THERE IS NO GRAVITON, IT IS PHOTON: THE RELATIVISTIC QUANTIZED FORCE: NEWTON'S SECOND LAW, INERTIAL AND GRAVITATIONAL

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Abstract
In this paper we derived the relativistic Quantized force, where the force given as a function of frequency[1]. Where, in this paper we defined the relativistic momentum as a function of frequency equivalent to the energy held by a body, and time, and then the quantized force is given as the first derivative of the momentum with respect to time. Subsequently we introduce in section one Newton's second law as it is relativistic quantized, and in section two we introduce the relativistic quantized inertial force, and then the relativistic quantized gravitational force, and the quantized gravitational time dilation. What is leading to there is no graviton it is photon. This paper is meaningless without modification the SRT in my paper http://dx.doi.org/10.14299/ijser.2014.04.001

Note
This paper was formulated in 1994 while I was studying my BA in Applied Science University Amman-Jordan as my graduation project. It is published in my book in 2004 in Arabic version "The Comalogy: The new Relativity Theory". And it is published in The General Science Journal in June 12, 2007 So, And it is participated in many conferences worldwide. So,

1- Newton's Second Law in Quantum
The Relativistic Quantized Force

Introduction
Newton's Second Law of motion defined that the force acts on a body equals to the product of the rest mass of the body with its acceleration[9], and the acceleration is given as the second derivative for a distance with respect to time.
When Einstein reached to his special theory of relativity in 1905, he reached to the measuring of the relativistic mass, which indicates that the mass of the body increased with increasing the speed of the body[4,7,15]. Einstein depends on his relativistic equations derivative on the classical physical conceptions, which depend on the determinism, causality and continuity[11,12], and also depend on the possibility of measuring the velocity and the position simultaneously, where the velocity according to Einstein derivation equals to the distance first derivative with respect to time[4,7,11,12,15]. But Heisenberg uncertainty principle assures the impossibility of measuring the velocity and the position simultaneously, and then our dependence that the speed equals to distance first derivative with respect to time is not correct according to the simultaneous measurement for both velocity and position[1,2,5,12,14].
We conclude from that, for measuring the velocity or momentum for any body, we should know the energy held by this body, or the equivalent frequency for this energy. Since, according to the uncertainty principle, it is possible measuring the momentum and the energy simultaneously, therefore it is possible expressing the momentum in terms of the equivalent frequency of this energy to this body[1,2,5,12,14].
The force that affected on a body is given through the momentum first derivative with respect to time. Subsequently, we can express the momentum of the body in terms of frequency and time, and then we can get the applied force as the first derivative of the momentum with respect of time. Then we get the applied force in terms of equivalent frequency to the energy which coring by the body.

Theory

The cycle number of a standing electromagnetic wave in terms of time[8] is given by the relation

$$n = \nu \ t \tag{1}$$

Where n is the cycle number at a time t, and ν is the wave frequency[8]. The time t in equation (1) is defined by the relation

$$t = N\left(\frac{1}{2\nu}\right) \tag{2}$$

where

$N = 1,\ 2,\ 3,\ ....,\ \dfrac{2\nu}{\nu_u}$

Where ν_u is the frequency unit, where $\nu_u = \dfrac{1}{t_u}$, and t_u is the time unit. From the equations (1) and (2) we get

$$n = \frac{N}{2} \tag{3}$$

We find from equation (3) that n takes the values $\frac{1}{2},\ 1,\ \frac{3}{2},\ 2,\ .....,\ \frac{\nu}{\nu_u}$. Since the frequency is defined as the number in the unit of time, subsequently, when $t = t_u$ in equation (2) we get

$$N = 2\ \nu\ t_u \tag{4}$$

and from this we get

$$n = \frac{\nu}{\nu_u} \tag{5}$$

The energy of the electromagnetic wave is defined by the relation

$$E = h\nu \tag{6}$$

Where E is the energy and h is Plank's constant[5,6], and from equations (4) and (5) we get

$$E = \frac{N}{2}\ h\nu_u = nh\nu_u$$

And by putting $H = h\nu_u$, we get

$$E = N\frac{H}{2} \tag{7}$$

And also

$$E = nH \tag{8}$$

Equation (7) indicates that, the energy of the standing electromagnetic wave takes integral value of $\frac{H}{2}$, and from that we can get the minimum energy $E_{\min}$ for the stating electromagnetic wave, and that when $N = 1$, where we get

$$E_{\min} = \frac{H}{2}$$

when the energy value equals to H, it is called $H - energy$, where $H = 6.626 \times 10^{-34}$ joule, and the equivalent mass to the $H - energy$ is given by

$$m_H = \frac{H}{c^2} \tag{9}$$

Where m_H is the equivalent mass for $H-energy$, and the equivalent mass is called $H-particle$. The relativistic kinetic energy E_k [15] for a body moving with constant velocity V is given by

$$E_k = \frac{m_0 c^2}{\sqrt{1-\frac{V^2}{c^2}}} - m_0 c^2$$

And by substituting the value $E_k = nH$ in the last equation we get

$$nH = \frac{n_0 H}{\sqrt{1-\frac{V^2}{c^2}}} - n_0 H \qquad (10)$$

And from equation (10), we get

$$\frac{n_0}{\sqrt{1-\frac{V^2}{c^2}}} = n_0 + n \qquad (11)$$

multiplying both sides of equation (11) by m_H, we get

$$\frac{n_0 m_H}{\sqrt{1-\frac{V^2}{c^2}}} = m_H (n_0 + n) \qquad (12)$$

and from equation (12) $m = \frac{n_0 m_H}{\sqrt{1-\frac{V^2}{c^2}}}$, where m is a relativistic mass of the moving body, therefore we get

$$m = m_H (n_0 + n) \qquad (13)$$

and by solving equation (11) in terms of the velocity, we get

$$V = \pm \sqrt{\frac{n^2 + 2nn_0}{(n+n_0)^2}}\ c \qquad (14)$$

Now, when a body absorbs energy with frequency ν so the velocity of this body in terms of time is given by substituting the value of n from equation (1) in the equation (14), we get

$$V = \pm \left[\frac{(\nu\ t)^2 + 2(\nu\ t)n_0}{[(\nu\ t) + n_0]^2} \right]^{\frac{1}{2}} c \qquad (15)$$

and also we can express equation (13) in terms of time, where we get

$$m = m_H (n_0 + \nu\ t) \qquad (16)$$

The relativistic momentum[21] for a body moving with constant velocity V is given by the relation

$$P = mV$$

where P is the momentum, and from equation (15) and (16) we can get the momentum in terms of time, where we have

$$P = \pm\ m_H\ c\sqrt{(\nu\ t)^2 + (\nu\ t)n_0} \qquad (17)$$

Newton's second law of motion is given by the relation

$$F = \frac{dP}{dt}$$

where F is the force. and by a deriving equation (7) with respect of time, we get

$$F = \pm m_H c \left[\frac{\nu^2 t + \nu\ n_0}{\sqrt{(\nu\ t)^2 + 2(\nu\ t)n_0}} \right] \quad (18)$$

and by multiplying equation (18) by $\frac{c}{c}$ we get

$$F = \pm\ m_H c^2 \left[\frac{(\nu\ t) + n_0}{\sqrt{(\nu\ t)^2 + 2(\nu\ t)n_0}} \right] \frac{1}{c} \quad (19)$$

and from equation (15) we have $\frac{1}{V} = \left[\frac{(\nu\ t) + n_0}{\sqrt{(\nu\ t)^2 + 2(\nu\ t)n_0}} \right] \frac{1}{c}$, and from equation (9), we have $H = m_H c^2$. Now by substituting these value in (19) we get

$$F = \pm \frac{H\nu}{V} \quad (20)$$

Equation (20) expresses about the affected force on a body, when the body changes its velocity from zero to V , when it absorbs a photon with frequency ν, and we find the dimension of equation (20) is MLT^{-2} which means force, and by taking the positive value of equation (20), we get

$$F = \frac{H\nu}{V} \quad (21)$$

Now suppose a body starts at rest $(V = 0)$, and after it absorbed a photon with frequency ν_1, its velocity became V_1, and according to the equation (21), the force affected on the body is F_1 , where $F_1 = \frac{H\nu_1}{V_1}$ and then after it absorbed another photon with frequency ν_2 therefore the body should move with a total velocity V (because of the absorption the two photons ν_1 and ν_2). So the total force affected on the body is $F = \frac{H(\nu_1 + \nu_2)}{V}$. The affected force on the body as a result of the absorption of the second photon ν_2 is F_2 where

$$F_2 = F - F_1 \quad (22)$$

2- The Relativistic Quantized Inertial Force, The Relativistic Quantized gravitational Force

Introduction

As we know from the Quantum Theory that the energy is photons having a rest mass equals to zero[1,2,5,12,14]. We can express the photon energy by the relation

$$E = h\nu \quad (23)$$

Where E is the photon energy, h is plank's constant and ν is the wave frequency[5,6]. And from the equivalent of mass and energy, we can get the equivalent mass m to a photon having energy E as

$$m = \frac{h\nu}{c^2} \quad (24)$$

Now suppose a train moving with constant velocity V , as we have from the special relativity theory of Einstein the clock motion of this train should be slower than the clock motion of the earth observer according to reference frame of the earth surface, whereas if the earth observer measured the time interval Δt via his earth clock, then he will measure the time interval $\Delta t'$ via the clock of moving train, where $\Delta t' = \sqrt{1 - \frac{V^2}{c^2}}\ \Delta t$ [16]. And the wave frequency is defined as the cycle number in the time unit, subsequently the wave frequency which exists on the earth surface according to the earth observer is given by the relation

$$\nu = \frac{1}{\Delta t_0} \qquad (25)$$

And now if this wave entered inside the moving train, then, the wave frequency becomes ν' according to the earth observer, where

$$\nu' = \frac{1}{\Delta t} = \frac{\sqrt{1 - \frac{V^2}{c^2}}}{\Delta t_0}$$

And from that we get

$$\nu' = \sqrt{1 - \frac{V^2}{c^2}}\ \nu \qquad (26)$$

Equation (26) indicates that the wave frequency inside the moving train should be less than outside the train on the earth surface by the factor of $\sqrt{1 - \frac{V^2}{c^2}}$. Subsequently the endured energy E' through this photon inside the train is given by

$$E' = h\nu' = \sqrt{1 - \frac{V^2}{c^2}}\ h\nu$$

And from equation(23), we get

$$E' = \sqrt{1 - \frac{V^2}{c^2}}\ E \qquad (27)$$

Equation (27) represents the endured inside the frame of moving train according to the reference frame of the earth surface in terms of the photon energy E . The difference of the endured energy ΔE of the train from its rest on the earth surface and its motion with constant velocity V is given by the relation

$$\Delta E = E\left[1 - \sqrt{1 - \frac{V^2}{c^2}}\right] \qquad (28)$$

Theory

2.1 The Relativistic Quantized Inertial Force

We have reached in section 1 to a new formula for understanding the quantization of force, where the force acts on the body when its velocity changes from zero to V is given by the relation $F = \frac{H\nu}{V}$

Now suppose a static train on the earth surface and a rider is living inside it, Now if this train absorbs an energy of frequency ν, then the speed of this train will change from $0 \ to \ V$, thus, the affected force on this train is given by the relation $F = \frac{H\nu}{V}$ according to the static earth observer, in this case there is a force affected on the rider push him to the opposite direction of the train speed. This force is called "inertial force". Subsequently, according to this force the rider speed should be changed from $0 \ to \ V_r$, whereas in this case V_r should be equal to V (the speed of the train). We can get this change of the velocity of the train rider from $0 \ to \ V_r$ under the affect of inertial force whereas V_r should be equal to V by applying the two conditions

1- The kinetic energy E_k that is equivalent to the rider's speed V_r is given as

$$E_k = E_0(1-\gamma^{-1})$$

Where $\gamma^{-1} = \sqrt{1-\frac{V^2}{c^2}}$, and E_0 is the equivalent energy of the rider rest mass, where $E_0 = m_0 c^2$. We can express the kinetic energy in the last equation in the terms of the number of $H-energy$, where we have

$$n = n_0(1-\gamma^{-1}) \qquad (29)$$

Where n is the number of $H-energy$ which is equivalent to the kinetic energy, and n_0 is the number of $H-particle$ or the number of the $H-energy$ which equivalent to the rider rest mass.

2- The endured rest mass inside the train in terms of the rider's rest mass is m_0' given according to equation (27), where we have

$$m_0' = \gamma^{-1} m_0$$

And we can express the last equation in terms of $H-particle$ or $H-energy$, where we have

$$n_0' = \gamma^{-1} n_0$$

Where n_0 is the number of $H-particle$ or the number of $H-energy$ which is equivalent to the endured rest mass , thus, from equation (29) we can write the last equation as

$$n_0' = n_0 - n$$

Now according to these two conditions, we can get the measured speed V_r of a rider under the affect of the inertial force according to the observer inside the train by equation (14), where we have

$$V_r = \sqrt{\frac{n^2 + 2nn_0'}{(n+n_0')^2}}\ c = \sqrt{\frac{n^2 + 2n(n_0 - n)}{[n+(n_0-n)]^2}}\ c$$

by substituting $n_0' = n_0 - n$, we get

$$V_r = \sqrt{\frac{2nn_0 - n^2}{n_0^{\ 2}}}\ c = \sqrt{\frac{2n}{n_0} - \frac{n^2}{n_0^{\ 2}}}\ c$$

And from equation (29) we get

$$V_r = \sqrt{\frac{2n_0(1-\gamma^{-1})}{n_0} - \frac{n_0^{\ 2}(1-\gamma^{-1})^2}{n_0^{\ 2}}}\ c$$

And from that we get

$$V_r = \sqrt{1-\gamma^{-2}}\ c \quad (30)$$

And by substituting the value of $R^{-2} = 1 - \frac{V^2}{c^2}$ in the last equation we get

$$V_r = V \quad (31)$$

We get from equation (31) that the change in the measurement of the train rider speed under the effect of the inertial force is from $0\ to\ V$ and it is the same change in the train speed but it in the opposite direction. Therefore we get the inertial force F_i which acts on the train rider, whereas from equation (21) we have

$$F_i = \frac{H\nu}{V} = \frac{H\nu_0(1-\gamma^{-1})}{V} \quad (32)$$

2.2 The Relativistic Quantized Gravitational Force and the Quantized Gravitational Time Dilation

The quantized inertial force is given according to the equation (32), where

$$F_i = \frac{H\nu_0(1-\gamma^{-1})}{V}$$

Now, according to the equivalence principle of Einstein[17,18], the gravitational force is equivalent to the inertial force, thus we can use equation (32) for computing the gravitational force.

Now if a body is located at a gravitational field, thus the energy that is held by the body is E given by the equation (28), where

$$E = m_0 c^2 (1-\gamma^{-1}) \quad (33)$$

Now if we consider this energy is equal to the gravitation potential energy, from that we get

$$\frac{GMm_0}{r} = m_0 c^2 (1-\gamma^{-1})$$

G is the gravitational constant

M is the mass of the gravitational field

m is the mass of the body

r is the distance between the body and the mass M

Thus we can solve the equation above to get the factor γ^{-1} of the gravity where

$$\gamma^{-1} = 1 - \frac{GM}{c^2 r} \quad (34)$$

From that we can get the gravitational time dilation, whereas if a clock is located at a distance r from the center of the mass M, thus the time that is measured by this clock is $\Delta t'$ compared to the time Δt of a clock located far a way from the mass M, whereas

$$\Delta t' = \gamma^{-1} \Delta t$$

Thus

$$\Delta t' = \left[1 - \frac{GM}{c^2 r}\right] \Delta t \quad (35)$$

Now if we consider $\gamma^{-1} = 0$, then we can compute the radius that the mass should be compressed to be transformed to a block hole. This radius is known as Schwarzschild radius. Thus

$$1 - \frac{GM}{c^2 r} = 0$$

Thus

$$r_s = \frac{GM}{c^2}$$

Whereas r_s is Schwarzschild radius[22].

Now we can compute r_s for the earth where

$$r_s = 0.00443184 \text{ m}$$

Schwarzschild's calculated gravitational radius differs from this result by a factor of 2 and is coincidently equal to the non-relativistic escape expression velocity.

Whereas for the earth $\gamma^{-1} = 1 - \frac{GM}{C^2 R}$, where R is the radius of the earth, and M is its mass.

Thus by taken

$$M = 5.98 \times 10^{24} kg$$

$$G = 6.67 \times 10^{-11} N \; m^2 kg^{-2}$$

$$R = 6.38 \times 10^{6} m$$

$$C = 3.0 \times 10^{8} m/s$$

Then $\gamma^{-1} = 1 - (6.95 \times 10^{-10}) \approx 0.99999999\ 93053535$

From that we can get the gravitational time dilation of clock1 located on the earth surface comparing to clock2 located far a way from the earth gravity as in equation (3) whereas

$$\Delta t' = 0.9999999993053535 \Delta t$$

From that if the clock2 registered one second, at this moment clock1 will register 0.9999999993053535 second. In this case the difference of time is 6.94646×10^{-10} second.

The escape velocity of a body to be free from the earth gravity is given by equation (30), where $V_{escape} = \sqrt{1-\gamma^{-2}}\, c$. Thus the escape velocity on the earth is $V_{escape} = 11182$ m/s

The force that is exerted on a body of mass 1 kg to move from zero to V_{escape} is given by the equation (32) where

$$F = 5590.98 \text{ newtons}$$

This result is half the classical result. That is refer to the relativistic quantized derivation of the velocity[5,6].

REFERENCES:

(1) Heisenberg, W., "Physics and Phylosophy", (1958), Allien and Unwin.

(2) Pais, A., "Einstein and The Quantum theory", (1979),Rev. of Modern Physics, vol. 51, No. 4.

(3) Stapp, H. "The Copenhagen School Interpretation and the nature of space-time", (1972), American Journal of Physics, 40, 1098.

(4) Roland, W. Clark, "Einstein: The Life and Time", (1979), Hodder Stoughton, London, Sydney, Auckland, Toronto.

(5) Robert, E., "Quantum Physics of Atoms, Melecules, Solids, Nuclei, and Particles", (1985), John Wiley and Sons, 2nd ed..

(6) Richard, L. Liboff, "Introductory Quantum Mechanics", (1992), Addison-Wesley Publishing Company, Inc., 2nd ed..

(7) Einstein, A., "Autobiographical notes", in P. A. Schilpp, editor, Albert Einstein; Philosopher-Scientist.

(8) H. J., Pain, " The Physics of Vibrations and Waves", (1993),John Wiley & Sons, 4th ed..

(9) Jerry, B. Marion, Stephen, T. Thornton, "Classical Dynamics of Particles & Systems", (1988), Harcourt Brace Jovanovich, 3rd ed..

(10) Henry, Semat, "Introduction to Atomic and Nuclear Physics", (1962), Holt Rinehart Winston, 4th ed..
(11) Popper, K. R., "Objective Knowledge", (1983), Oxford at the Clarendon Press.
(12) Bohm, D., "Causality and Chance in Modern Physics", (1984), Routledge and Kegan Paul.
(13) Heisenberg, W., "Physics and beyond", (1971), London Allen & Unwin.
(14) W. Cropper, "The Quantum Pysics", (1970), Oxford.
(15) W. Rosser, "An Introduction to the Theory of Relativity", (1972), Butterworth.
(16) George T. Gillies. "The Newtonian gravitational constant: recent measurements and related studies", (1997), Reports on Progress in Physics, 60:151-225.
(17) C. W. Misner, K. S. Thorne and J. A. Wheeler, Gravitation, W. H. Freeman and Company, New York (1973).
(18) Hans Ohanian and Remo Ruffini "Gravitation and Spacetime", (1994), 2nd edition, Norton, New York.
(19) Odenwald, S. & Fienberg, RT.; "Galaxy Redshifts Reconsidered", (1993), in *Sky & Telescope* Feb. 2003; pp31-35.
(20) Binney, James, and Michael Merrifeld, "Galactic Astronomy", (1998), Princeton University Press.
(21) Taylor, Edwin F.; Wheeler, John Archibald, "Spacetime Physics: Introduction to Special Relativity" (1992). (2nd ed.).
(22) Schwartzchild B "Probing the early Universe with quasar light", (1987), Physics Today 40; Nov. 17-20.

(23) Adler, R., Bazin M., and Schiffer, M., "*Introduction to General Relativity", (*1975), 2d ed., McGraw-Hill, New York,.

(24)Carlip, S., "*QuantumGravity in 2+1 Dimensions" (*1998), Cambridge University Press, Cambridge,