

Hypothesis

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Hypothesis

Quantum Relativity (Impact of Energy with Space-Time 4)

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Abstract

This research answers the knowledge gap regarding the explanation of the quantum jump of the electron. This scientific paper aims to complete Einstein's research regarding general relativity and attempt to link general relativity to quantum laws.

Keywords: special relativity; general relativity; Bohr atomic model; the fine-structure constant; photon energy; energy of the total photon; electron wave by de Broglie; gravity constant; quantum jump and Cosmic constants of nature

1. Introduction

This research was created for the purpose of answering questions about physics phenomena that have not been answered. Such as explaining the phenomenon of the quantum jump of the electron and the phenomenon of cumulative entanglement. What happens in the phenomenon of the quantum jump of the electron is that when we give the electron energy, this energy causes the electron to move from the energy level that it occupies to the higher energy level without crossing the distance between the two orbits, which leads to the occurrence of the phenomenon of the quantum jump of the electron.[1] (Svidzinsky et al., 2014)

The role of this scientific paper is to provide a scientific explanation of how the quantum leap occurs without crossing the distance between the orbits. The theory of quantum entanglement is a connection between two quantum entangled particles. If one particle is observed, the other particle is affected by it at the same moment. This is what Einstein objected to; because when the electron traveled this distance in the same period of time, this would lead to the existence of a speed faster than the speed of light. Einstein proved it in special relativity. The maximum speed in the universe is the speed of light. Therefore, the phenomenon of quantum entanglement does not agree with Einstein's laws. After the validity of quantum laws was proven. There has become a conflict between the laws of relativity that apply to the universe and the quantum laws that apply to atoms. This scientific paper aims to resolve this conflict between the laws of relativity and quantum laws. By establishing a law derived from the laws of relativity to apply to quantum laws. (Equation number 1)

This law in equation 1 is known as quantum relativity because it links the laws of relativity and quantum theory. This law is derived from general relativity. The law works to explain the phenomenon of the quantum leap and the phenomenon of quantum entanglement, as it explains that when energy is given to the atom, the atom does not gain energy, but rather space-time gains that energy. We will discuss the interpretation of this theory in detail later.

The goal of this scientific research is to answer the explanation of the phenomenon of quantum leap and quantum entanglement and to add some modifications in the Bohr model.

2. Equations

These laws want to explain the results of the final derivation process of this research and what this research wants to prove.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (h_p)^4}{(\lambda nm)^4 \times (e)^4 (\Delta E_n)^4} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^6 \times 4 \times (m_{DQ})^4}{(\lambda nm)^5 \times (\mu_0 \times \epsilon_0)^7 \times (e)^5} \frac{(t_{DQ})^6}{(\Delta E_n)^5} T_{\mu\nu} \quad (1)$$

$$(G)^3 = \frac{(2\pi)^4 \times 4 \times C^{15}}{(\lambda nm \times e)^3 \times 8\pi} \frac{(l_{DQ} \times t_{DQ})^3}{(\Delta E_n)^3}$$

$$(G)^2 = \frac{1}{(\mu_0 \times \epsilon_0)^5} \left(\frac{2\pi \times l_{DQ} \times t_{DQ}}{\Delta E_n \times \lambda nm \times e} \right)^2$$

Where $G_{\mu\nu}$ represents the Einstein tensor, h_p is the Planck constant, G is the universal gravitational constant, $T_{\mu\nu}$ is the energy-momentum tensor, λnm is the wavelength is (nm), ΔE_n is the photon energy is in electron volt, ϵ_0 Vacuum permittivity, μ_0 Vacuum permeability.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4}{\lambda nm \times e} \frac{(l_{DQ})^2}{\Delta E_n} T_{\mu\nu} \quad (2)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^4 \times 4 \times (m_{DQ})^2}{(\lambda nm \times e)^3 \times (\mu_0 \times \epsilon_0)^3} \frac{(l_{DQ} \times t_{DQ})^2}{(\Delta E_n)^3} T_{\mu\nu}$$

Where e represents the electron charge, t_{DQ} Quantum time of David, l_{DQ} Quantum length of David, m_{DQ} Quantum block of David. This law explains the final result of the derivation. This law proves the creation of a relationship that links the photon energy and curvature of space-time.

$$\Delta E_n = \frac{h_p}{\sqrt{\mu_0 \times \epsilon_0} \times \lambda nm \times e} = \frac{h_p \times v_p}{\lambda nm \times e} = \frac{h_p \times v_{Dp}}{\lambda nm \times e} \quad (3)$$

ΔE_n is the photon energy is in electron volt, v_{Dp} David's velocity of the stationary phase.

$$E = \frac{n^2 \times h_{(a)}^2 \times 2KE}{(Z)^2} + n \times P \times \frac{\omega}{k \times \alpha \times Z} \quad (4)$$

$$E = \frac{n^2 \times h_{(a)}^2 \times 2KE}{(Z)^2} + n \times P \times \frac{v_p}{\alpha \times Z}$$

$$E = \frac{n^2 \times h_{(a)}^2 \times 2KE}{(Z)^2} + n \times P \times \frac{v_{Dp}}{\alpha \times Z}$$

$$p = m \times v$$

$$h_{(a)} = \frac{1}{\alpha} = \frac{C \times Z}{n \times v}$$

v_p is the Phase Velocity

$$E = m \times C^2 + P \times C$$

$$p = m \times C$$

$$E_{sqr} = m \times (v_p)^2 + p \times v_p$$

$$E_{sqr} = m \times (v_{Dp})^2 + p \times v_{Dp}$$

v_{Dp} David's velocity of the stationary phase

$$E_{sqr} = E + E_{re}$$

Where E represents the energy in special relativity, E_{sqr} is the Special quantum relativity, E_{re} is the Released energy, $h_{(a)}$ is the atomic constant, KE is the kinetic energy, P is the momentum, ω is the angular velocity, C is the speed of light, v_p is the Phase Velocity, n is the energy level, Z is the number of protons, and α is the fine-structure constant. This law explains the final result of the derivation. This law proves the creation of a relationship that links energy and kinetic energy. That the lost kinetic energy comes out in the form of radiant energy.

$$E_{sqr} = E + E_{re}$$

This equation explains that if a mass moves faster than the speed of light through a certain medium, the portion that exceeds the speed of light is in the form of energy from radiation until the maximum speed in the universe becomes the speed of light.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4}{\sqrt{\mu_0 \times \epsilon_0} \times \lambda nm} \frac{l_{DQ} \times t_{DQ}}{\Delta E_n} T_{\mu\nu} \quad (5)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{\mu_0 \times \varepsilon_0} \frac{1}{a_{DQ} \times E_{DQ}} T_{\mu\nu}$$

Where a_{DQ} represents the David's Quantum Acceleration, E_{DQ} David's Quantum Energy. This law explains the final result of the derivation. This law proves the creation of a relationship that links the Planck energy and curvature of space-time.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times \hbar \times e^2 \times (Z)^2}{n^2 \times E^2} T_{\mu\nu} \quad (6)$$

$$\bar{\hbar} = k_c \times X = \frac{e^2 \times (m_e)^2}{(4\pi \times \varepsilon_0)^2 \times \hbar \times C \times (m_p)^2} = \frac{H \times \hbar \times C}{e^2} = \frac{H \times k_c}{\alpha}$$

$$\bar{\hbar} = \frac{e^2 \times ((k_c)_{(m)_1})^2 \times G}{(\hbar \times C)^2} = \frac{e^2 \times ((k_c)_{(m)_1})^2 \times G}{(\hbar \times v_p)^2} = \frac{e^2 \times ((k_c)_{(m)_1})^2 \times G}{(\hbar \times v_{Dp})^2}$$

Where $\bar{\hbar}$ represents the multiverse constant, α is the fine – structure constant. This law wants to prove is the creation of a relationship that links the curvature of space – time and the energy of the total photon, n is the energy level, Z is the number of protons.

$$n^2 \times \hbar^2 = (k_c)_{(m)_1} \times r_n \times e^2 \quad (7)$$

$$(k_c)_{(m)_1} = (m_e) \times k_c = \frac{(m_e)}{(4\pi \times \varepsilon_0)}$$

m_e is the electron mass, r_n is the Bohr radius .

This law affects the Planck constant and the charge of the electron.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 (l_{(p)})^2}{\hbar} \frac{1}{v_p} T_{\mu\nu} \quad (8)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 (l_{DQ})^2}{\hbar} \frac{1}{v_{Dp}} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 (l_{DQ})^2}{(\mu_0 \times \varepsilon_0)^2 \times \hbar (v_{Dp})^5} T_{\mu\nu}$$

$$T_H = \frac{\hbar \times (v_p)^3}{8\pi \times G \times M \times k_B} = \frac{\hbar \times (v_{Dp})^3}{8\pi \times G \times M \times k_B}$$

Where μ_0 Vacuum permeability, $l_{(p)}$ is the Planck length, l_{DQ} Quantum length of David, T_H is the Hawking Temperature, \hbar is the reduced Planck constant.

$$\Delta E_n = \frac{\hbar_p \times 2kE}{\lambda nm \times e \times p \times (\alpha)^2} \quad (9)$$

$$\Delta E_n = \frac{2\pi \times G \times (m_p)^2}{\lambda nm \times e}$$

Where $h_{(p)}$ represents the Planck constant, m_p is the Planck mass.

$$\Delta E_n = \left(\frac{2\pi \times \hbar \times C}{\lambda nm \times e} \right) = \left(\frac{2\pi \times \hbar \times v_p}{\lambda nm \times e} \right) = \left(\frac{2\pi \times \hbar \times v_{Dp}}{\lambda nm \times e} \right) \quad (10)$$

$$(\Delta E_n)^4 = \frac{(h_p)^4 \times F_{DQ} \times G}{(\lambda nm \times e)^4}$$

F_{DQ} David's Quantum Force

These equations represent the energy of a photon in electron volts.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(v_p)^4} T_{\mu\nu} \quad (11)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(v_{Dp})^4} T_{\mu\nu}$$

$$v_p = \frac{C}{n}$$

$$v_{Dp} = \frac{C}{n_{Dp}}$$

v_p is the Phase Velocity

v_{Dp} David's velocity of the stationary phase

This equation explains these points:

1) The speed of light varies depending on the medium through which it travels.

2) This difference can be measured when measuring gravitational waves.

3) One of the following things is expected to happen when measuring gravitational waves:

1) Note that the speed of gravitational waves as they pass through a given medium differs from the speed of light.

2) Note that the speed of light will not be affected, meaning that gravitational waves travel at the speed of light as they pass through a given medium. However, the distance and time traveled between the wave's source and its arrival at Earth will vary, and they will not be consistent with the calculations provided by general relativity.

Note: If the speed of light remains the same during the measurement, this is because the tube measuring the wave is empty of air, and the speed of light in a vacuum is constant.

Time travel is the process of turning matter into antimatter.

$$E_n = 2kE \times \frac{n}{\alpha \times Z}$$

KE is the kinetic energy, E_n the energy of a photon in relativity in joules.

n is the energy level, Z is the number of protons.

$$E_n = \frac{n \times \hbar \times C}{r_n \times Z} \quad (12)$$

$$E_n = \frac{n \times \hbar \times v_{Dp}}{r_n \times Z}$$

$$E_n = \hbar \times \omega$$

$$\omega = C \times k$$

$$E_n = p \times C \times \frac{\alpha \times Z}{n}$$

$$E_n = p \times v_{Dp} \times \frac{\alpha \times Z}{n}$$

$$p = m \times C$$

These equations represent some of the laws that can represent the energy of a photon in relativity in joules.

$$E_n = \frac{n \times G \times (m_p)^2}{r_n} \quad (13)$$

$$E_n = \frac{2\pi \times G \times (m_p)^2}{\lambda}$$

$$\Delta E_n = \frac{2\pi \times G \times (m_p)^2}{\lambda n m \times e}$$

$$E_n = h_{(p)} \times \nu$$

E_n is the photon energy

Where m_p represents the Planck mass

$$n \times \lambda = \nu \times T \quad (14)$$

$$\nu = \frac{\alpha \times C \times Z}{(n)^2}$$

$$T = \frac{\nu \times \alpha \times Z}{\nu}$$

T is the **Periodic time**

ν is the frequency.

$$2kE = \frac{n \times h_p}{T}$$

λ is the **wavelength**

$$F_c = \frac{2\pi \times p}{T}$$

$$F_c = \frac{h_p \times \nu}{r_n}$$

F_c is the Centripetal force

$$\alpha = \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times C}$$

$$\alpha = \frac{\hbar}{m_e \times C \times r_n}$$

The fine structure constant determines the balance and interaction between two worlds: the world of particles and waves and the world of large objects, i.e., it is the separator.

$$v_p = \frac{C}{n}$$

$$v_p = f_p \times \lambda_p = C$$

$$n = \frac{C}{v_p} = \frac{C}{C} = 1$$

To solve the puzzle of why the electron mass conflicts with the Planck mass, often known as the "electron mass problem" or the "hierarchy problem," we must assume that the refractive index reaches the Planck limit.

From Planck's perspective, the constants were interesting because they explained black body radiation, but they did not explain why the mass of the electron did not apply to Planck's laws, like the Planck mass. There is also another problem: when we calculate the maximum medium for Planck's refractive index, we find that the maximum speed in the universe is the speed of light, and the maximum frequency and wavelength are the Planck frequency and the Planck wavelength. When we apply the law, we find that it is equal to 1, and this does not apply in nature either. I think the reason stems from Planck's belief that he took his constants and applied them to a single medium. Thus, to solve the mystery of the electron mass not matching the Planck mass, the reason for the medium not matching must be solved.

A vacuum is not a vacuum but rather a medium in itself, resulting from the vibrations that occur within it. It is known as the quantum vacuum medium, or the stability medium. In this medium, matter is stable and visible, and its refractive index is 1.

Imaginary particles are part of the quantum vacuum medium, or the medium of stability.

I believe the explanation for dark mass and dark energy lies in the presence of antimatter, but it exists in a low-temperature, cold medium, which is considered a superconductor. This medium is a separator between ordinary matter and antimatter. That is, all the elements of the periodic table are present, but their sign is negative, and they form clumps. The formation of these clumps in this cold medium prevents them from interacting with ordinary matter to stabilize the universe. Dark energy is dark mass, and dark mass is energy from the mass-energy equivalence equation.

$$G = \frac{(l_p)^2 \times (4\pi)^3 \times (k_c)^3}{\hbar \times (Z_0)^3}$$

$$(l_p)^2 = \frac{h_p \times G \times \sqrt{(\mu_0)^3 \times \epsilon_0}}{8(\pi)^2 \times k_c}$$

k_c is the Coulomb constant

$$C = \frac{4\pi \times k_c}{Z_0}$$

Z_0 it is (Impedance of free space)

$$(Q_{Dp})^2 = \frac{(e)^2}{\alpha \times n_{Dp}}$$

Modified Planck charge by David

$$v_{Dp} = \frac{C}{n_{Dp}}$$

$n_{\alpha_{ij}}, n_{\alpha}, n_{Dp}$ David's quantum refractive index

v_{Dp} David's velocity of the stationary phase

$$n = \sqrt{1 - \frac{\omega_p^2}{\omega^2}}$$

Refractive index equation in plasma

If 1 in the equation represents the speed of light in a vacuum, and if we consider a vacuum as a medium like any other medium, then in the law we will not attribute to a specific medium

$$n_{Dp} = \sqrt{\frac{\omega_p^2}{\omega^2}}$$

n_{Dp} David's quantum refractive index

This equation represents a constant refractive index.

Since the medium affects the speed, the medium itself is relative because it affects the speed of light. The speed of light is constant for each medium, but it varies from one medium to another.

If the universe allows the production of a refractive index that allows exceeding the speed of light in laboratories. This directly indicates that what is done in laboratories is actually being done in the universe but has not yet been observed.

Time travel is the process of turning matter into antimatter.

3. These Laws Have Been Modified from the Mix Planck Laws

- *How quantum entanglement occurs?*

What happens is that the electron connects to the other electron through space-time, as space-time acts like a quantum tunnel that connects the two electrons. In this way, the electron does not penetrate the speed of light, But in relation to large objects, you see that it has crossed the speed of light.

- *This hypothesis was based on scientific foundations, the most important of which is:*

1) the connection between relativity and quantum mechanics occurs via quantum entanglement and loop gravitational entanglement.

2) quantum entanglement occurs by the contraction of space-time.

3) space-time contraction occurs by space-time absorbing energy.

4) the quantum jump of the electron occurs as a result of the contraction of space-time.

4. Derivation of Equations

Completing the derivation of the laws resulting from quantum relativity (quantum world)

$$\begin{aligned} p &= m \times v = \hbar \times k \\ C &= \frac{n \times v}{\alpha \times Z} \\ v &= \frac{\alpha \times C \times Z}{n} = \frac{\alpha \times v_p \times Z}{n} = \frac{\alpha \times v_g \times Z}{n} \\ p &= m \times \frac{\alpha \times C \times Z}{n} \\ p &= m \times C \times \frac{\alpha \times Z}{n} \end{aligned}$$

$$E = p \times C$$

$$\begin{aligned} E_n &= p \times C \times \frac{\alpha \times Z}{n} \\ p &= m \times C \\ E_n &= p \times C \\ p &= m \times v = \hbar \times k \end{aligned}$$

This is derivation number 1

$$\begin{aligned} E_n &= p \times C \\ C &= \frac{n \times v}{\alpha \times Z} \\ E_n &= p \times \frac{n \times v}{\alpha \times Z} \end{aligned}$$

$$p = m \times v = \hbar \times k$$

$$\begin{aligned} E_n &= m \times v \times \frac{n \times v}{\alpha \times Z} \\ 2kE &= m_e \times (v)^2 = m_e \times \left(v_p \times \frac{\alpha \times Z}{n} \right)^2 = m_e \times \left(v_g \times \frac{\alpha \times Z}{n} \right)^2 \\ E_n &= 2kE \times \frac{n}{\alpha \times Z} \end{aligned}$$

This is derivation number 2

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(C)^4} T_{\mu\nu}$$

$$E_n = \mathbf{p} \times \mathbf{C}$$

$$\mathbf{p} = \mathbf{m} \times \mathbf{v} = \hbar \times \mathbf{k}$$

$$C = \frac{E_n}{p}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4}{1} \frac{G}{(E_n)^4} T_{\mu\nu}$$

$$\mathbf{p} = \mathbf{m} \times \mathbf{v} = \hbar \times \mathbf{k}$$

$$E_n = \mathbf{h}_{(p)} \times \mathbf{v} = \hbar \times \mathbf{C} \times \mathbf{k} = \hbar \times \boldsymbol{\omega} = \frac{L \times \boldsymbol{\omega}}{n}$$

$$L = \mathbf{m} \times \mathbf{v} \times \mathbf{r}_n = \mathbf{n} \times \hbar$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (\hbar \times k)^4}{1} \frac{G}{(\hbar \times \omega)^4} T_{\mu\nu}$$

$$v_p = \frac{\boldsymbol{\omega}}{\mathbf{k}}$$

$$v_{Dp} = \frac{\mathbf{C}}{n_{Dp}}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(v_p)^4} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(v_{Dp})^4} T_{\mu\nu}$$

v_p is the Phase Velocity

This is derivation number 3

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4}{1} \frac{G}{(E_n)^4} T_{\mu\nu}$$

$$\mathbf{p} = \mathbf{m} \times \mathbf{v} = \hbar \times \mathbf{k}$$

$$\mathbf{p} = \frac{\mathbf{h}_{(p)}}{\lambda}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (\mathbf{h}_{(p)})^4}{(\lambda)^4} \frac{G}{(E_n)^4} T_{\mu\nu} \quad \frac{(2\pi)^4}{(2\pi)^4}$$

$$\hbar = \frac{\mathbf{h}_p}{2\pi}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^5 \times 4 \times (\hbar)^4}{(\lambda)^4} \frac{G}{(E_n)^4} T_{\mu\nu} \quad \frac{(e)^4}{(e)^4}$$

$$\Delta E_n = \frac{\mathbf{h}_p \times \mathbf{C}}{\lambda \mathbf{nm} \times e}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^5 \times (\hbar)^4 \times 4}{(\lambda \mathbf{nm} \times e)^4} \frac{G}{(\Delta E_n)^4} T_{\mu\nu}$$

This is derivation number 4

$$(l_{(p)})^2 = \frac{\hbar \times G}{(C)^3}$$

$$G = \frac{(C)^3 \times (l_{(p)})^2}{\hbar}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4}{1} \frac{G}{(E_n)^4} T_{\mu\nu} \quad \frac{C}{C}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 (C)^4 \times (l_{(p)})^2}{C \times \hbar (E_n)^4} T_{\mu\nu}$$

$$\hbar = \frac{\mathbf{h}_p}{2\pi}$$

$$C = \lambda \times \mathbf{v}$$

$$E_n = \mathbf{h}_{(p)} \times \mathbf{v}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (p)^4 (C)^4 \times (l_{(p)})^2}{\lambda (E_n)^5} T_{\mu\nu}$$

$$\mu_0 \times \varepsilon_0 = \left(\frac{\mathbf{1}}{(\mathbf{C})^2} \right)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (p)^4 (l_{(p)})^2}{\lambda \times (\mu_0 \times \varepsilon_0)^2 (E_n)^5} T_{\mu\nu}$$

$$\mathbf{p} = \frac{\mathbf{h}_{(p)}}{\lambda} = \hbar \times \mathbf{k}$$

$$\mathbf{k} = \frac{2\pi}{\lambda}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 \times (\hbar)^4 \times (k)^5 (l_{(p)})^2}{(\mu_0 \times \varepsilon_0)^2 (E_n)^5} T_{\mu\nu}$$

$$\mathbf{E}_n = \mathbf{h}_{(p)} \times \mathbf{v} = \hbar \times \mathbf{C} \times \mathbf{k} = \hbar \times \boldsymbol{\omega}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 \times (\hbar)^4 \times (k)^5 (l_{(p)})^2}{(\mu_0 \times \varepsilon_0)^2 (\hbar \times \boldsymbol{\omega})^5} T_{\mu\nu}$$

$$\mathbf{v}_p = \frac{\boldsymbol{\omega}}{\mathbf{k}}$$

$$\mathbf{v}_g = \frac{\partial \boldsymbol{\omega}}{\partial \mathbf{k}}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 (l_{(p)})^2}{(\mu_0 \times \varepsilon_0)^2 \times \hbar (v_p)^5} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 (l_{(p)})^2}{(\mu_0 \times \varepsilon_0)^2 \times \hbar (v_g)^5} T_{\mu\nu}$$

$$\mu_0 \times \varepsilon_0 = \left(\frac{\mathbf{1}}{(v_p)^2} \right)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{2\pi \times 4 (l_{(p)})^2}{\hbar v_p} T_{\mu\nu}$$

$$\mathbf{G}_{\mu\nu} + \Lambda \mathbf{g}_{\mu\nu} = \frac{2\pi \times 4 (l_{(p)})^2}{\hbar v_g} \mathbf{T}_{\mu\nu}$$

v_g is the group Velocity

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (p)^4 (l_{(p)})^2}{\lambda \times (\mu_0 \times \varepsilon_0)^2 (E_n)^5} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (h_{(p)})^4 (l_{(p)})^2}{(\lambda)^5 \times (\mu_0 \times \varepsilon_0)^2 (E_n)^5} T_{\mu\nu}$$

$$\mathbf{h}_p = 2\pi \times \mathbf{m}_p \times \mathbf{C} \times \mathbf{l}_{(p)}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (h_{(p)})^4 (l_{(p)})^2}{(\lambda)^5 \times (\mu_0 \times \varepsilon_0)^2 (E_n)^5} T_{\mu\nu}$$

$$\mathbf{E}_n = \hbar \times \mathbf{C} \times \mathbf{k} = \hbar \times \boldsymbol{\omega}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (h_{(p)})^4 (l_{(p)})^2}{(\lambda)^5 \times (\mu_0 \times \varepsilon_0)^2 (\hbar \times \mathbf{C} \times \mathbf{k})^5} T_{\mu\nu}$$

$$\Delta E_n = \frac{\mathbf{h}_p \times \mathbf{C}}{\lambda nm}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4 \times (h_{(p)})^4 (l_{(p)})^2}{(\lambda nm \times e)^5 \times (\mu_0 \times \varepsilon_0)^2 (\Delta E_n)^5} T_{\mu\nu}$$

$$\hbar = \frac{\mathbf{h}_p}{2\pi}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^6 \times 4 \times (\hbar)^4 (l_{(p)})^2}{(\lambda nm \times e)^5 \times (\mu_0 \times \varepsilon_0)^2 (\Delta E_n)^5} T_{\mu\nu}$$

$$\hbar = \mathbf{m}_p \times \mathbf{C} \times \mathbf{l}_{(p)}$$

$$\mu_0 \times \varepsilon_0 = \left(\frac{\mathbf{1}}{(\mathbf{C})^2} \right)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^6 \times 4 \times (m_p)^4}{(\lambda nm \times e)^5 \times (\mu_0 \times \epsilon_0)^4} \frac{(l_{(p)})^6}{(\Delta E_n)^5} T_{\mu\nu}$$

This is derivation number 5

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (h_{(p)})^4}{(\lambda)^4} \frac{G}{(E_n)^4} T_{\mu\nu} \quad \frac{(n)^4}{(n)^4}$$

$$n \times \lambda = 2\pi \times r_n$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (n \times \hbar)^4}{(r_n \times Z)^4} \frac{G}{(E_n)^4} T_{\mu\nu}$$

$$E_n = \frac{n \times \hbar \times C}{r_n \times Z} = \hbar \times \omega$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^5 \times (\hbar)^4 \times 4}{(\lambda nm \times e)^4} \frac{G}{(\Delta E_n)^4} T_{\mu\nu}$$

This is derivation number 6

$$(l_{DQ})^2 = \frac{\hbar \times G}{(v_{Dp})^3}$$

$$\alpha = \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times C}$$

$$(m_{DQ})^2 = \frac{\hbar \times v_{Dp}}{G}$$

$$\alpha = \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{(m_{DQ})^2 \times G}$$

$$G = \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{(m_{DQ})^2 \times \alpha}$$

$$(l_{DQ})^2 = \frac{\hbar}{(v_{Dp})^3 \times 4\pi \times \epsilon_0} \frac{(e)^2}{(m_{DQ})^2 \times \alpha}$$

$$(m_{DQ})^2 = \frac{\hbar \times C}{G}$$

$$(l_{DQ})^2 = \frac{G}{(v_{Dp})^4 \times 4\pi \times \epsilon_0} \frac{(e)^2}{\alpha}$$

$$\frac{(l_{DQ})^2}{(e)^2} = \frac{G}{(v_{Dp})^4 \times 4\pi \times \epsilon_0} \frac{1}{\alpha}$$

$$\frac{(l_{DQ})^2}{(e)^2} = \frac{G}{(v_{Dp})^4 \times 4\pi \times \epsilon_0} \frac{1}{\alpha}$$

This is derivation number 7

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(v_{Dp})^4} T_{\mu\nu}$$

$$G = \frac{(v_{Dp})^3 \times (l_{DQ})^2}{\hbar}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi (v_{Dp})^3 \times (l_{DQ})^2}{\hbar (v_{Dp})^4} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi (l_{DQ})^2}{\hbar v_{Dp}} T_{\mu\nu}$$

$$C = \lambda \times v$$

$$E_n = h_{(p)} \times v$$

$$\hbar = \frac{h_p}{2\pi}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4}{\lambda nm \times e} \frac{(l_{DQ})^2}{\Delta E_n} T_{\mu\nu}$$

This is derivation number 8

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{G}{(v_{Dp})^4} T_{\mu\nu}$$

$$F_{DQ} = \frac{(v_{Dp})^4}{G}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{1}{F_{DQ}} T_{\mu\nu}$$

$$F_{DQ} = a_{DQ} \times m_{DQ}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{1}{a_{DQ} \times m_{DQ}} T_{\mu\nu}$$

$$m_{DQ} = \frac{E_{DQ}}{C^2}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{1} \frac{C^2}{a_{DQ} \times E_{DQ}} T_{\mu\nu}$$

$$\mu_0 \times \varepsilon_0 = \left(\frac{1}{(C)^2} \right)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi}{\mu_0 \times \varepsilon_0} \frac{1}{a_{DQ} \times E_{DQ}} T_{\mu\nu}$$

This is derivation number 9

$$E = m \times C^2 + p \times C$$

$$C = \lambda \times v$$

$$E = m \times (\lambda \times v)^2 + p \times (\lambda \times v) \frac{(2\pi)^2}{(2\pi)^2}$$

$$k = \frac{2\pi}{\lambda}$$

$$\omega = 2\pi \times v$$

$$E = m \times \frac{(\omega)^2}{(k)^2} + p \times \frac{\omega}{k}$$

$$v_p = \frac{\omega}{k}$$

$$v_{Dp} = \frac{C}{n_{Dp}}$$

$$E_{sqr} = m \times (v_p)^2 + p \times v_p$$

$$E_{sqr} = m \times (v_{Dp})^2 + p \times v_{Dp}$$

v_p is the Phase Velocity

This is derivation number 10

$$T_H = \frac{\hbar \times C^3}{8\pi \times G \times M \times k_B}$$

$$C = \lambda \times v$$

$$T_H = \frac{\hbar \times (\lambda \times v)^3}{8\pi \times G \times M \times k_B} \frac{(2\pi)^3}{(2\pi)^3}$$

$$k = \frac{2\pi}{\lambda}$$

$$\omega = 2\pi \times v$$

$$T_H = \frac{\hbar}{8\pi \times G \times M \times k_B} \times \frac{(\omega)^3}{(k)^3}$$

$$v_p = \frac{\omega}{k}$$

$$v_{Dp} = \frac{C}{n_{Dp}}$$

v_p is the Phase Velocity

This is derivation number 11

$$v = \frac{x}{t}$$

$$x = 2\pi \times r_n$$

$$t = T$$

$$v = \frac{2\pi \times r_n}{T}$$

$$v = \frac{\alpha \times C \times Z}{n}$$

$$T = \frac{n}{v \times \alpha \times Z}$$

$$n \times \lambda = v \times T$$

$$v = \frac{2\pi \times r_n \times v \times \alpha \times Z}{(n)^2}$$

$$v = \frac{\alpha \times C \times Z}{n}$$

$$\frac{\alpha \times C \times Z}{n} = \frac{2\pi \times r_n \times v \times \alpha \times Z}{(n)^2}$$

$$C = \frac{2\pi \times r_n \times v}{n}$$

$$C = \frac{n \times v}{\alpha \times Z}$$

$$v = \frac{2\pi \times r_n \times v \times \alpha \times Z}{(n)^2} \quad \frac{v \times r_n}{v \times r_n}$$

$$\frac{v}{r} = \frac{2\pi \times v \times \alpha \times Z}{(n)^2}$$

$$\frac{v}{r} = \frac{\omega \times \alpha \times Z}{(n)^2}$$

$$\frac{v^2}{r} = \frac{2\pi \times r_n \times v \times \alpha \times Z \times v}{(n)^2 \times r_n}$$

$$a_c = \frac{v^2}{r}$$

$$a_c = \frac{2\pi \times r_n \times v \times \alpha \times Z \times v}{(n)^2 \times r_n}$$

$$\omega = 2\pi \times v$$

$$a_c = \frac{r_n \times \omega \times \alpha \times Z \times v}{(n)^2 \times r_n}$$

$$r = \frac{n}{k}$$

$$a_c = \frac{\omega \times \alpha \times Z \times v}{n \times k \times r_n}$$

$$\frac{v}{r} = \frac{\omega \times \alpha \times Z}{(n)^2}$$

$$a_c = \frac{(\omega \times \alpha \times Z)^2}{(n)^3 \times k}$$

This is derivation number 12

$$n \times \lambda = v \times T$$

$$\lambda = \frac{h_p}{m \times v}$$

$$n \times \frac{h_p}{m \times v} = v \times T$$

$$T = n \times \frac{h_p}{m \times (v)^2}$$

$$2kE = m_e \times (v)^2$$

$$T = n \times \frac{h_p}{2kE}$$

$$2kE = \frac{n \times h_p}{T}$$

This is derivation number 13

$$m \times v \times r_n = n \times \hbar$$

$$v = \frac{n \times \hbar}{m \times r_n}$$

$$a_c = \frac{v^2}{r}$$

$$a_c = \frac{\left(\frac{n \times \hbar}{m \times r_n}\right)^2}{r}$$

$$a_c = \frac{(n \times h_p)^2}{(2\pi \times m)^2 \times (r_n)^3}$$

This is derivation number 14

$$F_c = m \times a_c$$

$$a_c = \frac{(n \times h_p)^2}{(2\pi \times m)^2 \times (r_n)^3}$$

$$F_c = m \times \frac{(n \times h_p)^2}{(2\pi \times m)^2 \times (r_n)^3}$$

$$F_c = \frac{(n \times h_p)^2}{(2\pi)^2 \times m \times (r_n)^3} \frac{v}{v}$$

$$m \times v \times r_n = n \times \frac{h_p}{2\pi}$$

$$F_c = \frac{n \times h_p \times v}{2\pi \times (r_n)^2}$$

$$v = \frac{\alpha \times C \times Z}{n}$$

$$F_c = \frac{n \times h_p \times \alpha \times C \times Z}{2\pi \times (r_n)^2 \times n}$$

$$C = \lambda \times v$$

$$F_c = \frac{n \times h_p \times \alpha \times \lambda \times v \times Z}{2\pi \times (r_n)^2 \times n}$$

$$n \times \lambda = 2\pi \times r_n$$

$$F_c = \frac{h_p \times \alpha \times r_n \times v \times Z}{(r_n)^2 \times n}$$

$$F_c = \frac{h_p \times \alpha \times v \times Z}{r_n \times n} \frac{2\pi}{2\pi}$$

$$\omega = 2\pi \times v$$

$$F_c = \frac{h_p \times \alpha \times \omega \times Z}{2\pi \times r_n \times n}$$

$$n \times \lambda = 2\pi \times r_n$$

$$F_c = \frac{h_p \times \alpha \times \omega \times Z}{n^2 \times \lambda}$$

$$n \times \lambda = v \times T$$

$$F_c = \frac{h_p \times \alpha \times \omega \times Z}{n \times v \times T}$$

$$v = \frac{\alpha \times C \times Z}{n}$$

$$F_c = \frac{h_p \times \omega}{C \times T}$$

$$C = \lambda \times v$$

$$\omega = 2\pi \times v$$

$$F_c = \frac{h_p \times 2\pi \times v}{\lambda \times v \times T}$$

$$F_c = \frac{h_p \times 2\pi}{\lambda \times T}$$

$$k = \frac{2\pi}{\lambda}$$

$$F_c = \frac{h_p \times k}{T} \frac{2\pi}{2\pi}$$

$$\hbar = \frac{h_p}{2\pi}$$

$$p = \hbar \times k$$

$$F_c = \frac{2\pi \times p}{T}$$

This is derivation number 15

$$F_c = m \times a_c$$

$$a_c = \frac{(n \times h_p)^2}{(2\pi \times m)^2 \times (r_n)^3}$$

$$F_c = m \times \frac{(n \times h_p)^2}{(2\pi \times m)^2 \times (r_n)^3}$$

$$F_c = \frac{(n \times h_p)^2}{(2\pi)^2 \times m \times (r_n)^3} \frac{v}{v}$$

$$m \times v \times r_n = n \times \hbar$$

$$m \times v \times r_n = n \times \frac{h_p}{2\pi}$$

$$F_c = \frac{n \times h_p \times v}{2\pi \times (r_n)^2}$$

$$C = v$$

$$F_c = \frac{n \times h_p \times C}{2\pi \times (r_n)^2}$$

$$C = \lambda \times v$$

$$F_c = \frac{n \times h_p \times \lambda \times v}{2\pi \times (r_n)^2}$$

$$n \times \lambda = 2\pi \times r_n$$

$$F_c = \frac{h_p \times v}{r_n}$$

This is derivation number 16

$$n = \sqrt{1 - \frac{\omega_p^2}{\omega^2}}$$

Refractive index equation in plasma

If 1 in the equation represents the speed of light in a vacuum, and if we consider a vacuum as a medium like any other medium, then in the law we will not attribute to a specific medium

$$n_{Dp} = \sqrt{\frac{\omega_p^2}{\omega^2}}$$

n_{Dp} David's quantum refractive index

This equation represents a constant refractive index.

This is derivation number 17

$$\frac{n^2 - 1}{n^2 + 2} = \frac{4\pi N \times \alpha}{3 V}$$

(Clausius - Mossotti)

$$\frac{n^2 - 1}{n^2 + 2} \approx \frac{n - 1}{1} = n - 1$$

$$n - 1 \approx \frac{4\pi N \times \alpha}{3 V}$$

$$n \approx 1 + 2\pi \frac{N \times \alpha}{V}$$

$$\frac{N}{V} = \frac{P}{k_B \times T} \Rightarrow n \approx 1 + 2\pi \alpha \frac{P}{k_B \times T}$$

$$n \approx 1 + 2\pi \alpha \frac{P}{k_B \times T}$$

This is derivation number 18

$$\alpha_H \approx \frac{9}{2} \times a_0^3$$

The static electric dipole polarizability of the ground-state hydrogen atom

$$a_0 = 0.529 \times 10^{-10} \text{ m}$$

$$\alpha_H = \frac{9}{2}(0.529 \times 10^{-10})^3$$

$$\alpha_H = \frac{9}{2} \times 0.148 \times 10^{-30} \approx 6.6683117046 \times 10^{-31} \text{ m}^3$$

$$\alpha_H \approx 6.6683117046 \times 10^{-31} \text{ m}^3$$

This is derivation number 19

$$v_p = \frac{C}{n}$$

v_p is the Phase Velocity

$$v_{Dp} = \frac{C}{n_{Dp}}$$

v_{Dp} David's quantum refractive index or David's velocity of the stationary phase

$$m_{DQ} = \sqrt{\frac{\hbar \times (v_{Dp})}{G}}$$

m_{DQ} Quantum block of David

$$l_{DQ} = \sqrt{\frac{\hbar \times G}{(v_{Dp})^3}}$$

l_{DQ} Quantum length of David

$$t_{DQ} = \sqrt{\frac{\hbar \times G}{(v_{Dp})^5}}$$

t_{DQ} Quantum time of David

$$E_{DQ} = m_p \times (v_{Dp})^2 = \sqrt{\frac{\hbar \times (v_{Dp})^5}{G}}$$

E_{DQ} David's Quantum Energy

$$T_{DQ} = \frac{E_p}{k_B} = \frac{m_p \times (v_{Dp})^2}{k_B} = \sqrt{\frac{\hbar \times (v_{Dp})^5}{G \times k_B^2}}$$

T_{DQ} David's quantum temperature

$$Q_{DQ} = \sqrt{4\pi \times \epsilon_0 \times \hbar \times (v_{Dp})}$$

Q_{DQ} David's quantum charge

$$F_{DQ} = \frac{(v_{Dp})^4}{G}$$

F_{DQ} David's Quantum Force

$$a_{DQ} = \frac{F_p}{m_p} = \frac{(v_{Dp})^7}{\hbar \times G}$$

a_{DQ} David's Quantum Acceleration

$$\rho_{DQ} = \frac{m_p}{l_p^3} = \frac{(v_{Dp})^5}{\hbar \times G^2}$$

ρ_{DQ} David's quantum density

$$P_{DQ} = \frac{(v_{Dp})^7}{\hbar \times G^2}$$

P_{DQ} David's Quantum Pressure

$$w_{DQ} = \frac{E_p}{t_p} = \frac{(v_{Dp})^5}{G}$$

w_{DQ} David's Quantitative Ability

$$p_{DQ} = m_p \times (v_{Dp}) = \sqrt{\frac{\hbar \times (v_{Dp})^3}{G}}$$

p_{DQ} David's Momentum Quantity

This is derivation number 20

$$v_p = \frac{C}{n}$$

v_p is the Phase Velocity

$$v_{Dp} = \frac{C}{n_\alpha} = \frac{C}{n_{\alpha ij}}$$

$n_{\alpha ij}$ David's quantum refractive index

v_{Dp} David's velocity of the stationary phase

$$n_\alpha \Rightarrow \boxed{n \approx 1 + 2\pi \alpha \frac{P}{k_B \times T}}$$

(Clausius – Mossotti)

$$n_{\alpha ij} \Rightarrow \boxed{\alpha_{ij} = 2 \sum_{n \neq 0} \frac{\langle 0 | \hat{\mu}_i | n \rangle \langle n | \hat{\mu}_j | 0 \rangle}{E_n - E_0}}$$

“Sum-over-States formula for linear polarizability”

This is derivation number 21

$$\alpha = \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times C}$$

$$(m_{(p)})^2 = \frac{\hbar \times C}{G}$$

$$(m_{(p)})^2 \times G = \hbar \times C$$

$$\alpha = \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{(m_{(p)})^2 \times G}$$

$$k_c = \frac{1}{4\pi \times \epsilon_0}$$

$$\frac{G}{k_c} = \frac{(e)^2}{(m_{(p)})^2 \times \alpha}$$

This is derivation number 22

$$\frac{E}{B} = C$$

E is electric field

B is a magnetic field

$$E = \frac{1}{4\pi \times \epsilon_0} \frac{e}{(r_n)^2}$$

$$B = \frac{m \times v}{e \times r_n} \frac{r_n}{r_n}$$

$$m \times v \times r_n = n \times \hbar$$

$$B = \frac{n \times \hbar}{e \times (r_n)^2}$$

$$\frac{E}{B} = C$$

$$\frac{1}{4\pi \times \epsilon_0} \frac{e}{(r_n)^2} = \frac{m \times v}{e \times r_n} \frac{e}{e \times r_n} = C$$

$$\frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{m \times v \times r_n} = C$$

$$m \times v \times r_n = n \times \hbar$$

$$\frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha} = C$$

$$\frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} = 1$$

$$\frac{\hbar \times \alpha \times C}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} = 1$$

This is derivation number 23

$$\begin{aligned} (m_{(Dp)})^2 &= \frac{\hbar \times C}{G} \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ (m_{(Dp)})^2 &= \frac{\hbar \times C}{G} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} \\ (m_{(Dp)})^2 &= \frac{(e)^2}{G \times \alpha} \times \frac{1}{4\pi \times \epsilon_0} \\ (m_{(Dp)})^2 &= \frac{(e)^2 \times k_c}{G \times \alpha} \end{aligned}$$

Modified Planck mass by David

This is derivation number 24

$$\begin{aligned} (l_{(Dp)})^2 &= \frac{\hbar \times G}{(C)^3} \times 1 \\ \frac{\hbar \times \alpha \times C}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} &= 1 \\ (l_{(Dp)})^2 &= \frac{\hbar \times G}{(C)^3} \times \frac{\hbar \times \alpha \times C}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} \\ (l_{(Dp)})^2 &= \frac{(\hbar)^2 \times G}{(C)^2} \times \frac{\alpha}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} \\ (l_{(Dp)})^2 &= \frac{(\hbar)^2 \times G}{(v_{Dp})^2} \times \frac{\alpha}{k_c \times (e)^2} \end{aligned}$$

Modified Planck length by David

This is derivation number 25

$$\begin{aligned} (t_{(Dp)})^2 &= \frac{\hbar \times G}{(C)^5} \times 1 \\ \frac{\hbar \times \alpha \times C}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} &= 1 \\ (t_{(Dp)})^2 &= \frac{\hbar \times G}{(C)^5} \times \frac{\hbar \times \alpha \times C}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} \\ (t_{(Dp)})^2 &= \frac{(\hbar)^2 \times G}{(C)^4} \times \frac{\alpha}{\frac{1}{4\pi \times \epsilon_0} \times (e)^2} \\ (t_{(Dp)})^2 &= \frac{(\hbar)^2 \times G}{(v_{Dp})^4} \times \frac{\alpha}{k_c \times (e)^2} \end{aligned}$$

Modified Planck time by David

This is derivation number 26

$$\begin{aligned} (E_{(Dp)})^2 &= \frac{\hbar \times (c)^5}{G} \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ (E_{(Dp)})^2 &= \frac{\hbar \times (c)^5}{G} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} \\ (E_{(Dp)})^2 &= \frac{(c)^4}{G} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\alpha} \\ (E_{(Dp)})^2 &= \frac{(v_{Dp})^4 \times k_c}{G} \times \frac{(e)^2}{\alpha} \end{aligned}$$

Modified Planck energy by David

This is derivation number 27

$$\begin{aligned} (T_{(Dp)})^2 &= \frac{\hbar \times (C)^5}{G \times k_B^2} \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ (T_{(Dp)})^2 &= \frac{(C)^4}{G \times k_B^2} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\alpha} \\ (T_{(Dp)})^2 &= \frac{(v_{Dp})^4 \times k_c}{G \times k_B^2} \times \frac{(e)^2}{\alpha} \end{aligned}$$

Modified Planck temperature by David

This is derivation number 28

$$\begin{aligned} (Q_{(Dp)})^2 &= 4\pi \times \epsilon_0 \times \hbar \times C \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ (Q_{(Dp)})^2 &= 4\pi \times \epsilon_0 \times \hbar \times C \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} \\ (Q_{(Dp)})^2 &= \frac{(e)^2}{\alpha \times n_{\alpha ij}} \end{aligned}$$

Modified Planck charge by David

This is derivation number 29

$$\begin{aligned} F_{(Dp)} &= \frac{(C)^4}{G} \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ F_{(Dp)} &= \frac{(C)^4}{G} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} \\ F_{(Dp)} &= \frac{(v_{Dp})^3 \times k_c}{G} \times \frac{(e)^2}{\hbar \times \alpha} \end{aligned}$$

Modified Planck Force by David

This is derivation number 30

$$\begin{aligned} a_{(Dp)} &= \frac{(C)^7}{\hbar \times G} \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ a_{(Dp)} &= \frac{(C)^7}{\hbar \times G} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} \\ a_{(Dp)} &= \frac{(v_{Dp})^6 \times k_c}{(\hbar)^2 \times G} \times \frac{(e)^2}{\alpha} \end{aligned}$$

Modified Planck acceleration by David

This is derivation number 31

$$\begin{aligned} \rho_{(Dp)} &= \frac{(C)^5}{\hbar \times G^2} \times 1 \\ \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} &= 1 \\ \rho_{(Dp)} &= \frac{(C)^5}{\hbar \times G^2} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} \\ \rho_{(Dp)} &= \frac{(v_{Dp})^4 \times k_c}{(\hbar)^2 \times G^2} \times \frac{(e)^2}{\alpha} \end{aligned}$$

Modified Planck density by David

This is derivation number 32

$$P_{(Dp)} = \frac{(C)^7}{\hbar \times G^2} \times 1$$

$$\frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} = 1$$

$$P_{(Dp)} = \frac{(C)^7}{\hbar \times G^2} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C}$$

$$P_{(Dp)} = \frac{(v_{Dp})^6 \times k_c}{(\hbar)^2 \times G^2} \times \frac{(e)^2}{\alpha}$$

Modified Planck pressure by David

This is derivation number 33

$$w_{(Dp)} = \frac{(C)^5}{G} \times 1$$

$$\frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C} = 1$$

$$w_{(Dp)} = \frac{(C)^5}{G} \times \frac{1}{4\pi \times \epsilon_0} \frac{(e)^2}{\hbar \times \alpha \times C}$$

$$w_{(Dp)} = \frac{(v_{Dp})^4 \times k_c}{G} \times \frac{(e)^2}{\hbar \times \alpha}$$

Planck's power modified by David

This is derivation number 34

$$(l_{(p)})^2 = \frac{\hbar \times G}{(C)^3}$$

$$C = \frac{1}{\sqrt{\mu_0 \times \epsilon_0}}$$

$$(l_{(p)})^2 = \frac{\hbar \times G}{\left(\frac{1}{\sqrt{\mu_0 \times \epsilon_0}}\right)^3}$$

$$(l_{(p)})^2 = \hbar \times G \times (\sqrt{\mu_0 \times \epsilon_0})^3$$

$$(l_{(p)})^2 = \frac{h_p \times G \times \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}}{2\pi}$$

$$(l_{(p)})^2 = \frac{h_p \times G \times \epsilon_0 \times \sqrt{(\mu_0)^3 \times \epsilon_0}}{2\pi} \frac{4\pi}{4\pi}$$

$$(l_{(p)})^2 = \frac{h_p \times G \times \epsilon_0 \times \sqrt{(\mu_0)^3 \times \epsilon_0}}{2\pi} \frac{4\pi}{4\pi}$$

$$k_c = \frac{1}{4\pi \times \epsilon_0}$$

$$(l_{(p)})^2 = \frac{h_p \times G \times \sqrt{(\mu_0)^3 \times \epsilon_0}}{2\pi \times k_c \times 4\pi}$$

$$(l_{(p)})^2 = \frac{h_p \times G \times \sqrt{(\mu_0)^3 \times \epsilon_0}}{8(\pi)^2 \times k_c}$$

This is derivation number 35

$$(l_{(p)})^2 = \frac{h_p \times G \times \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}}{2\pi}$$

$$G = \frac{(l_{(p)})^2 \times 2\pi}{h_p \times \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}} \frac{(4\pi)^3 \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}}{(4\pi)^3 \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}}$$

$$G = \frac{(l_{(p)})^2 \times 2\pi \times (4\pi)^3 \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}}{h_p \times (4\pi)^3 \times (\mu_0)^3 \times (\epsilon_0)^3}$$

$$\hbar = \frac{h_p}{2\pi}$$

$$k_c = \frac{1}{4\pi \times \epsilon_0}$$

$$G = \frac{(l_{(p)})^2 \times (4\pi)^3 \times (k_c)^3 \sqrt{(\mu_0)^3 \times (\epsilon_0)^3}}{\hbar \times (\mu_0)^3}$$

$$C = \frac{1}{\sqrt{\mu_0 \times \epsilon_0}}$$

$$G = \frac{(l_{(p)})^2 \times (4\pi)^3 \times (k_c)^3}{\hbar \times (\mu_0)^3 \times (C)^3}$$

$$Z_o = \mu_0 \times C$$

$$G = \frac{(l_{(p)})^2 \times (4\pi)^3 \times (k_c)^3}{\hbar \times (Z_o)^3}$$

$$C = \frac{4\pi \times k_c}{Z_o}$$

Z_o it is (Impedance of free space)

This is derivation number 36

$$(m_{(p)})^2 = \frac{\hbar \times C}{G}$$

$$\frac{1}{(m_{(p)})^2} = \frac{G}{\hbar \times C} \frac{(m_e)^2}{(m_e)^2}$$

$$\frac{(m_e)^2}{(m_{(p)})^2} = \frac{G \times (m_e)^2}{\hbar \times C}$$

$$m \times v \times r_n = n \times \hbar$$

$$\frac{(m_e)^2}{(m_{(p)})^2} = \frac{G \times (m_e)^2}{m \times v \times r_n \times C}$$

$$(m_e)^2 = \frac{(m_{(p)})^2 \times G \times (m_e)^2}{m \times v \times r_n \times C}$$

$$(m_{(p)})^2 = \frac{\hbar \times C}{G}$$

$$(m_e)^2 = \frac{\hbar \times C \times (m_e)^2}{m \times v \times r_n \times C}$$

$$v = \frac{\alpha \times C \times Z}{n}$$

$$m_e = \frac{\hbar}{\alpha \times C \times r_n}$$

$$\alpha = \frac{\hbar}{m_e \times C \times r_n}$$

This is derivation number 37

$$L_l = \sqrt{l(l+1)} \times \hbar$$

(Orbital Angular Momentum)

$$L_z = m_l \times \hbar$$

Orbital Angular Momentum Component on the z – axis

$$\mu_l = -\mu_B \times m_l$$

Orbital Magnetic Moment of the Electron

$$S = \sqrt{s(s+1)} \times \hbar$$

(Total Spin Angular Momentum)

$$S_z = m_s \times \hbar$$

Spin Angular Momentum on the z – axis

$$\mu_s = -g_s \times \mu_B \times m_s$$

$\vec{\mu}_s$ it is (Spin Magnetic Moment)

This is derivation number 38

$$L_z = \frac{L_l \times \left(m_l \times \frac{1}{|m_l|} \right)}{\sqrt{\frac{1}{l} + 1}}$$

$$S_z = \frac{S \times \left(m_s \times \frac{1}{|m_s|} \right)}{\sqrt{\frac{1}{s} + 1}}$$

This is derivation number 39

$$\begin{aligned} v_p &= \frac{C}{n} \\ v_p &= f_p \times \lambda_p = C \\ f_p &= \frac{1}{t_p} \\ \lambda_p &= c \cdot t_p \\ n &= \frac{C}{v_p} = \frac{C}{C} = 1 \end{aligned}$$

This is derivation number 40

These are some equations after removing the speed of light and putting in the phase speed. The phase velocity was included because it became clear from the derivation, I made that from Einstein's perspective on the speed of light he was focusing on the speed of light in a vacuum and did not consider other media such as water which affect the speed of light as Christian Huygens explained it and therefore this had to be into account in the calculations.

This will enable us to add the group velocity as a result of adding the phase velocity when the speed of light is constant.

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{(v_p)^4} T_{\mu\nu}$$

$$R_{\mu\nu} - \frac{1}{2}Rg_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{(v_{Dp})^4} T_{\mu\nu}$$

1. (General quantitative relativity)

$$ds^2 = -\left(1 - \frac{2GM}{(v_p)^2 r}\right) (v_p)^2 dt^2 + \left(1 - \frac{2GM}{(v_p)^2 r}\right)^{-1} dr^2 + r^2 d\Omega^2$$

$$ds^2 = -\left(1 - \frac{2GM}{(v_{Dp})^2 r}\right) (v_{Dp})^2 dt^2 + \left(1 - \frac{2GM}{(v_{Dp})^2 r}\right)^{-1} dr^2 + r^2 d\Omega^2$$

2. (Schwarzschild Metric)

$$\begin{aligned} ds^2 = & -\left(1 - \frac{2GMr}{\rho^2(v_p)^2}\right) (v_p)^2 dt^2 - \frac{4GMar}{\rho^2(v_p)^2} \sin^2 \theta dt d\phi + \frac{\rho^2}{\Delta} dr^2 + \rho^2 d\theta^2 \\ & + \left(r^2 + a^2 + \frac{2GMa^2}{\rho^2(v_p)^2} \sin^2 \theta\right) \sin^2 \theta d\phi^2 \end{aligned}$$

$$\begin{aligned} ds^2 = & -\left(1 - \frac{2GMr}{\rho^2(v_{Dp})^2}\right) (v_{Dp})^2 dt^2 - \frac{4GMar}{\rho^2(v_{Dp})^2} \sin^2 \theta dt d\phi + \frac{\rho^2}{\Delta} dr^2 + \rho^2 d\theta^2 \\ & + \left(r^2 + a^2 + \frac{2GMa^2}{\rho^2(v_{Dp})^2} \sin^2 \theta\right) \sin^2 \theta d\phi^2 \end{aligned}$$

$$\rho^2 = r^2 + a^2 \cos^2 \theta$$

$$\Delta = r^2 - \frac{2GMr}{(v_p)^2} + a^2$$

$$\Delta = r^2 - \frac{2GMr}{(v_{Dp})^2} + a^2$$

3. (Kerr Metric)

$$\begin{aligned} ds^2 = & -\left(1 - \frac{2GMr - Q^2}{\rho^2(v_p)^2}\right) (v_p)^2 dt^2 - \frac{4GMar}{\rho^2(v_p)^2} \sin^2 \theta dt d\phi + \frac{\rho^2}{\Delta} dr^2 + \rho^2 d\theta^2 \\ & + \left(r^2 + a^2 + \frac{(2GMr - Q^2)a^2}{\rho^2(v_p)^2} \sin^2 \theta\right) \sin^2 \theta d\phi^2 \end{aligned}$$

$$ds^2 = - \left(1 - \frac{2GMr - Q^2}{\rho^2 (\mathbf{v}_{Dp})^2} \right) (\mathbf{v}_{Dp})^2 dt^2 - \frac{4GMa r}{\rho^2 (\mathbf{v}_{Dp})^2} \sin^2 \theta dt d\phi + \frac{\rho^2}{\Delta} dr^2 + \rho^2 d\theta^2$$

$$+ \left(r^2 + a^2 + \frac{(2GMr - Q^2)a^2}{\rho^2 (\mathbf{v}_{Dp})^2} \sin^2 \theta \right) \sin^2 \theta d\phi^2$$

4. (Kerr – Newman Metric)

$$R_s = \frac{2GM}{(\mathbf{v}_p)^2}$$

$$R_s = \frac{2GM}{(\mathbf{v}_{Dp})^2}$$

5. (Schwarzschild Radius)

$$\Delta t' = \frac{\Delta t}{\sqrt{1 - \frac{2GM}{(\mathbf{v}_p)^2 r}}}$$

$$\Delta t' = \gamma \Delta t = \frac{\Delta t}{\sqrt{1 - \frac{v^2}{(\mathbf{v}_{Dp})^2}}}$$

6. (Gravitational Time Dilation)

$$z = \frac{1}{\sqrt{1 - \frac{2GM}{(\mathbf{v}_p)^2 r}}} - 1$$

$$z = \frac{1}{\sqrt{1 - \frac{2GM}{(\mathbf{v}_{Dp})^2 r}}} - 1$$

7. (Gravitational Redshift)

$$\theta_E = \sqrt{\frac{4GM}{(\mathbf{v}_p)^2} \frac{D_{LS}}{D_L D_S}}$$

$$\theta_E = \sqrt{\frac{4GM}{(\mathbf{v}_{Dp})^2} \frac{D_{LS}}{D_L D_S}}$$

8. (Einstein Ring or Gravitational Lensing Angle)

$$\left(\frac{\dot{a}}{a} \right)^2 = \frac{8\pi G}{3} \rho - \frac{k}{a^2} + \frac{\Lambda}{3}$$

9. (Friedmann Equation)

$$\Delta\omega = \frac{6\pi GM}{(\mathbf{v}_p)^2 a(1 - e^2)}$$

$$\Delta\omega = \frac{6\pi GM}{(\mathbf{v}_{Dp})^2 a(1 - e^2)}$$

$$\Delta\phi = \frac{6\pi GM}{(\mathbf{v}_p)^2 a(1 - e^2)}$$

$$\Delta\phi = \frac{6\pi GM}{(\mathbf{v}_{Dp})^2 a(1 - e^2)}$$

$\Delta\phi$ is the additional precession per orbit.

10. (Perihelion Precession of Mercury)

The electron generates a constant field while rotating around the nucleus, but when it gains energy, it generates a changing field. This explains why it has a torque resulting from the energy during the experiment. Therefore, if the electron is observed in its normal state without being excited, the electron will behave as a particle, and if it is excited, it will behave as a wave.

The Mössbauer effect proved that general relativity is true. Relativity explains that the fastest speed is the speed of light. However, if the Mössbauer effect differs depending on the medium it is in, due to the refractive index, then relativity will differ.

5. Method

My name is Ahmed. I have made a theoretical derivation of the equation of general relativity as explained in this research for the purpose of obtaining an equation that can be applied within the quantum world so that it describes the movement of the electron during the quantum jump in the Bohr model. After that, the researcher Samira reviewed the research and verified it, and then she worked on applying this theory to the movement of the electron during the occurrence of the quantum leap, using previous research and matching it with the results of this equation to determine its validity.

This part of the research will explain the spectrum of the hydrogen atom in a new way, as the results presented in these tables from previous research match the results extracted from the equation, and this is consistent with the validity of this equation. Because the new equation is consistent with the photon energy equation. We will discuss that part of the research in the results and discussion.

Table 5 shows the measurement results tested.[3] (Nanni, 2015).

Table 5. It represents the theoretical and experimental value of the hydrogen atom. Using the photon energy law mentioned above, this table.

$$\Delta E = E_{n'} - E_n = h \frac{c}{\lambda} \rightarrow \frac{1}{\lambda} = \frac{4}{B} \left(\frac{1}{n'^2} - \frac{1}{n^2} \right)$$

The way toward the quantum mechanics was definitely opened! The calculated wavelength values vs the experimental ones are listed in table

<i>Spectral Line</i>	<i>Experimental Value</i>	<i>Theoretical Value</i>
-----	(nm)	(nm)
$\lambda(n'=2, n=1)$	121.5	122.0
$\lambda(n'=3, n=1)$	102.5	103.0
$\lambda(n'=4, n=1)$	97.2	97.3
$\lambda(n'=2, n=3)$	656.1	656.3
$\lambda(n'=2, n=4)$	486.0	486.1
$\lambda(n'=3, n=4)$	1874.6	1875.0

My scientific research explains how the universe initially expanded so quickly that the change in phase velocity from the speed of light led to this expansion in spacetime. Since I put the phase velocity in place of the speed of light in general relativity because of the derivative I did, and this equation will be known as general quantum relativity, then this means that the speed of light was moving differently, and this will lead to spacetime being affected by different media, as my equations show, so the universe was initially expanding, and then inflation occurred as a result of the phase velocity differing from the speed of light, which led to the expansion of spacetime faster than light, and this led to homogeneity in the cosmic background.

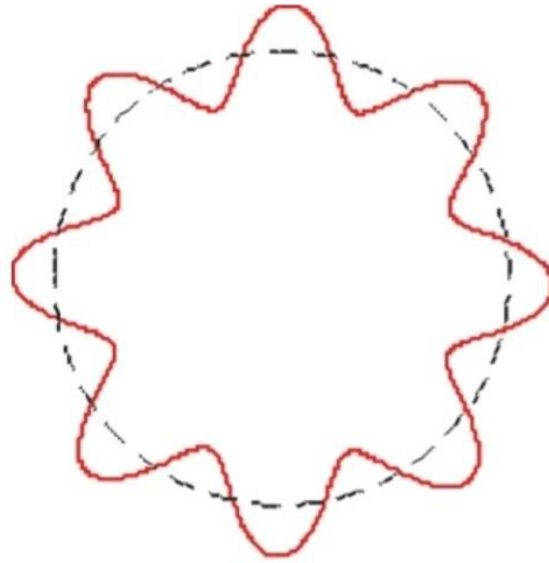


Figure 1. Bohr hydrogen atomic model incorporating de Broglie's .[4] (Jordan, 2024).

This drawing, taken from previous research, shows how the quantum leap occurs through interference, as my equation showed. When interference occurs between the orbit occupied by the electron and the energy level higher than the electron's orbit, it occurs in the form of wave interference of this type as a result of a contraction in the fabric of space-time. The black circle represents the orbit occupied by the electron, while the red color represents how interference occurs from the orbit higher to the orbit occupied by the electron in the form of wave interference. In other words, the upper level works to contract, forming a wave equal to the same wave as the level occupied by the electron through the de Broglie equation. $n \times \lambda = 2\pi \times r$

If we make the electron quantum entangled in particle accelerators, then if we make one of these electrons be in a short line and the other be in a long line, when one approaches the speed of light, the other must exceed the speed of light. In other words, the two entangled bodies are in two dimensions, that is, different dimensions, and this happens as a result, a distortion of space-time, which makes during the measurement that the speed is breached, but in reality it does not exceed the speed. This is the same idea as the distortion of the orbits that I explained. Because it is assumed that the electron does not move from its position, however, a distortion occurs in the orbit with the highest energy, and it forms a wave similar to the orbit occupied by the electron, according to De Broglie's laws. This occurs through the distortion of space-time as a result of the increase in energy.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^2 \times 4}{\lambda nm \times e} \frac{(l_p)^2}{\Delta E_n} T_{\mu\nu}$$

Because the equation connects more than one equation into a single equation. As

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times G}{C^4} T_{\mu\nu}$$

$$\Delta E_n = \frac{h_p \times C}{\lambda nm \times e}$$

$$n \times \lambda = 2\pi \times r_n$$

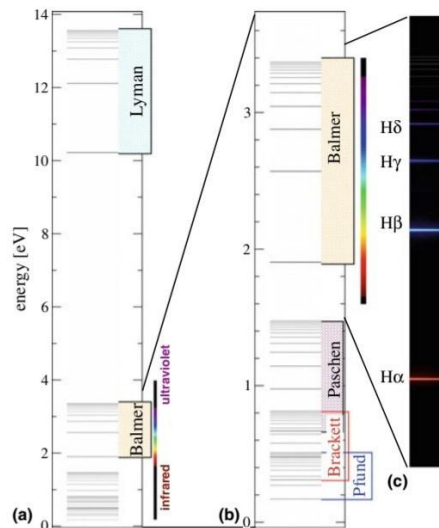


Figure 2. The observed emission line spectrum of atomic hydrogen in chapter 2 atoms.[5] (Manini, 2020).

Table 6. shows the measurement results of one of the previous researches related to the spectrum of the hydrogen atom in chapter 2 atoms.[5] (Manini, 2020).

The 4 lowest-energy series of spectral lines of atomic hydrogen				
name	lower n	lowest energy [eV]	max energy [eV]	spectral region
Lyman series	1	10.2	13.6	UV
Balmer series	2	1.89	3.40	Visible-UV
Paschen series	3	0.66	1.51	IR
Brackett series	4	0.31	0.85	IR

This shape is a result of the fact that the electron, after a quantum leap occurred as a result of an interference between the orbital that it occupies and the energy level above it, was in an unstable state. Therefore, when the highest level of energy returns to its position, it releases energy in the form of spectral lines. These lines are determined according to the amount of energy, as shown in the picture.

6. Results Obtained

This scientific research aims to prove a theory by comparing the practical results of this theory with the original results and making the comparison in a table. We will discuss that here .

My theory is based on introducing the curvature of spacetime into the equation, but quantum mechanics shows that it is not affected by gravity. How to interact with the curvature of spacetime has not yet been proven. As a result, my equations show a way to conduct an experiment that enables direct interaction with the curvature of spacetime. Therefore, this experiment practically proves that quantum mechanics made a mistake in its concept when it showed gravity does not interact with it. How to conduct an experimental experiment to prove the validity of my equations

Steps to conduct the experiment

1) The place where the experiment will take place must be chosen, and it must be at a high altitude, such as Mount Everest because the higher the altitude, the less gravity.

2) The experiment is about creating a quantum leap for the electron so that we can know the emission lines that represent the fingerprint of the element and compare them at different heights. Let us take the example of the hydrogen atom. After knowing the choice of the element, the device that will measure the spectral lines of the element must be taken to Mount Everest, where the experiment will be conducted.

3) We will excite the element keeping all elements constant as energy and the comparison will be between wavelength and curvature of spacetime. The first measurement is at the bottom of the mountain, that is, before climbing the mountain first. Then we measure in the middle of the mountain, then we test at the top of the mountain and compare the atomic spectra. If my theoretical results are correct, there will be skewing of the spectral lines at different heights due to distortion of the fabric of space-time.

4) If we measure atomic spectra, we also measure the Zeeman, Stark, and magneto-stark effects separately.

The reason they were not previously able to measure the curvature of space-time is because my equations show that the effect of energy and wavelength when measured as two variables will cancel each other out, so space-time will not be affected.

Gravitational Effect on Atomic Energy Levels

Objective: Measure the effect of gravity on atomic energy levels

Equipment:

- A gas sample (e.g., hydrogen or cesium) in a vacuum chamber.
- A laser to excite electrons at specific energy levels.
- A high-precision spectrometer.
- A variable gravitational field (e.g., using aircraft simulating microgravity).

Procedure:

1. Measure the atomic spectrum in a normal gravitational environment.
2. Measure the spectrum in a reduced-gravity environment (e.g., during parabolic flights).
3. Compare the energy levels and emission lines.

Expected Outcome:

- If the spectrum shifts at different gravitational strengths, it indicates that gravity affects atomic energy levels

My equations clearly show that if proven in practical experiments, it indicates that the gravitational constant G is not a cosmic constant in quantum mechanics, but is affected by the wavelength and the energy difference, that is, it is variable. In other words, gravity is not an absolute quantity, but rather the quantum state is influenced by me. For this reason, quantum mechanics is not related to general relativity.

My equations explain the effect (magnetic attraction) and Bayfield-Brown effect My equations confirm the effect of electromagnetism on gravity.

Well, with these experiments, the Pound-Rebecca experiments, also known as gravitational redshift, will prove what the equation tells you.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} - T_{\mu\nu} = \frac{8\pi \times G}{c^4} = 2.0766474428 \times 10^{-43} \quad (16)$$

$$E_n = E_2 - E_1$$

$$\Delta E_n = \frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^6 \times (\hbar)^4 \times 4}{(\lambda \text{ nm} \times e)^5 \times (\mu_0 \times \epsilon_0)^2} \frac{(l_{(p)})^2}{(\Delta E_n)^5} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^6 \times (1.0545718 \times 10^{-34})^4 \times 4}{(\lambda \text{ nm} \times e)^5 \times (4\pi \times 10^{-7} \times 8.854187813 \times 10^{-12})^2} \frac{(1.616255011 \times 10^{-35})^2}{(\Delta E_n)^5} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{6.4231253544 \times 10^{-167}}{(\lambda \text{ nm} \times e)^5} \frac{1}{(\Delta E_n)^5} T_{\mu\nu}$$

$$(\Delta E_n)^5 = \frac{6.4231253544 \times 10^{-167}}{(\lambda \text{ nm} \times e)^5} \frac{1}{G_{\mu\nu} + \Lambda g_{\mu\nu} - T_{\mu\nu}}$$

$$(\Delta E_n)^5 = \frac{6.4231253544 \times 10^{-167}}{(\lambda \text{ nm} \times e)^5} \frac{1}{2.0766474428 \times 10^{-43}}$$

$$(\lambda \text{ nm})^5 = \frac{3.0930261448 \times 10^{-124}}{(\Delta E_n \times e)^5}$$

$$(\lambda nm)^5 = \frac{3.0930261448 \times 10^{-124}}{\left(\frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right) \times e\right)^5}$$

$$\lambda nm = 5 \sqrt[5]{\frac{3.0930261448 \times 10^{-124}}{\left(\frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right) \times 1.60217662 \times 10^{-19}\right)^5}}$$

$$\lambda = 656.11227252 \text{ nm}$$

This example of a hydrogen atom in the Balmer series.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{4 \times (\hbar)^8 \times (2\pi)^{10}}{(\mu_0 \times \varepsilon_0)^4 \times (\lambda nm)^9 \times (e)^9} \frac{(l_{(p)})^2}{(\Delta E_n)^9} T_{\mu\nu}$$

$$\Delta E_n = \frac{h_p \times C}{\lambda} = \frac{1239.8419637 \text{ eVnm}}{\lambda}$$

Photon energy equation.

$$(\Delta E_n)^9 = \frac{4 \times (\hbar)^8 \times (2\pi)^{10}}{(\mu_0 \times \varepsilon_0)^4 \times (\lambda nm)^9 \times (e)^9} \frac{(l_{(p)})^2}{G_{\mu\nu} + \Lambda g_{\mu\nu}} T_{\mu\nu}$$

Example of a hydrogen atom.

$$\Delta E_n = 9 \sqrt{\frac{4 \times (\hbar)^8 \times (2\pi)^{10}}{(\mu_0 \times \varepsilon_0)^4 \times (\lambda nm)^9 \times (e)^9} \frac{(l_{(p)})^2}{G_{\mu\nu} + \Lambda g_{\mu\nu}} - T_{\mu\nu}}$$

Example of a hydrogen atom in the Balmer series.

We remove the energy level (n)

$$\Delta E_n = 9 \sqrt{\frac{4.8160445107 \times 10^{-223}}{(\lambda nm)^9 \times (e)^9}}$$

$$\Delta E_n = 9 \sqrt{\frac{4.8160445107 \times 10^{-223}}{(656.11227252)^9 \times (1.60217662 \times 10^{-19})^9}}$$

$$\Delta E_n = 1.8896795971$$

The unit of measurement for photon energy is electron volt (eV), the wavelength is (nm)

$$\lambda nm = \frac{1}{R_\infty \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)}$$

$$R_\infty = 1.0973731731 \times 10^7 \text{ m}^{-1}$$

$$\Delta E_n = \frac{h_p \times C}{\lambda}$$

$$\Delta E_n = -\frac{h_p \times C \times \alpha}{2e \times \lambda} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)$$

$$\lambda = \frac{2\pi \times r_n}{n}$$

$$\Delta E_n = -\frac{h_p \times C \times \alpha}{2e \times \frac{2\pi \times r_n}{n}} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)$$

$$\lambda = \frac{2\pi \times r_n}{n} = \frac{2\pi \times 5.29177202590 \times 10^{-11} \times (n)^2}{n}$$

$$\lambda = \frac{2\pi \times r_n}{n} = 2\pi \times 5.29177202590 \times 10^{-11} \times n$$

$$\Delta E_n = -\frac{6.62607004 \times 10^{-34} \times 299792458 \times 7.297352563 \times 10^{-3}}{2 \times 1.60217662 \times 10^{-19} \times 2\pi \times 5.29177202590 \times 10^{-11}} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)$$

$$\Delta E_n = \frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)$$

$$\Delta E_n = -\frac{h_p \times C \times \alpha}{2e \times \lambda} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)$$

$$\Delta E_n = -\frac{6.62607004 \times 10^{-34} \times 299792458 \times 7.297352563 \times 10^{-3}}{2 \times 1.60217662 \times 10^{-19} \times 3.324918425 \times 10^{-10}} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2}\right)$$

$$\Delta E_n = \frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta E_n = -\frac{h_p \times v \times \alpha}{2e} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta E_n = -\frac{6.62607004 \times 10^{-34} \times 9.016535737 \times 10^{17} \times 7.297352563 \times 10^{-3}}{2 \times 1.60217662 \times 10^{-19}} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta E_n = \frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

The unit of measurement for ΔE_n photon energy is electron volt (eV)

$$E_n = \frac{h_p \times C}{\lambda}$$

$$\lambda = \frac{2\pi \times r_n}{n}$$

$$E_n = \frac{n \times h_p \times C}{2\pi \times r_n} = \frac{n \times 6.62607004 \times 10^{-34} \times 299792458}{2\pi \times 5.29177202590 \times 10^{-11} \times (n)^2}$$

$$E_n = \frac{5.9744197314 \times 10^{-16} \text{ J}}{n}$$

$$\Delta E_n = -\frac{h_p \times v \times \alpha}{2e} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$E_n = \frac{h_p \times C}{\lambda}$$

$$\Delta h_p \times v = -\frac{h_p \times v \times \alpha}{2e} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta v = -\frac{v \times \alpha}{2} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$v = \frac{v \times (n)^2}{2\pi \times r_n \times \alpha \times Z}$$

$$\Delta v = -\frac{\frac{v \times (n)^2}{2\pi \times r_n \times \alpha} \times \alpha}{2} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta v = -\frac{v \times (n)^2}{4\pi \times r_n} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta v = -\frac{2187691.261}{4\pi \times 5.29177202590 \times 10^{-11}} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$\Delta v = \frac{-3.289842008 \times 10^{15} \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 \times Z^4}{(n)^4} \frac{(\alpha)^4 \times G}{(\alpha)^4 \times G} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 \times Z^4}{(n)^4} \frac{\left(h_{(p)} \times \frac{\Delta v \times 2 \text{ eV}}{\alpha} \times \frac{1}{\left(\frac{(Z)^2}{(n_1)^2} - \frac{(Z)^2}{(n_2)^2} \right)} \right)}{(\alpha)^8 \times G} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 \times Z^4}{(n)^4} \frac{(\alpha)^8 \times G}{(h_{(p)} \times \Delta v \times 2 \times e)^4} \times \left(\frac{(Z)^2}{(n_1)^2} - \frac{(Z)^2}{(n_2)^2} \right) T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 \times Z^4}{(n)^4} \frac{(\alpha)^8 \times G}{(\Delta E_n \times 2 \times e)^4} \times \left(\frac{(Z)^2}{(n_1)^2} - \frac{(Z)^2}{(n_2)^2} \right) T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 \times Z^4}{(n)^4} \frac{(\alpha)^8 \times G}{\left(\frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right) \times 2 \times e \right)^4} \times \left(\frac{(Z)^2}{(n_1)^2} - \frac{(Z)^2}{(n_2)^2} \right) T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi \times (p)^4 \times Z^4}{(n)^4} \frac{(\alpha)^8 \times G}{\left(\frac{-13.605693099 \text{ eV}}{1} \times 2 \times e \right)^4} T_{\mu\nu}$$

$$h_p = m_e \times C \times \alpha \times 2\pi \times r_n$$

$$C = \lambda \times v$$

$$h_p = m_e \times \lambda \times v \times \alpha \times 2\pi \times r_n$$

Space-time represents in the equation the force of attraction of the nucleus for the electron. Where we take the hydrogen atom compared to the sodium atom. We find after comparison that the undulations that occur in the sodium atom are higher than those that occur in the hydrogen atom. That is, during the occurrence of the quantum jump of the electron, the higher energy level than the level occupied by the electron undulates. So the number of ripples (ripple amplitude) is higher than that of the hydrogen atom during the occurrence of the quantum jump, and this is consistent with the de Broglie equation. $n \times \lambda$ is represented by a ratio to space-time. It is the number of ripples that occur in the energy level higher than the level occupied by the electron until interference occurs between the two levels, the higher energy level and the level occupied by the electron. In other words, as the number of orbitals occupied by the electron increases, the number of ripples that occur at the higher energy levels increases, causing the curvature (contraction) of the fabric of space-time. The interference between the two levels occurs in a wave form so that the quantum jump of the electron occurs. The photon's energy is represented by a ratio to the fabric of space-time, the force that causes the fabric of space-time to bend (contract). The more energy increases, the more space-time contracts through the occurrence of quantum disturbances at the highest energy level, which makes the highest energy level generate waves similar to the orbital number occupied by the electron. Because of these disturbances that occur at the highest energy level, the two levels interfere with each other, the highest energy level, and the level occupied by the electron. A quantum leap occurs, and this is consistent with the quantum Zeno effect, where the electron will remain fixed in its position. This is what my equation indicates, as I explain that these quantum fluctuations occur through a contraction in the fabric of space-time. This contraction occurs as a result of this tissue absorbing energy. Because of this, contraction affects the energy levels in the atom. This contraction works to contract the energy level higher than the level occupied by the electron. Wave interference occurs between the highest energy level and the level occupied by the electron, and a quantum jump occurs from the observer's perspective. But from the electron's perspective, it remains fixed in its position.

The Casimir effect is according to a law that states that after all the objects acting on the plates disappear until imaginary particles are detected. My equation proves that there is one thing that was not included in the calculations, which is the effect of space-time. Since the plates have a static mass that works to curve space-time, and the presence of imaginary particles works when they collide with each other, they disappear. But according to the law of conservation of energy, the energy will not disappear and will affect the fabric of space-time, making it turbulent like a water wave, and these disturbances that occur on it form waves. This wave works to impact the panels from moving in and out, and because the external disturbances are higher than the internal ones, they cause the panels to move towards each other.

This relationship shows that although we cannot measure what happens when an electronic quantum jump occurs. This law also shows that there is a relationship between the energy of the photon and the fabric of space-time, even if it is not measured by measuring devices. Because measuring devices are considered primitive devices when making the process of measuring the quantitative world. What is being measured are the spectra of the elements being measured, not what happens to the electron when the quantum jump of the electron to the higher level. Second, Maxwell told Rutherford that the electron changes direction as it orbits the nucleus, so it must lose energy to cause a collision with the nucleus, which it does not. My equation tells me the electron moves in a large circle around the nucleus. A body moving in a large circle whose direction of motion is in a straight line. Thus, the electron moves in a straight line. Newton's law states that an object at rest remains at rest unless acted upon by an external or internal force. Likewise, an object in motion stays in motion unless an external or internal force affects its movement, the electron does not lose energy.

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^5 \times (\hbar)^4 \times 4}{(\lambda nm \times e)^4} \frac{G}{(\Delta E_n)^4} T_{\mu\nu}$$

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{(2\pi)^6 \times (\hbar)^4 \times 4}{(\lambda nm \times e)^5 \times (\mu_0 \times \epsilon_0)^2} \frac{(l_p)^2}{(\Delta E_n)^5} T_{\mu\nu}$$

Table 7. Comparing my theoretical results through my equation with previous results.

Theoretical value (My work)		Experimental value			
Spectral Line	Energy	λ		λ	
$\lambda(n'=2, n=1)$	10.204269824 eV	121.50227268	nm	121.5	nm
$\lambda(n'=3, n=1)$	12.093949421 eV	102.51754257	nm	102.5	nm
$\lambda(n'=4, n=1)$	12.75533728 eV	97.20181814	nm	97.20	nm
$\lambda(n'=3, n=2)$	1.8896795971 eV	656.11227245	nm	656.1	nm
$\lambda(n'=4, n=2)$	2.5510674561 eV	486.0090907	nm	486.0	nm
$\lambda(n'=4, n=3)$	0.66138785898 eV	1874.6064927	nm	1874.6	nm

The results of the experimental value were obtained by using the results of previous research on the hydrogen atom. I prove in table 7 that the results of the equations are identical to their original results in table 5, which indicates the validity of this law

$$\Delta E_n = E_2 - E_1$$

$$\Delta E_n = \frac{h_p \times C}{\lambda} = \frac{1239.8419637 \text{ eVnm}}{\lambda}$$

Photon energy equation.

$$\Delta E_n = \frac{-13.605693099 \text{ eV}}{1} \times \left(\frac{(Z)^2}{(n_2)^2} - \frac{(Z)^2}{(n_1)^2} \right)$$

These are the results of a relationship between energy and wavelength. The observed results show that whenever the energy increases, the wavelength decreases, as shown by this equation in the hydrogen atom.

7. Conclusions

After the idea of research has been clarified using theoretical and practical scientific evidence to explain the phenomenon of the quantum leap and quantum entanglement from a new perspective, these equations would be used in the following:

- 1) serving humanity in the advancement of scientific research.
- 2) using these equations to explore space and quantum world.
- 3) using these equations in developing communications machines.

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