 & 0 & 0 & 0 \\ 0 & 0 & \Pi & 0 & 0 & 0 \\ 0 & 0 & 0 & \Pi & 0 & 0 \\ 0 & 0 & 0 & 0 & \Pi & 0 \\ 0 & 0 & 0 & 0 & 0 & \Pi \end{bmatrix}$$

$$|L_{\mu\nu}| = \left(\frac{\pi-2}{2}\right)^6 \to \left(\frac{\pi-2}{2}\right)^6 \left(\frac{he}{c}\right) = \frac{8\pi G}{c^4} \ , \left(\frac{\pi-2}{2}\right)^6 \left(\frac{he}{c}\right) \cong \frac{8\pi G}{c^3 he} \qquad 5.24$$

$$T_{\mu\nu} = \begin{bmatrix} -\rho & 0 & 0 & 0 & 0 & 0 \\ 0 & -\rho & 0 & 0 & 0 & 0 \\ 0 & 0 & \rho & 0 & 0 & 0 \\ 0 & 0 & 0 & P & 0 & 0 \\ 0 & 0 & 0 & 0 & P & 0 \\ 0 & 0 & 0 & 0 & 0 & P \end{bmatrix} \qquad 5.25$$

6. Curvature in six-dimensional space-time

Ricci tensor expresses curvature in 4-dimensional space-time; by adding two Dimensions of time another definition of curvature is formed. Expression of the sphere surface curvature by Riemann tensor and Ricci tensor in six-dimensional space-time may not be comprehensive. (6.26)

$$R_{1212} = r^2 \sin^2\theta \ , \quad R_{1313} = r^2 \sin^2\theta \, sin^2\phi \ , \quad R_{2323} = r^2 \, sin^2\theta \ \ sin^2\phi \ ,$$

$$R^1_{212} = sin^2\theta \ , \quad R^1_{313} = sin^2\theta \ \ sin^2\phi \ , \quad R^2_{323} = sin^2\theta \ \ sin^2\phi \ ,$$

$$R_{ij} = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 2\,sin^2\theta & 0 \\ 0 & 0 & 2\,sin^2\theta \ \ sin^2\phi \end{bmatrix} \Rightarrow R_{\mu\nu} = \begin{bmatrix} q & 0 & 0 & 0 \\ 0 & 2 & 0 & 0 \\ 0 & 0 & 2\,sin^2\theta & 0 \\ 0 & 0 & 0 & 2\,sin^2\theta \ \ sin^2\phi \end{bmatrix}$$

https://doi.org/10.32388/QT9EZE

$$q = -c^2 - c^2cos^2\theta - c^2cos^2\theta cos^2\phi \Rightarrow R = -\frac{6}{r^2c^6(cos^2\theta - cos^2\theta cos^2\phi)} \qquad 6.26$$

Concerning space rotation, the Ricci tensor expresses curvature in the time dimension length, and space dimensions. Curvature in time means changing wavelength in higher dimensions and becoming closer or farther the states of space-time from each other. Generally, Ricci's 6-dimensional tensor can only be defined during the time in the case of existing various masses. (6.27)

$$R = \frac{6}{r^2c^2\,sin^2\,\gamma}$$

$$\acute{R}_{\mu\nu} = \begin{bmatrix} 2cos^2\theta cos^2\phi & 0 & 0 & 0 \\ 0 & 2cos^2\theta & 0 & 0 \\ 0 & 0 & 2 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \Rightarrow R = \frac{2}{r^4cos^2\theta cos^2\phi} \,,$$

$$g_{\mu\nu} = \begin{bmatrix} r & 0 & 0 & 0 \\ 0 & r & 0 & 0 \\ 0 & 0 & r^2\,sin^2\,\theta & 0 \\ 0 & 0 & 0 & r^2\,sin^2\,\theta\ \ sin^2\,\phi \end{bmatrix} \Rightarrow R = -\frac{6}{r^2} \qquad 6.27$$

Using the introduced metric, two types of Christoffel symbols were expressed in 6-dimensional space. (6.28) (6.29)

$$\Gamma^1_{\alpha,\mu} = \begin{bmatrix} \frac{1}{2r} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{cos^2\phi} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{cos^2\theta cos^2\phi} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{cos^2\theta cos^2\phi} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{sin^2\,\theta}{cos^2\theta cos^2\phi} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{sin^2\,\theta\ \ sin^2\,\phi}{a\ \ cos^2\theta cos^2\phi} \end{bmatrix} \qquad 6.28$$

$$\Gamma_{1,\alpha,\mu} = \begin{bmatrix} \frac{a^2\ \ cos^2\theta cos^2\phi}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -r\,a^2cos^2\theta & 0 & 0 & 0 & 0 \\ 0 & 0 & -ra^2 & 0 & 0 & 0 \\ 0 & 0 & 0 & -ra^2 & 0 & 0 \\ 0 & 0 & 0 & 0 & -ra^2\,sin^2\,\theta & 0 \\ 0 & 0 & 0 & 0 & 0 & -r\,a\,sin^2\,\theta\ \ sin^2\,\phi \end{bmatrix} \qquad 6.29$$

https://doi.org/10.32388/QT9EZE

Einstein tensor, Scalar Ricci, and Ricci tensor were obtained using Christoffel symbols. (6.30) (6.31) Geometrical connection is hidden between space curvature and time length curvature in Scalar Ricci. (6.30)

$$R_{\mu\nu} = \begin{bmatrix} \frac{5}{2r^2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{7}{2r\ cos^2\phi} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{7}{2r\ cos^2\theta cos^2\phi} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{7}{2r\ cos^2\theta cos^2\phi} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{7\sin^2\theta}{2r\ cos^2\theta cos^2\phi} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{7\sin^2\theta\ \sin^2\phi}{2r\ a\ cos^2\theta cos^2\phi} \end{bmatrix}$$

6.30

$$R_{\alpha\beta\mu\nu}.R_{\alpha\beta\mu\nu} = \frac{45}{a^4 r^6(\ cos^2\theta cos^2\phi)(\ cos^2\theta cos^2\phi)}\ ,\quad R_{1313} = \frac{a^2}{2}$$

$$R = \frac{15}{a^2 r^3(\ cos^2\theta cos^2\phi)} \Rightarrow \left(\frac{5}{r^2}\right)\left(\frac{3}{ra^2(\ cos^2\theta cos^2\phi)}\right)$$

$$G_{\mu\nu} = \begin{bmatrix} \frac{10}{r^2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{4}{r\ cos^2\phi} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{4}{r\ cos^2\theta cos^2\phi} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{4}{r\ cos^2\theta cos^2\phi} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{4\sin^2\theta}{r\ cos^2\theta cos^2\phi} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{4\sin^2\theta\ \sin^2\phi}{r\ a\ cos^2\theta cos^2\phi} \end{bmatrix} \qquad 6.31$$

The general equation was obtained for general relativity and quantum mechanics. (6.32) that Whenever mass is high (not in the scale of black holes), wave function and electromagnetic field are disappeared, and whenever mass and density are low, quantum behavior is observed (6.32)

$\mu, \nu = 1,2,3,4,5,6$

$$\boldsymbol{\Psi_{\mu\nu} + R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \left(\frac{\pi-2}{2}\right)^6 \left(\frac{he}{c}\right) T_{\mu\nu} + K_{\mu\nu}} \qquad 6.32$$

7. Quantum mechanics

Hilbert space is a complex of various states for a particle in a time loop. A particle rotates around the field with a density radius in higher dimensions. In a moment a particle can have two upper and lower spins. Measurement reduces the dimensions of a particle to four dimensions. Figure 12

https://doi.org/10.32388/QT9EZE

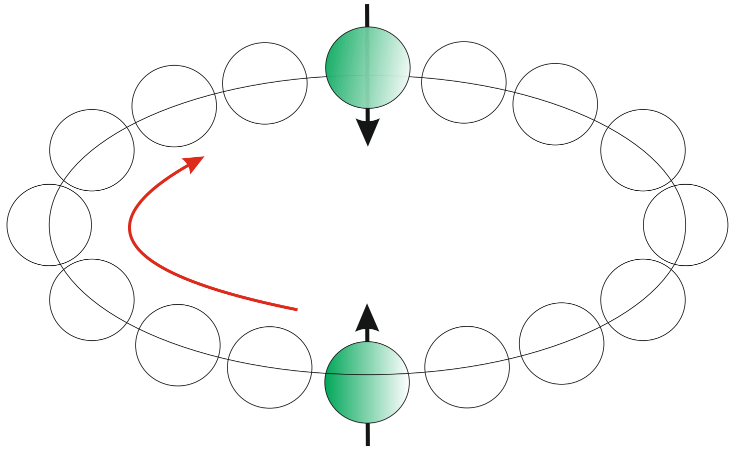


Figure 12: when a particle is in the time loop around a field, it exists in Hilbert space.

Measuring a phenomenon in higher dimensions causes the wave function to collapse to the lower dimensions, resulting in different observable states. Figure 13

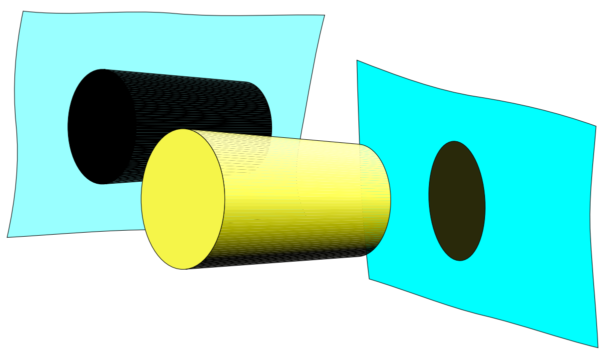


Figure 13: With continuous changing of supervisor states or objects in space, each time a new result measurement is created.

Despite the distance of the two objects from each other, they can have similar states. Regarding the masses with similar densities, these states are contrariwise. Figure 14

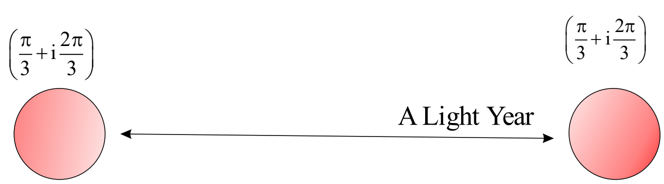


Figure 14: Particles with different charge and mass can have similar states in space simultaneously.

Due to the direct relationship of mass and momentum with wave function and the direct relationship of the wave function with space-time structure, the whole similar particles like electrons, photons, and protons, follow space geodesics. When one of the entangled particles is measured, another particle's all states can be predicted with certainty. Figure 15

https://doi.org/10.32388/QT9EZE

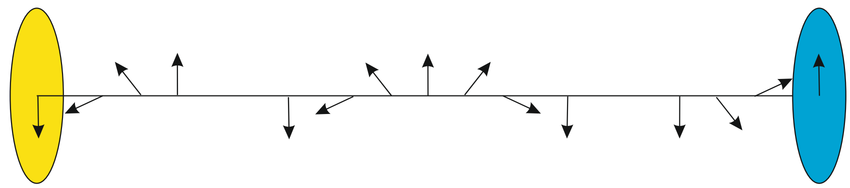


Figure 15: In case of having sufficient information from mass and particle speed, other states can be predicted as well.

Before measuring a particle, there is no orientation in 3-dimensional space. Measuring in the time state π/3 causes the particle's dimension to collapse into a four-dimensional space; for this reason, we select the states from the tensor Ψ which are constant for all the particles with a specific momentum. As a result, entanglement will never occur between two particles in the coordinate system of relativistic. Entanglement has been institutionalized in the space-time structure. Bell's Inequality defect is due to the existence of similar states in the space-time rotating structure. (7.33)

$$|\gamma\rangle = c_0|a_0\rangle + c_1|a_1\rangle \ , \quad |\tau\rangle = d_0|b_0\rangle + d_1|b_1\rangle$$

$$|\gamma\rangle\otimes|\tau\rangle = (c_0d_0|a_0\rangle|b_0\rangle + c_0d_1|a_0\rangle|b_1\rangle) + (c_1d_0|a_1\rangle|b_0\rangle + c_1d_1|a_1\rangle|b_1\rangle)$$

$$|00\rangle = \begin{bmatrix}1\\0\\0\\0\\0\\0\end{bmatrix}, |01\rangle = \begin{bmatrix}0\\1\\0\\0\\0\\0\end{bmatrix}, |10\rangle = \begin{bmatrix}0\\0\\1\\0\\0\\0\end{bmatrix}, |11\rangle = \begin{bmatrix}0\\0\\0\\1\\0\\0\end{bmatrix}, |01\rangle = \begin{bmatrix}0\\0\\0\\0\\1\\0\end{bmatrix}, |00\rangle = \begin{bmatrix}0\\0\\0\\0\\0\\1\end{bmatrix}$$

$$|\tilde{\psi}\rangle = \alpha_1|A_1\rangle + \alpha_2|A_2\rangle + \alpha_3|A_3\rangle + \alpha_4|A_4\rangle + \alpha_5|A_5\rangle + \alpha_6|A_6\rangle$$

$$b_1 = cos\left(\frac{\theta}{2}\right) \ , \ b_2 = e^{i\Phi} sin\left(\frac{\theta}{2}\right) \ , \sqrt{1-\frac{v^2}{c^2}} = \sin\left(cos^{-1}\left(\frac{v}{c}\right)\right) = sin\theta \ , v \equiv \Delta x$$

$$\Delta x^2 \equiv (\rho c) \Rightarrow \rho \equiv E \equiv \theta, \Phi$$

$$\int_0^{2\pi} |\psi(x,t))|^2 dx = 1 \to \frac{2\pi}{6} \Longrightarrow \left\{\left(\frac{\pi}{3}\right) + i\left(\frac{2\pi}{3}\right)\right\}, \left\{\left(\frac{2\pi}{3}\right) + i\left(\frac{4\pi}{3}\right)\right\}, \{(\pi) + (i)\}, \left\{\left(\frac{4\pi}{3}\right) + i\left(\frac{5\pi}{3}\right)\right\}, \left\{\left(\frac{5\pi}{3}\right) + i(1)\right\}, \{(2\pi) + i(2\pi)\}$$

$$A_1 = \pm\left(\frac{\pi}{3}\right) + iz, A_2 = \pm\left(\frac{2\pi}{3}\right) + iz, \ A_3 = \pm(\pi) + iz \ , A_4 = \pm\left(\frac{4\pi}{3}\right) + iz, \ A_5 = \pm\left(\frac{5\pi}{3}\right) + iz, A_6 = \pm(2\pi) + iz,$$

$$|\Psi\rangle = b_1|0\rangle + b_2|1\rangle \Rightarrow |\Psi\rangle = b_1|0\rangle + b_2|1\rangle + b_3|0\rangle + b_4|1\rangle$$

$$\Longrightarrow \frac{1}{\sqrt{2}}(|00\rangle + |11\rangle$$

$$|\eta\rangle = z_0|a_0\rangle + z_1|a_1\rangle + \acute{z}_0|a_0\rangle + \ \acute{z}_1|a_1\rangle \ , \quad |\mu\rangle = d_0|b_0\rangle + d_1|b_1\rangle + \acute{d}_0|b_0\rangle + \acute{d}_1|b_1\rangle$$

$$|\eta\rangle\otimes|\mu\rangle = (z_0d_0\acute{d}_0\acute{z}_0|a_0\rangle|a_0\rangle|b_0\rangle|b_0\rangle + \cdots$$

https://doi.org/10.32388/QT9EZE

$$\Rightarrow (A_1 + B_0)\alpha + (A_0 + B_1)\beta - (A_1 + B_1)\gamma \leq 2$$

$$|\langle (A_1 + B_0)\alpha + (A_0 + B_1)\beta - (A_1 + B_1)\gamma \rangle| \geq 2 \qquad 7.33$$

$$cos^2\left(\frac{\pi}{3}\right) = \frac{1}{4} \Rightarrow Same\ result \leq \frac{1}{3}$$

8. Results and Discussion

The study of the relationship between fundamental physics constants and mathematical constants such as π, φ, and ɐ reveals a deep connection between electromagnetic fields and the geometry of space-time. This relationship sheds light on the inherent properties of matter, including spin, mass, polarization, and load, within the framework of space-time geometry and electromagnetic fields. One of the key insights from this relationship is the concept of mass, which can be understood as resulting from motion in both space (inertial mass) and time (gravitational mass). This duality reflects the equilibrium that exists within the symmetrical space-time, where the interplay of various physical quantities is balanced. Furthermore, the investigation of events within space-time yields important principles such as orthogonality, separability, and reality. These principles underpin our understanding of the behavior of physical systems over time. Additionally, concepts such as the uncertainty principle, commutative property, and Bell inequality violation are shown to be intricately linked to the passage of time. Drawing from both quantum mechanics and general relativity, it becomes apparent that an electromagnetic field rotating in space-time has the capacity to generate a positive or negative gravitational field. This insight not only deepens our understanding of the interplay between electromagnetic and gravitational forces but also provides a potential avenue for further exploration and experimentation. Moreover, the study of space-time geometry also has implications for our understanding of dark matter and dark energy. These enigmatic components of the universe are directly related to the underlying geometry of space-time, hinting at a deeper connection between the structure of the universe and the fundamental forces that govern it. In conclusion, the relationship between fundamental physics constants, mathematical constants, and the geometry of space-time offers a rich tapestry of insights into the nature of our universe. By delving into this relationship, we gain a deeper understanding of the interconnectedness of physical phenomena and pave the way for new discoveries and advancements in our comprehension of the cosmos.

https://doi.org/10.32388/QT9EZE

Acknowledgements:

The author would like to express their gratitude to Professor Masoud Naseri, Dr. M.T, Dr. Lh. Razazi and E.t.S. Sattar for their helpful discussions.

Conflicts of Interest:

The author declares that there are no conflicts of interest. The author takes full responsibility for the content and writing of this article.

The data statement

The data that support the findings of this study are openly available in [*Preprints.org*] at

https://doi.org/10.20944/preprints202308.1112.v1

References

[1]. Einstein, A., Podolsky, B., & Rosen, N. (1935). Can quantum-mechanical description of physical reality be considered complete*?. Physical review,* 47(10), 777. https://doi.org/10.1103/PhysRev.47.777

[2]. Brody, D. C., & Graefe, E. M. (2011). Six-dimensional space-time from quaternionic quantum mechanics. *Physical Review D*, *84*(12), 125016.https://doi.org/10.1103/PhysRevD.84.125016

[3]. Bonezzi, R., Latini, E., & Waldron, A. (2010). Gravity, two times, tractors, Weyl invariance, and six-dimensional quantum mechanics. *Physical Review D*, *82*(6), 064037.https://doi.org/10.1103/PhysRevD.82.064037

[4]. Halliwell, J. J. (1986). The quantum cosmology of Einstein-Maxwell theory in six dimensions. *Nuclear Physics B*, *266*(1), 228-244.https://doi.org/10.1016/0550-3213(86)90182-3

[5]. Randjbar-Daemi, S., Salam, A., & Strathdee, J. (1983). Spontaneous compactification in six-dimensional Einstein-Maxwell theory. *Nuclear Physics B*, *214*(3), 491-512.https://doi.org/10.1016/0550-3213(83)90247-X

[6]. Córdova, C., Dumitrescu, T. T., & Intriligator, K. (2021). 2-group global symmetries and anomalies in six-dimensional quantum field theories. *Journal of High Energy Physics*, 2021(4), 1-46.https://doi.org/10.1007/JHEP04(2021)252

[7]. Maxwell, N. (2017). Relativity Theory may not have the last Word on the Nature of Time: Quantum Theory and Probabilism. *Space, time and the limits of human understanding*, 109-124.DOI 10.1007/978-3-319-44418-5_9

[8]. Mkhize, N., & Hansraj, S. (2023). de Sitter potential in six dimensional Einstein–Gauss–Bonnet isotropic fluids. *Annals of Physics*, *454*, 169328.http://dx.doi.org/10.2139/ssrn.4385411

https://doi.org/10.32388/QT9EZE

[9]. Wu, Y. L. (2017). Maximal symmetry and mass generation of Dirac fermions and gravitational gauge field theory in six-dimensional spacetime. *Chinese Physics C*, *41*(10), 103106.https://doi.org/10.1088/1674-1137/41/10/103106

[10]. Yerra, P. K., & Bhamidipati, C. (2022). Topology of black hole thermodynamics in Gauss-Bonnet gravity. Physical Review D, 105(10), 104053.https://doi.org/10.1103/PhysRevD.105.104053

[11]. Barvinsky, A. O., Kurov, A. V., & Sibiryakov, S. M. (2022). Beta functions of (3+ 1)-dimensional projectable Hořava gravity. *Physical Review D*, *105*(4), 044009..https://doi.org/10.1103/PhysRevD.105.044009

[12]. Ganchev, B., Houppe, A., & Warner, N. P. (2022). New superstrata from three-dimensional supergravity. *Journal of High Energy Physics*, *2022*(4), 1-40.https://doi.org/10.1007/JHEP04(2022)065

[13]. Popov, N., & Matveev, I. (2022). Six-Dimensional Space with Symmetric Signature and Some Properties of Elementary Particles. *Axioms*, *11*(11), 650.https://doi.org/10.3390/axioms11110650

[14]. Brahma, R., & Sen, A. K. (2023). The space–time line element for static ellipsoidal objects. *General Relativity and Gravitation*, *55*(2), 24.https://doi.org/10.1007/s10714-023-03078-8

[15]. Zhang, C., Gong, Y., Liang, D., & Wang, B. (2023). Gravitational waves from eccentric extreme mass-ratio inspirals as probes of scalar fields. *Journal of Cosmology and Astroparticle Physics*, *2023*(06), 054.https://doi.org/10.1088/1475-7516/2023/06/054

[16]. Buchbinder, I. L., Fedoruk, S. A., & Isaev, A. P. (2022). Light-front description of infinite spin fields in six-dimensional Minkowski space. *The European Physical Journal C*, *82*(8), 733.https://doi.org/10.1140/epjc/s10052-022-10697-z

[17]. Mousavi, S. K. The balance In the six dimensions of space-time description of quantum mechanics phenomena and nature of time. *Journal of Physics: Theories and Applications*, *7*(1).https://doi.org/10.20961/jphystheor-appl.v7i1.63874

https://doi.org/10.32388/QT9EZE