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Classical Analogy of General Relativity Equation & Quantum Interpretation to Dark Matter as New Fundamental Force Particle

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Abstract

Difference in two quantum states defined for a point in space time is represented by space time curvature and the superposition of these quantum states will affect the momentum of mass existed at that point. Analogy of the same with Einstein's General relativity field equation and Einstein's gravitational constant κ , indicated an equation containing 'Hubble's constant H , Einstein's gravitational constant 'H' and Siva's constant 'K'. Its output is a quadratic equation. Solution to this quadratic equation predicted a fundamental force particle. This solution gives the diameter of that particle. From the fundamental principles, the diameter of this force particle gives the coupling constant of that fundamental force. Prediction and review of this particle may provide us new insights in to quantum physics and standard model of particle physics. From the first principles, it is discussed that this particle can be claimed as a force carrying particle of a fundamental force related to dark matter. This work has provided simple explanation to reconcile quantum nature of space time with smooth space time of General Relativity. This has demanded the necessity to introduce a new postulate in quantum mechanics which is beyond Hilbert space and Dirac notation. A new perspective of uncertainty principle in quantum mechanics has been elaborated.

Key words: General relativity, Einstein's gravity constant, Siva's constant 'K',Dark Matter.

1.Introduction

Mathematics is a tool for physics to substantiate the understanding of complicated interactions of physical quantities or phenomena. In classical physics with limited dimensions, vector notation has been used to interpret physical quantities in to mathematics on vector space . Later In quantum mechanics state of physical system is represented by a vector in a Hilbert space which is a complex vector space with an inner product. It is a closed inner product space for an infinite dimensional inner product space. We will use Dirac notation in which the vectors in the space are denoted by $|v\rangle$, called a ket, where v is some symbol which identifies the vector.

In Dirac notation, the inner product of the vectors $|v\rangle$ with $|w\rangle$ is written $\langle v|w\rangle$. This resembles the ordinary dot product $\vec{v}.\vec{w}$.[1] This notation further applied to wave functions, Eigen states and Eigen values, calculation of probability density to find out coherent states involved in measurement problem of physics. In general relativity, tensors are used to solve complications when a vector at a point changes with time. Tensors are physical quantities such as stress and strain that have magnitude

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and two or more directions. Vector is always a one-dimensional tensor. In applications, it is common to study situations in which a different tensor can occur at each point of an object; for example the stress within an object may vary from one location to another. This leads to the concept of a tensor field application of tensors in quantum mechanics. Tensor products are used to describe systems consisting of multiple subsystems. Each subsystem is described by a vector in a vector space (Hilbert space). For example, let us have two systems I and II with their corresponding Hilbert spaces H_I and $H_{I.}$ In quantum theory the Hilbert space of a composite system (such as two qubits) is the tensor product of the Hilbert spaces for the subsystems[2].Even in a recent paper[3]transforming operator tensor (operator tensor formulation)has been described by means of operator circuits(operator circuits are the equivalent of scalars for tensors).This also depends on time symmetry and asymmetry and tried to link the space time pieces in to circuits for the purpose of quantum gravity theories.

Whatever may be the mathematical tool, all are based on a change of point in basic vectors in time .Some may say it as a simple dynamics of space[4].We can explain same dynamics by taking time as a physical quantity that is essential for formation of first space. In my words it is space time. Its dynamics with various tools like vectors, tensors, Hilbert spaces, Dirac notations[5] of mathematics describes the physical system whether it is quantum or relativistic or classical. Quantum states have been defined by these mathematical tools. But when we think of these mathematical tools while separating space and time, lot of new insights will appear which are useful to render the present quantum theories.

Let us add some new imagination to probe in to this-

A point in a space time is superposition of two quantum states of time [6].all fundamental forces can be interpreted by space-time with diameter. A signal is defined for the minimum space time diameter and maximum velocity of that particular space time .All the fundamental forces will have their signal velocity and represented by space time diameter. A space time with diameter $'d'$ will contain mass $'m'$ and density $'\gamma'$ and interpreted as classical equation of space time..This space time diameter provides the coupling constant for that fundamental force [7]. Space time diameter is based on general relativity and superposition of quantum states will be interpreted by quantum mechanics. And $'d'$ represents curvature of space time and quantum states interpret energy and momentum. These two have been described in an equation with the use of Hubble's equation $V = Hd$ and Siva's gravity equation $Vd = K$ and Einstein's field equation for curvature and momentum tensor. This equation has provided the space time diameter which creates the least energy of Hubble's universe in to a massive particle. The characteristics of that particle have been calculated.

2.Concept & Discussion

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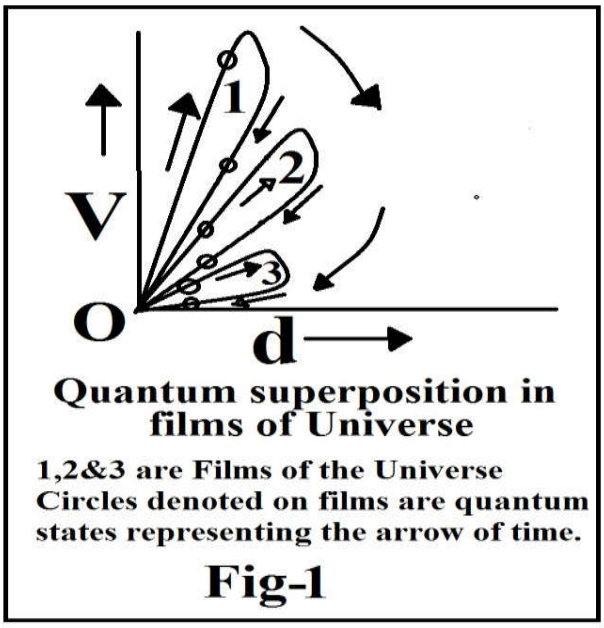

Fig.1. Films of the Universe is denoted by nos 1,2&3. A film is a superposition of all the quantum states with same 'time' and different space(positions) The transformation from quantum coordinate system to relativistic system explained in [8]. Circles denoted on film are quantum states of space time. One represents outword direction and another represent inward direction

Future and past are two quantum states and superposition of these two states represent present. This quantum concept is represented by expansion of space time as future and the force against to this expansion i.e gravity as 'past'. Thus each and every point in the space time experience two forces opposite to each other and represented by $V = Hd$ and $Vd = K$ where $'V'$ is the resultant velocity of anybody due to the affect of above two forces. $'d'$ is not the same for both equations. But the present state is applicable for same $'d'$ only. So in the present state, the difference in velocity changes its $'d'$. The $'d'$ is the change in curvature of space time. According to General relativity, the left side of Einstein equation shows the path and is represented by $'d'$. The momentum described in right side of Einstein's equation will be changed by $'\kappa'$ times where $'\kappa'$ is Einstein's gravitational constant.

Analogy with Einstein's field equation[9]

Einstein's field equation is

$$G_{\mu\nu} + \Lambda g_{\mu\nu} = kT_{\mu\nu} \tag{1}$$

Where $G_{\mu\nu}$ is Einstein Tensor

$$G_{\mu\nu} = R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} \tag{2}$$

$R_{\mu\nu}$ is Ricci curvature Tensor,

R is scalar curvature.

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$g_{\mu\nu}$ is metric tensor

$T_{\mu\nu}$ is stress-energy tensor

Λ is cosmological constant

G is gravitational constant and

c is velocity of light.

k is Einstein's gravitational constant.

$$k = \frac{8\pi G}{c^4} = 2.077 \times 10^{-43}\, N^{-1} \tag{3}$$

Physically it elaborates that the space time will have a curvature in the presence of mass.

Siva's classical Equations for space time [6] after considering final revision

$$m = 7.9905778 \times 10^{-17} \times d^{1/3} \tag{4}$$

$$\gamma\, d^{8/3} = 1.526087946 \times 10^{-16} \tag{5}$$

Where ' m' is the mass of the fundamental particle and 'd' is its 'diameter of its own space. γ is its space time density. As per Siva's space time equation, every mass will be associated with its own space time for its existence, space (more precisely space time). The distance between any two points depends on the space time associated to that mass. If that space time is less than the required, that space time cannot be flat and will have a curvature. Here space time density plays an important role. If mass density and space time density are same, the space time is flat.(4) and (5)are Siva's equations for classical space time.

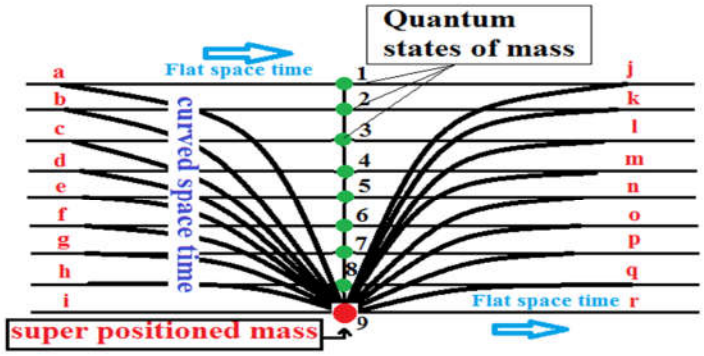

Fig.2 –1.The planes a1j to i9r represent flat space times.2. Points 1 to 9 marked in green represent positional quantum states of mass.3. a9 to h9 in left portion and j9 to q9 represent curvature of space time when 1 to 9 quantum states super positioned at 9 (If another point is considered, the curvature of space time will be changed accordingly).In any flat space time for example a1j plane, particle or energy density defined for that plane at 1 is the maximum velocity and will be used as signal velocity for relativistic transformations like a photon with light velocity

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For each flat space the point is different depending upon distance $'d'$ .In fig.2 it is a1 or 1j

At this point, two forces will be acted in opposite direction and it gives velocity to any mass placed at this point. The difference between these two velocities is zero for a flat space. If it is not flat, the difference creates a curvature for distance $'d'$ in order to keep the density with the mass which is associated to it. Thus curvature and the momentum represented in one equation since velocity and distances are connected in a space time.

Mathematically,

$$V_E - V_C = \kappa \tag{6}$$

$$Hd - \frac{K}{d} = \kappa \tag{7}$$

$$\mathrm{Hd}^2 - \mathrm{K} = \kappa\mathrm{d} \tag{8}$$

$$Hd^2 - \kappa d - K = 0 \tag{9}$$

$$d = \frac{\kappa \pm \sqrt{\kappa^2 + 4HK}}{2H} \tag{10}$$

We have

Einstein's gravity constant $\kappa = \frac{8\pi G}{c^4} = 2.077 \times 10^{-43}\, N^{-1}$

Hubble's constant $H = 4.1394908592 \times 10^{-19}\, \mathrm{sec}^{-1}$

Siva's constant $K = 4.84533 \times 10^{-27}\, m^2 s^{-2}$

Substitute these values in (10)

$$d = \frac{\kappa \pm \sqrt{\kappa^2 + 4HK}}{2H}$$

since κ value is negligible comparing with the term 4HK

$$d \approx \pm\sqrt{\frac{4HK}{4H^2}} \tag{11}$$

$$d \approx \pm\sqrt{\frac{K}{H}} \tag{12}$$

$$d \approx \pm\sqrt{\frac{4.84533 \times 10^{-27}}{4.1394908592 \times 10^{-19}}}$$

$$d \approx \pm\sqrt{1.170513516 \times 10^{-8}}$$

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$$d \approx \pm 1.0819027294 \times 10^{-4}\, mt \tag{13}$$

$\pm$ Indicates that $'d'$ will increase if it goes as expansion and $'d'$ decreases in opposite direction.

Now,

Siva's classical space time equation (4),

$$m = 7.9905778 \times 10^{-17} \times d^{1/3}$$

Substitute value of 'd' in (4)

$$M = 7.9905778 \times 10^{-17} \times \left(1.0819027294 \times 10^{-4}\right)^{1/3}$$

$$M = 7.9905778 \times 10^{-17} \times 1.026587737 \times 4.6415888336 \times 10^{-2}$$

$$M = 3.8075088648 \times 10^{-18}\, kg \tag{14}$$

'd' is the least space time diameter and 'M' is its mass.

This equation shows that space time will have a point where two forces will be equal and opposite and at that distance, the space time is flat. This space time contains constant K,H ,c and 'd'

If we keep 'K' as constant, due to changes in space and time, H ,c and d will be changed accordingly and satisfy $c = Hd$, $cd = K$ and $d = \sqrt{\frac{K}{H}}$

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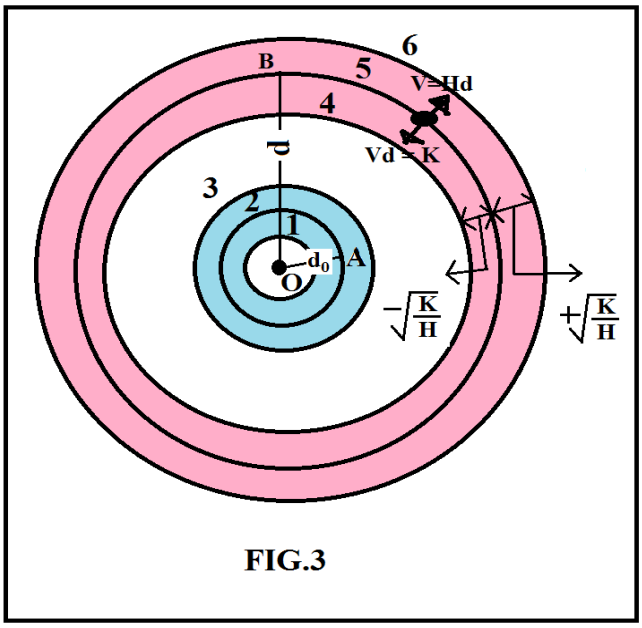

FIG.3

Fig.3 . 1 to 6 nos denote circles in space time for easy explanation. 1,2&3 is one set and 4,5&6 is another set of circles. In these two sets the centre circles are important. Their diameter from centre 'O' represent the flat space time. One is denoted by d_o from O to A. Another one is denoted with space time diameter'd' from O to B. Let us consider 4,5&6 Circles only for calculation. A point on this circle at a distance d from centre exerts two forces. One pushes outwards and follow $V = Hd$ and the other pulls it towards centre and follows $Vd = K$ .As per equation (13) the distance $'d'$ will be changed and based on resultant force on that point. This change in $'d'$ of flat space time will be equal to curved space time of General Relativity. The space between circles 4 &6 is quantum of space time and can be calculated as per equation(13) and can be calculated as $d = \sqrt{\frac{K}{H}}$

When 'd' is least diameter of that space time, and considered as a particle, that will be the quantum of that space time and signal in that space time.

For our space time $d = 1.61622938 \times 10^{-35}\, mt$ i.e Planck diameter[10] and particle is with a mass equivalent to space time and a black hole. This particle is 'dark matter particle' and the diameter is 'space time diameter of that fundamental force'[7]. So we can calculate its coupling constant also[7].

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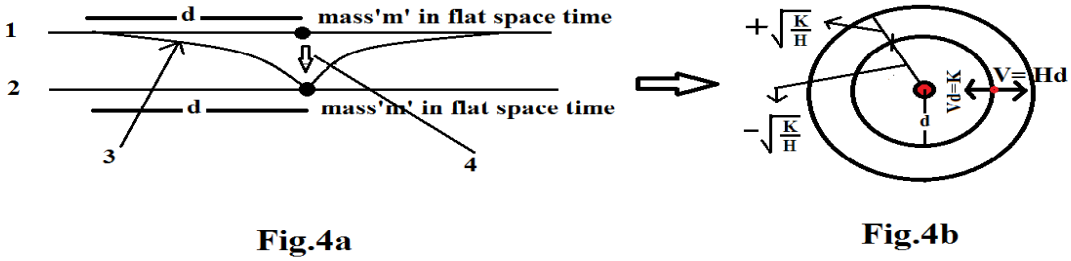

Fig.4a Fig.4b

FIG.4

Fig.4. Illustrates the application of analogy of Siva's equations with General Relativity for superposition of two flat spaces represented by two imaginary quantum states to form a real quantum states which obeys Dirac notation, wave function and Schrödinger equation.

Fig.4a.1&2 are two flat spaces defined for a mass 'm'. Here mass 'm' is an imaginary quantum state represented by film. 3 represents formation of curvature for superposition of these two imaginary quantum states of mass as a real quantum state which can be interpreted by Dirac notations and mathematics of Quantum mechanics.

Fig.4b. shows the single quantum of a space time calculated by equation (4) (13).It is interpreted as a particle with flat space time diameter with 'Planck diameter'. As per theory, a space time diameter in a flat space time is a signal velocity of that space time and used for relativistic mechanics and the same represents a force particle of a fundamental force with a coupling constant. Thus dark matter interpreted as a consequence of new fundamental force

2.1.Fundamental force and Dark matter:

We have equation [7],

$$d_x^{\,4} = 2.116991\times10^{-77}\alpha_x^{\,3} \tag{15}$$

Re write this equation for Dark matter force

$$d_{Dm}^{\,4} = 2.116991\times10^{-77}\alpha_{Dm}^{\,3} \tag{16}$$

Now $d_{Dm} = l_p = 1.61622938\times10^{-35}\,mt$

So the coupling constant is ,

$$\alpha_{Dm} = \left[\frac{\left(1.61622938\times10^{-35}\right)^4}{2.116991\times10^{-77}}\right]^{1/3}$$

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$$\alpha_{Dm} = \left[\frac{\left(16.1622938 \times 10^{-36}\right)^4}{21.16991 \times 10^{-78}} \right]^{1/3}$$

$$\alpha_{Dm} = \frac{40.8636663442 \times 10^{-48}}{2.7663449732 \times 10^{-26}}$$

$$\alpha_{Dm} = 1.4771717461 \times 10^{-21} \tag{17}$$

Now let us see what this force is-

The theory behind (17) elaborates the significance of the term 'signal velocity used in relativistic transformations'. Specifically it says that

1. All the fundamental forces are manifestation of space time.
2. The space time is quantum in nature and the density of this 'quantum of space' time for each fundamental force is different.
3. The signal defined for transformation of reference frames is this quantum of space time only. For our conventional space time in which curvature interprets gravity is photon and will have a constant velocity 'c'. This signal velocity changes with space time associated to concerned fundamental forces. But if we suppose 'c' is constant ,space time diameter changes and 'K' also will be changed.
4. Equation (15) describes the coupling constant of that fundamental force based on space time quantum of that force. This quantum of space time is the interacting particle for transformations in that space time and is always considered as zero space zero time and zero mass particle for relativistic transformations since it is the maximum velocity in that space time. Photon is maximum velocity particle in electromagnetic interactions. It will be considered as space zero, time zero and mass zero particle for our conventional space time. As a quantum particle it is with energy, diameter and time.
5. Here we have to mention space time conversion while transforming quantum particle with space time and energy while combing with another similar particle which makes space time continuum in which space time will be smooth rather than discrete. Thus discrete quantum particles will form continuous and smooth space time .After a limit, General Relativity can be applicable.
6. As per (17) space time diameter of the particle will be at diameter $d_{Dm} = l_p = 1.61622938 \times 10^{-35} mt$. It is a black hole since l_p is a Planck diameter. Since it is a black hole, the interaction is not by light. Inside space time is different and out side space time is different. For inside space time the quantum particle is a particle with

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Planck dia. This is signal for that space time as defined above .Even we may consider it as a postulate of quantum theory.

7. Now how to synchronise inside and outside space times?

(6) Interpret Einstein General Relativity in to Sivas concept.

The analogy says that the curvature of space time of GR guides any mass towards a centre and interpreted as gravity .the right side term of the equation will shows its momentum.

Now the analogy to that by Siva's equations describes physically by (6) .Its physical interpretation is as –

"Every mass contains some space and space time. Its space time contains two forces one is away from the body and another is towards body. These two forces are same a distance 'd' from centre point. This 'd' is flat space time and shown by(6). Here only the signal is valid as per postulate of quantum mechanics. If we consider any point in this space time above 'd' ,will be affected due to the two forces one is repulsive and another attractive. Same way 'd' will be reduced because of negative sign, if it is bellow that flat 'd'.

Thus the difference in these forces changes the flat distance'd' as curved distance. At the same time, forces are interpreted by two different velocities in opposite direction. Since it is change in velocity with distance, it is a change in momentum with curvature also.

If we see GR equation once again, change in curvature is proportional to change in momentum and the Einstein's gravity constant is constant. The symmetry in these two different aspects of curvature and momentum relation proposes (6).Where Einstein's gravity constant is property of concerned space time for which we are considering the symmetry.

Quantum mechanically when we contract the space time from this flat distance 'd' , the space time changes in to a particle at a maximum contraction limit and it is the quantum particle of that space time.

Here in our four dimensional space time, as per (13), $d \approx \pm 1.08 \times 10^{-4} mt$ and is contracted to Planck diameter i.e $1.61622938 \times 10^{-35}$ mt.

Case-I

We can calculate parameters that obey the equations.

$$d \approx \pm 1.08 \times 10^{-4} mt$$

$$K = 4.84533 \times 10^{-27} m^2 s^{-2}$$

$$H = 4.1394908592 \times 10^{-19} \sec^{-1}$$

Case-II

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If $d = 1.61622938 \times 10^{-35} mt$

At the same time, $cd = K$

$\therefore K = 2.99792458 \times 10^{8} \times 1.0819027294 \times 10^{-4}$

$\therefore K = 3.2434627856 \times 10^{4} m^{2}.\sec^{-1}$

For this K , and $d = 1.0819027294 \times 10^{-4} mt$,

As per (13)

$$H = \frac{K}{d^{2}} = \frac{3.2434627856 \times 10^{4}}{\left(1.0819027294 \times 10^{-4}\right)^{2}} = \frac{3.2434627856 \times 10^{4}}{1.1705135159 \times 10^{-8}} = 2.7709742276 \times 10^{12}$$

As per the equation $c = Hd$, we can calculate 'c'

$\therefore c = 2.7709742276 \times 10^{12} \times 1.61622938 \times 10^{-35} = 4.4785299578^{-23}$

This is equivalent flat space for case-I

As per theory, this flat dia $d = 1.0819027294 \times 10^{-4} mt$ contract/folds to a particle of Planck diameter .so it is a particle of dia $1.61622938 \times 10^{-35} mt$ .at the same time it is a black hole mass since planck hole is a black hole. Thus it is a dark matter particle. This is quantum of this space time so it the signal velocity for interaction in this space time.if we consider light velocity is constant in all space times $c = 2.99792458 \times 10^{8} m.\sec^{-1}$,then for this space time $K = 4.84533 \times 10^{-27} m^{2} s^{-2}$

This analysis shows that the interactions are possible from inside to out side since 'K' is same.

At the same time ,contraction of space time is curved due to this dark particle. Curved from $d = 1.08 \times 10^{-4} mt$ to $1.62 \times 10^{-35} mt$ for which $K = 3.24 \times 10^{4} m^{2}.\sec^{-1}$. It is equal to bending space time $d = \times 10^{-10} mt$ $d = \times 10^{-47} mt$ which is graviton[7].

So space time inside atom or graviton is dark matter space time for which graviton is quantum particle. Thus graviton is a dark matter particle. In the calculation of percentage of dark matter[6] Siva's constant 'K' for the graviton[7] has been considered.

Thus particle with diameter $d = 1.62 \times 10^{-35} mt$ is a fundamental force with coupling constant $\alpha = 1.4771717461 \times 10^{-21}$ .This force particle bends the space time not graviton.

In the same way for a graviton $K = 4.64 \times 10^{-39}$ and flat space dia is $1.06 \times 10^{-10} mt$. Thus for all fundamental forces a flat space time diameter will exist. If 'c' and 'd' are constants 'K' and 'H' will change. if c,d, K are known, the 'H' also can be found for each space time. For electromagnetic

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Thus space time parameters for flat space time for this conventional space time are-

Let us define the space time with K

$$K = 3.24\times10^{4}\, m^{2}.\sec^{-1}, \quad d = 1.08\times10^{-4}\, mt$$

$$H = \frac{K}{d^{2}} = \frac{3.24\times10^{4}}{\left(1.08\times10^{-4}\right)^{2}} = 2.78\times10^{12}\ \sec^{-1}$$

$$c = Hd = 2.78\times10^{12}\times1.08\times10^{-4} = 3\times10^{8}\, mt.\sec^{-1}$$

$$H = \frac{K}{d^{2}} = \frac{3.24\times10^{4}}{\left(1.62\times10^{-35}\right)^{2}} = 1.23\times10^{74}\ \sec^{-1}$$

The same space time means $K = 3.24\times10^{4}\, m^{2}.\sec^{-1}$, if $d = 1.61622938\times10^{-35}\, mt$

$$c = Hd = 1.23\times10^{74}\times1.62\times10^{-35} = 1.99\times10^{39}\, mt.\sec^{-1}$$

Physically it means, that $K = 3.24\times10^{4}\, m^{2}.\sec^{-1}$ space time is flat at $d = 1.61622938\times10^{-35}\, mt$ the same space time is curved at $d = 1.61622938\times10^{-35}\, mt$. So space time contracted to a particle at Planck diameter .Since it is a Planck hole it is a black hole. We can say the matter inside is dark matter. The conventional space time is curved due to the dark matter particle and it is a force particle for the fundamental force (as explained above) due to which the space time is curved. Its coupling constant is $\alpha = 1.48\times10^{-21}$ .It is not due to graviton.

Then what is graviton?

The paper [6] interpreted equation with 'K' value of graviton and $\sqrt{\frac{K}{H}}$ value is equal to hydrogen atom. So the flat space diameter for graviton is $1.06\times10^{-10}\, mt$ and $K = 4.64\times10^{-39}$ That means a graviton whose 'K' value calculated in [7] is a fundamental force with 'K' value $K = 4.64\times10^{-39}$. It is inside the 'dark matter particle'. So space time inside the dark matter particle is graviton space time. Means all the gravitons are bound by dark matter force and the same is cause for space time curvature. It is difficult to find graviton since it is inside a black hole and (can not interact with outside matter or energy) may be at black hole collision it is possible to find them .

At the same, if we look into the cosmological catastrophe problem, the total mass energy density of the universe is with 27% dark matter and 67% dark energy and 5% only observable energy. And the calculation shows [6] that dark matter is 27%. This calculation is based on 'K' value of graviton none

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other particle. So definitely the particles inside Planck hole are gravitons and bound by dark matter force.

2.2.Interpretation by quantum mathematics & physical reality

Let us analyse that whether we can interpret fig.4 by Dirac notation or mathematics of quantum mechanics. Physically it is not possible to interpret quantum state of a film since mathematics of quantum mechanics describes the quantum mechanical system with quantum state has no meaning if the flow of time does not exist. Also, if there is no flow of time a wave function describing quantum state has no meaning. A point in quantum coordinates [8] is a superposition of lot of such imaginary quantum states which cannot be described by present day quantum mechanics. These super positioned quantum states will have a same time and that is not a flowing time since it is a 'quantum of time' which cannot be divided further. This super positioned quantum state is called universal film. This film is also imaginary since there is no flow of time. But this mixed state when it super positioned with another mixed quantum state(film)with another 'quantum of time' then the physical reality exists as shown[8] here relativity is applicable. Now it forms a 'quantum of time' which can be interpreted by Dirac notations and Schrödinger equations.

This is the most fundamental aspect of quantum mechanics. It has a reason why should we consider it as a postulate of quantum mechanics. It is very much required to explain the transformation of one physical system to another by means of signal and a signal must follow Einstein's postulate of special theory of relativity. Now at quantum level what is meant by signal which obeys relativistic postulates is?. Which is a manifestation of space time and follows quantum mechanical interpretation in describing the interactions of different space times described in terms of fundamental forces and creation of particles and matter of the universe?

In Fig. 1& 2 are imaginary quantum states of mass. Prior to superposition, these quantum states are pure states but imaginary. Let us represent them as $\psi_1, \psi_2\ \psi_3$. These $\psi_1, \psi_2\ \psi_3$ will form a super positioned mixed state of φ_1 as denoted by number 1. Similar manner number 2 can be expressed as quantum state (This is also imaginary) as φ_2 . Now the mixed state of $\varphi_1 \,\&\, \varphi_2$ say φ_3 is the quantum of space time and can be termed as pure state of quantum of space time. This quantum of space time contains curvature, energy entrapped with in a boundary and even a mass to cause some inertia(for a rest frame). But in quantum mechanics it is space zero, time zero, energy zero and mass zero and is a part of field described by quantum theories like QFT,QED and QCD.

If we apply Dirac notation to it, no use, since there is no probability in $\psi_1, \psi_2\ \psi_3$ they are all deterministic. Even in $\varphi_1 \,\&\, \varphi_2$ also there is no probability. They are deterministic. But φ_3 is mixed state of $\varphi_1 \,\&\, \varphi_2$ But it cannot stay in this state since, from this state, time starts flowing. Otherwise it cannot form a curvature to form 'space time quantum' and only two quantum states exist

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in between. There will not be any probability. Say φ_4 is another similar state which is also a quantum of space time but φ_3 and φ_4 can not be in one state .Physically also time flows from one to another. Here the mixed state will result a probabilistic Eigen state. Lot of states can be described in between φ_3 and φ_4 . From here, mathematics of quantum mechanics is valid. This is because of flow of time. Now mixed system is denoted by Bracket notation. Moreover, mathematical interpretation of a quantum system at basic level contains flow of time. Some authors [4] may say that time is an illusive entity and this is space dynamics in Hilbert space. In any case, space dynamics must start from a space time quanta only. In their terms it is a simple 3D space for which the dynamics will be applied. As per above analysis, this quantum of 3D space also exists due to a change from nothingness in which all the points are in quantum coordinate system. This change from nothingness to space is also part of space time dynamics. It is not considered in their argument. Why cant we name it 'time' which is embodied in that quantum of space time?. Change in this quantum space time forms smooth space time in General relativity as illustrated in Fig-5.

It is very much required to introduce a postulate in to quantum mechanics due to following reasons. Fundamentally, points in space are interpreted by vectors. Application of Vectors to many dimensions to Hilbert space developed quantum mechanics. Change in vectors for each point developed by tensors. These tensors developed and quantum mechanics boosted due to 'Fourier transforms'. Fig.4 shows that change in a point towards its tensor happens due to ψ_1 and ψ_2 which are imaginary because there is no flow of time. It will become real quantum state only after forming space time quantum. This don't need tensor application for its curvature but if another quanta adds to it, the state vector will be changed and state can be applicable for Dirac notation.

So we can postulate that all these notations are valid after formation of a mixed state with superposition of individual quantum of space time. Dirac notation can be interpreted for a mixed state with at least two quantum of space times. From this point onwards time flows. All the above mathematical tools or methods such as, Hilbert, Dirac are considered for the quantum states those involves flow of time.It is very much required to understand to change our path from the standard model in search of fundamental forces and their interactions for new particles. Dark matter is also one of Them.

3.New perspective on uncertainty principle

Space time quantum contains space only. Time changed in to space. It is interpreted as quantum state vector ψ . At the same time fig.4 illustrates that the superposition of ψ_1 and ψ_2 only can be expressed with Dirac notation on Hilbert space. Individually, ψ_1 and ψ_2 are imaginary and can not be interpreted by state of a wave function. This is interpreted as a change of a specific point from one position to another position and can be represented by position vector. Means, At this stage curvature

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will be formed and space will be with a boundary. Once again we can say that is a space only. Not the time. But is formed due to the conversion of 'quantum of time' in to 'space'. If we say change of position of point in space as curvature is Δx change in position and time quanta is Δt . $\Delta x.\Delta t = 1$ .This is applicable for 'space time quantum' only. Represented by ψ_1 . Here also, uncertainty valid. If we consider space , we can not observe time. If we consider time, we cannot observe space. Means, at the same time we can not observe position and time. This is the physical essence of 'uncertainty principle'[11]. But later ψ_1 and ψ_2 forms a mixed state as ψ_3 which involves flow of time and can be denoted with Dirac state vector .If it is a wave function, the change in the states forms energy which follows Planck's law $E = h\nu$ Again $\Delta E.\Delta t = h$. In this ΔE is related to space time diameter as per the first principle[7]. Space time diameter is change in position. So $\Delta x.\Delta t = h$. Since momentum is a function of time, the equation for position and momentum derived as $\Delta x.\Delta p = h$ Finally we can conclude that Heisenberg uncertainty is not applicable for 'space time quantum'. It is applicable Only in 'change of these states' where time flows. The same is involved in defining natural forces and their interaction to form new quantum particles.

In another way-

In between two space time quantums, there exist 2^n states and are equal to Planck time so that planck constant 'h' is defined during change of quantum states. The same has been applied to theories of consciousness also[8][12].

4.Conclusions

With Einstein's gravity constant 'κ', Hubble's constant 'H' and Siva's constant 'K' an equation has been derived which predicts a space time diameter of a fundamental force and a particle in another space time other than the space time whose curvature is gravity force.

Dark matter has been interpreted as a new fundamental force and the force particle has been predicted with a mass $m = 3.81 \times 10^{-18} kg$ and diameter $d = 1.62 \times 10^{-35} mt$

Coupling constant of that fundamental force has been calculated as $\alpha_{Dm} = 1.4771717461 \times 10^{-21}$

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