Research Article

Research into the fundamental building block of quantum theorem of the unified force field

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Abstract

This is a work based on the extension of the work of Professor James Clerk Maxwell and Albert Einstein into a new framework of science built on provable mathematical theorem which serves as a basis for unifications of the fundamental forces which all together have become impossible to unify under the current framework of General relativity and Quantum Field theory.

It is to be used as a piece for inspiring new innovations, discovering and exploring the terrains of the difficult pathways in physics where our modern physical theories have failed.

This work is meant to be adapted and used by various physics professionals who are working on extending the frontiers of physics or providing solutions to problems that cannot be handled by current physics framework. In summary it is an inspirational tool that hopefully will help our professional in physics out there.

It interpretations and applications is subject to the personal inspirations the reader who is a professional can derived from the work for his or her personal usage.

Introduction

James Clerk Maxwell unified electromagnetism and optics and gave us some astonishing equations which led to advances in science and engineering.

The Birth of Quantum Field theory started with the solution of the problem of the electron spiral catastrophe in the Rutherford Planetary Model of the atom and the Birth of General Relativity started with the solution to the problem of absolute velocity and the aether.

If you carefully observe, these 2 problems are an indirect consequence of the Maxwell Electromagnetic Field theory.

Which implies that the problem of unification of the 2 Giants theories in physics: General Relativity and Quantum Mechanics must be a problem arising from the frameworks used in resolving these 2 problems. Recalled they were resolved independently of one another and expecting them to unify naturally is absurd.

As a proposition: The two fundamental Modern theories of Physics cannot be unified because each of the 2 theories stems from a different framework of physics.

Needless to say, here that although the 2 Giant theories have been successful their inability to be unified reveals a need for the reformulations of the Theory that led to their consequences which we intend to correct here by way of extension and establishing mathematical principles and frameworks as Mathematical thoughts are more stable and consistent compare to physical thoughts [1-3].

However, we hope by this established mathematical theorems the individual physics professionals find a platform of inspiration to build physical theories from their wealth of knowledge in their fields to tunnel through the prevailing barriers plaguing the physics world.

Literature review

One of the most promising theories of the unified field theory is the superstring theory but it has no experimental evidence and as such cannot be confirmed.

In an attempt to solve this problem, I believe we need to revisit and review the work of Maxwell which led to the developments of the 2 fields as Einstein revisited the notion of space-time, mass and energy. This is already cited in the introduction.

We are going to introduce a new concept of space and time and also state generalized propositions which will lead to the developments of the theory.

We will also introduce the mathematical framework for the theorem and show how this describes the aspects of physics we now know and beyond.

We believe with the right intuition and experience this work will produce relevant physical results that can be testable [5-7].

Research methodology

The quantum unified field theorem

Theorem: The sum of all the nth degree operational change in the unified field with respect to space and time does not change in the universe.

Mathematically it is written as $\sum (\nabla^n_{x\otimes} U_x) = 0$. This is the compact form of the theorem

The extended concept of space and time

In this theorem the concept of space and time extends the Einsteinian notion of space-time.

Space and Time are treated as a separate entity with essentially similar identity with a dynamic connection that gives them the essential characteristics of the Minkowski space-time.

For example, the physical space is described by the x y z cartesian system and time essentially has it $t_x\, t_y\, t_z$.

Any physical event in space is described by this sets of parameters.

If I throw a ball into the air it's position is described by the x y z sets of parameters and the time in which this event takes place is described by the $t_x\, t_y\, t_z$ sets of parameters.

This idea basically sees time as identically the same as space much stronger than in the Einstein notion of space and time which only sees time as a continuum of space.
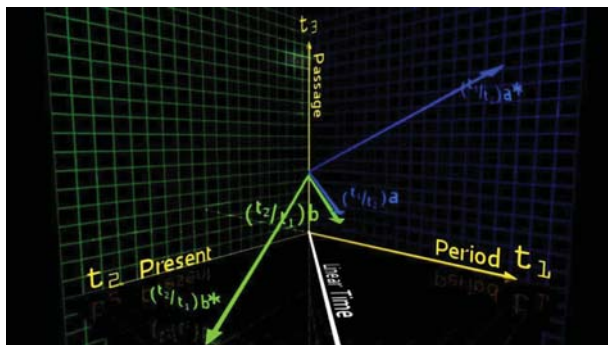
The extended concept of scalars and vectors

Here will see that time and space essentially have the same qualities and also the time we measure has the same notion as the space will measure. Moreso the geometry that is involved in space is also involved in the time. To talk about the geometry of the space and time we need to extend the concept of scalar and vector in this frame.
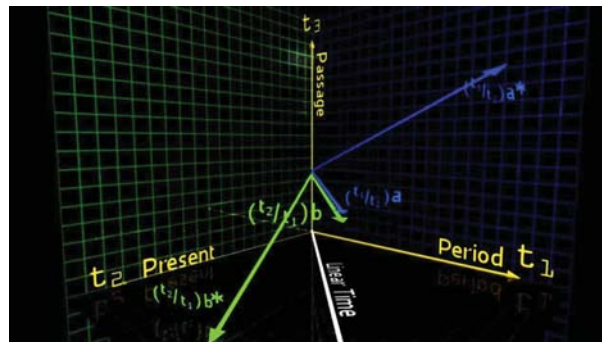
Scalar usually refers to magnitude without regard to direction here the notion of scalar is a little bit beyond this notion. Instead of just magnitude only it introduces a more general idea of the divergence property of an entity. It measures the extent to which an entity flows in space. Any entity that can diverge can flow in quantity, that is, it is a flux and as such is a scalar.

Vectors on the other hand refers to an entity having both magnitude and direction. In this work the notion of vectors does not even give a sense of magnitude only as much as it gives the sense of direction. Here it refers to an entity having a gradient property or appearing to recede. It measures the inherent potentiality of an entity to recede giving us a sense of direction. Any entity that can recede have the potentiality to move outwardly or inwardly and as such is a vector.

So, a straight line in the $t_x\, t_y\, t_z$ reference frames signify an event receding into the future and a circular or closed curved line represents an irrecedable events. Their length refers to their durations in space on the other hand the inherent attributes of the time entity to recede describes the potentiality of time to behave like a vector.

Under this notion a classical scalar quantity can act both as a scalar and a vector at the same time while a classical vector quantity aside having magnitude and direction only have a notion of an inherent or intrinsic directional sense or something that has a spontaneous directional sense as a quantity.

This idea has given time the same essence as space and leads to geometrical properties of time.

The Dynamical Connections between the space and time parameters leads to the discussions of the Unified Field Operations

Basic operations of the quantum unified force field

The two basic operations of the unified field are the

divergence and rotation, or curl operations and they connect the space and time entity dynamically as given by the above equation which is the expansion of the theorem:

$$\sum(\nabla_x^n \otimes U_x) = \nabla_r^n.U_r + \nabla_t^n \times U_t = 0$$

The equation consists of two sums the divergence part and the rotation part. The Divergence part describes the change in the unified field involving the use of the divergence operator while the rotation part involves the change in the unified field using the rotation or curl operator.

The parameter in which the change is based will lead to 4 sets of equations:

$$\sum(\nabla_x^n \otimes U_x) = \nabla_r^n.U_r + \nabla_t^n \times U_t = 0$$

$$\sum(\nabla_x^n \otimes U_x) = \nabla_t^n.U_r + \nabla_r^n \times U_t = 0$$

$$\sum(\nabla_x^n \otimes U_x) = \nabla_t^n.U_t + \nabla_r^n \times U_r = 0$$

$$\sum(\nabla_x^n \otimes U_x) = \nabla_r^n.U_t + \nabla_t^n \times U_r = 0$$

From the equations we see that the space and time parameters are dynamically linked by the 2 basic sets of operations.

An operation that is a divergence operator that has time as its basis must have space as the basis of its corresponding rotation operator and *vice-versa*.

This dynamic link or connection as shown in the theorem is what gives time and space the Einsteinian notion. (The continuum attributes of space and time making it a 4-D space-time).

The field potential U is based on time or space but not both simultaneously and the equations of the theorems represents the conservation of matter and energy and describe both the Quantum and Relativistic field.

The value of n in the theorem indicates the various kinds of laws of physics and forces that can be observable in our physical universe both known and unknown.

We shall express the 4 sets of equations in the derivative form:

Consider the case when *n* = 1 we obtain the following laws of physics:

$$\frac{\partial}{\partial_x}U_x + \frac{\partial}{\partial_y}U_y + \frac{\partial}{\partial_z}U_z + \oint U_t.dt = 0 \tag{1}$$

$$\frac{\partial}{\partial_{t_x}}U_x + \frac{\partial}{\partial_{t_y}}U_y + \frac{\partial}{\partial_{t_z}}U_z + \oint U_t.dr = 0 \tag{2}$$

$$\frac{\partial}{\partial_{t_x}}U_{t_x} + \frac{\partial}{\partial_{t_y}}U_{t_y} + \frac{\partial}{\partial_{t_z}}U_{t_z} + \oint U_r.dr = 0 \tag{3}$$

$$\frac{\partial}{\partial_x}U_{t_x} + \frac{\partial}{\partial_y}U_{t_y} + \frac{\partial}{\partial_z}U_{t_z} + \oint U_r.dt = 0 \tag{4}$$

The field potential U based on space represents a conservation of momentum while the field potential U based on time represents a conservation of energy. If we consider a one-dimensional space and a one-dimensional time the above equations can be written as

$$\frac{\partial}{\partial_r}U_r + \oint U_t.dt = 0 \tag{1}$$

$$\frac{\partial}{\partial_t}U_r + \oint U_t.dr = 0 \tag{2}$$

$$\frac{\partial}{\partial_t}U_t + \oint U_r.dr = 0 \tag{3}$$

$$\frac{\partial}{\partial_r}U_t + \oint U_r.dt = 0 \tag{4}$$

Characteristics of the mathematical representation of the quantum unified force fields

The above equations serve as a telescope that opens the intuition into what lies in the distant future in physics and also as a microscope revealing hidden realities that we are yet to know in physics as well as extends the realities of the physics we already know.

Due to these characteristics, the theorem has a multidimensional interpretation (subject to the intuition of the inspired readers applications and appreciations which can only results from his or her own experience in his fields) to all that is to be known in physics if the intuition behind the theorem is utilized.

Hence we advised a proper and sound knowledge of the current physics theories first before undertaking the study of the theorems so the attendants reader can be inspired into innovating solutions to current physics problems using the theorems as a guide and framework for creating and constructing his or her own ideas with all the modifications necessary so as to produce a relevant physical results which we believe will come when the theorems is rightly used.

The goal of this book is to equip the reader with the ability to use the theorem as a telescope and as a microscope to discover and formulate laws of physics drawing from his experience.

In a nutshell, it is not a theory but a theorem which is a framework in discovering hidden realities in physics as well as confirming experimental and theoretical facts which has existed previously.

As a result, the reader will need to build up some background understanding in physics so he can be able to connect the ideas in this book with what is already known or established and beyond.

Our focus is for the reader to see beyond the already existing theories and look into the realities that will help push the frontiers of physics.

As a results the goal of this book is not to reinvent the wheel as necessary citations will be provided to read up past research confirming or showing a relation with the ideas used here.

The methodology of this work is using mathematical theorems as a framework and an inspiration for innovating new physics theories and confirming previously existing ones either directly or indirectly and the approach is a straight-forward and direct introduction of the theorems before showing its direct or indirect relations to previous works already done in the field of physics which we only intend to cite here keeping details as minimum as possible and giving the reader the freedom to explore more of the details by themselves.

We planned to have a community of researchers to contribute, use and developed the theorems and release their own publications confirming the ideas in this work based on the inspiration they derive from this work.

Radical propositions of the quantum unified field theorem

Below are some ideas put forward to help equip the reader with the right intuition?

1. According to Emmy Noether symmetry in spatial translation leads to the conservation of momentum hence Momentum and Space are relative.

2. According to Albert Einstein, The geometry of space is determined by the momentum content in the space.

3. The greater the momentum content in space the more curved is space.

4. Extended Einstein's Concepts: Momentum physicalizes Space and gives it, it's structure and functions.

5. According to Louis De Broglie: Momentum brings about the presence of a mass which in turn brings about the presence of matter.

6. Extending Maxwell-Einstein Concepts: Magnetic fields arise because of momentum phenomena in Space.

7. Extending Maxwell-Noether Concepts: The Magnetic Field Potential is the Quantum Unified Force Field Potential translating in space.

8. According to Emmy Noether symmetry in temporal translation leads to the conservation of Energy hence Energy and Time are relative.

9. Extending Einstein-Noether Concepts: The geometry of time is determined by the Energy content in time.

10. Extending Einstein-Noether Concepts: The greater the Energy content in time the more curved is time.

11. Extended Einstein Concepts: Energy physicalizes Time and gives it, it's structure and functions.

12. Extended Schrodinger concepts: Energy brings about the presence of a wave which in turn brings about the presence of radiation.

13. Extended Maxwell-Noether Concepts: Electric Fields arise because of Energy phenomena in Time.

14. Extended Maxwell-Noether Concepts: The Electric Field Potential is the Quantum Unified Force Field Potential translating in Time.

15. Extended Einstein Concepts: Since Space and Time are dynamically linked or connected in the Quantum Unified Field Equation so Momentum and Energy are dynamically Connected or linked also

16. Extended Lious De Broglie Concepts: Similarly, Mass and Wave are dynamically Connected as well as matter and radiation

17. Extended Maxwell Concepts Magnetic Field and Electric Field are dynamically Connected.

18. Extended Kaluza-Klein Concepts: The Quantum Unified Electromagnetic Force Fields is the Most Fundamental Force Fields through which other Force Fields arises.

19. Extended Noether-Lagrange Concepts: The Quantum Unified Fields follows the path of least action in Space and in Time so as to Minimize or Maximize Momentum-Energy usage giving rise to conservational laws of Physics equations in the Universe.

20. Extended Duality Concepts: The Quantum Unified Fields has duals which plays an interchangeable role in the universe through a Fundamental Operations Called Quantum Unified Flips. These Duals are Space-Time, Momentum-Energy, Mass-Wave, Matter-Radiation and Magnetic-Electric Field.

For the sake of simplicity, we will consider the one-dimensional representation of the Quantum Unified Force Field Equations below:

$$\frac{\partial}{\partial_r} U_r + \oint \mathsf{U}_t \, . dt = 0 \tag{1}$$

$$\frac{\partial}{\partial_t} U_r + \oint \mathsf{U}_t \, . dr = 0 \tag{2}$$

$$\frac{\partial}{\partial_t} U_t + \oint U_r \, . dr = 0 \tag{3}$$

$$\frac{\partial}{\partial_r} U_t + \oint U_r \, . dt = 0 \tag{4}$$

In the next chapters we will give various multidimensional interpretations and applications of the theorems to various

areas of current research ongoing in the physics community which will be duly cited here with reference to the authors and also give possible solutions to intending problems in this research.

We will also see how the theorems generalizes previous works done by scientists both at classical and modern level as well as propose possible solutions to problems that these theories cannot handle.

Results of the theorems as a consequence of previous works

Our focus for the next chapter will be on equation (1) and equation (3). Observe the Quantum Unified Flips on the spatial and temporal coordinate. This Flips give rise to a different Mode of the Quantum Unified Force Fields.

First law of quantum unified field equations (QUFT) in mode 1

We will look at Equation 3 of the Physics of the Universe in this Mode:

$$\frac{\partial}{\partial_t} U_t + \oint U_r \,.dr = 0 \tag{3}$$

$\oint U_r$ is the cross or rotational operational part of the Quantum Unified Force Field and it represents a momentum field potential confined within a closed curve in space. In 3-D it represents a momentum field potential confined within a close region or volume in space.

The momentum flux moves round the close path in the region and physicalizes the space.

The greater the momentum density content within the closed path in the region the greater the curvature of the space and *vice-versa*. The presence of momentum is the presence of space and the structure of space is curved because the momentum fluxes in a closed path or region.

Since Magnetic Field arises as a results of momentum fluxes in space according to proposition 6 of the Quantum Unified Field Theorem and since this space is curved, the Magnetic field in this mode follows a closed curved hence Magnetic Field possess a dipole that is North-South Pole. This results is a generalization of Gauss Law of Magnetisms which is Maxwell's 2nd Law of Electromagnetism.

Relationship between the 2 equations

In QUFT $\oint U_r \,.dr$ represents a scalar which is not necessarily zero. It's equivalent in Maxwell form is $\oint B_r \,.ds$. Clearly we can see the relations established. In Maxwell Equations the scalar lines have neither a beginning nor an end: Each one either forms a closed loop, winds around forever without ever quite joining back up to itself exactly, or extends to infinity.

This explains the presence of Magnetic Dipole in space.

Also, as Momentum Fluxes within a close path or region and momentum brings about the presence of mass and matter meaning the masses are bound within a close region in Space in this Mode. Matter is distributed within a close region forming clusters and spheres which we can call heavenly bodies.

A Greater mass means a greater momentum fluxes and a greater curvature of space.

A lesser mass within the vicinity of the space created by a Greater mass has his momentum flux around it. Meaning all heavenly bodies with a lesser mass gravitate around heavenly bodies with a greater mass because of the curvature of the space around them. This is basically what Einstein General theory of Relativity is talking about.

Now let's look at the other part of the equation $\frac{\partial}{\partial_t} U_t$ which represents the dot or divergent operational part of the Quantum Unified Force Field and it's represents an energy field potential confined along a divergent straight line in time. In 3-D it represents an energy field potential confined along a divergent volume in time.

The energy flux moves along the straight line or divergent volume and physicalizes time.

The greater the energy density content within the straight line or divergent volume the greater the straight divergence of the time. The presence of energy is the presence of time, and the structure of time is straight because the energy fluxes along a straight path or divergent volume.

Since Electric Field arises as a results of Energy fluxes in time and since this time is divergent or straight, the Electric field in this mode follows a divergent straight path hence Electric Field possess a monopole that is Isolated Positive and Negative Charged Particles.

This explains the presence of Electric Monopole in Time. Also, as Energy Fluxes within a divergent straight path and Energy brings about the presence of wave and radiation meaning the waves are bound within a divergent straight path in Time in this Mode. Radiation is distributed within a divergent straight path forming beams of lights.

A Greater Wave or Radiation means a Greater Energy fluxes and a Greater Divergence along a straight path in Time.

Now looking at the 2 parts of the Equations we can deduce the following:

$$\frac{\partial}{\partial_t} U_t + \oint U_r \,.dr = 0 \tag{3}$$

The Equation must represent the Dynamical Connection or Link between the Duals Space-Time, Momentum-Energy, Mass-Wave, Matter-Radiation and Magnetic-Electric Fields.

Since there sum is constant and zero it represents an inter-

convertibility or conversion of one into the other and defines a conservation principle in the universe.

The work of Maxwell helps us to understand that Light is made up of Oscillating Electric and Magnetic Fields which is the oscillation of Time and Space. Meaning as we move through the universe time and space changes dynamically. Since Space is bound by the rotation Operator it means our position in the universe if we are not moving is fixed relative to other parts that is not moving but since Time is divergent by the Dot Operation it means the arrow of Time always move from the Present to the Future. So, we have control over our position if we refuse to translate in space but do not have control over time as it always moves into the Future whether we move or not. However, if we move, we affect the flow of time as the 2 entities are linked electromagnetically and as such the limit of our speed is the speed of Light which is the speed of the Electromagnetic wave. Also, all processes within the universe in this mode cannot exceed the speed of Light. Since the Space is bound, the position of all processes is deterministic and certain.

In Conclusion this Mode describes the General Relativity theory of Albert Einstein.

If the space is becoming less curved that is flatter, then it means the momentum content is becoming less significant in space and the cross operation follows a divergent straight path meaning masses will no longer act as gravity sources meaning momentum will be transformed to energy in the dot operation and as such Time will run more divergent which is longer duration. This explains time Dilation.

If the space eventually becomes flat, then there will be no momentum and hence no masses and hence no gravity and time will run the fastest divergence and the longest duration for any process.

To make time run slower in the flat space I must acquire momentum somehow, since my increase in momentum cannot be exchanged from the Energy content in the divergent Time, it means an external force outside the Quantum Unified field must act on my masses so as to cause me to gain momentum which I cannot gain spontaneously. As I acquire momentum, Time in my frame of reference runs slower based on the equation but remains at the same rate in the reference frame of other masses that were previously at rest with me in my reference frame and remain at rest with my reference frame previously at rest, and as I approach the speed of Light, Time slows down to zero or becomes infinitesimal.

This explains the Newtonian Mechanics and the Special theory of Relativity.

Looking from another perspective since the Quantum Unified Field Equation has a Multi-Dimensional Interpretation, we can say that gravity is a spontaneous process in the universe

that arises because of the presence of mass or momentum in the universe.

Also, from the dynamic connection we can see that Energy and Mass is related thus confirming the Einstein Mass-Energy Relationship $E=MC^2$ and since Energy is related to Time and Mass is related to Space meaning the birth of space is the birth of time and that the origin of mass must come from a point in time.

As a Christian I believe this point in Time is when God spoke the universe into existence out of nothing. Because the Equation shows a spontaneous process something that occurs without the need of any support so it is not a big bang that brought about the creation of the universe as this energy must come from somewhere. It is the word of God that creates the mass within the universe and all that we now see without the support of any process or substance and such point in time is only known by God. The equation only describes the underlying laws and principles that arises.

First law of quantum unified field equations (QUFT) in mode 2 Quantum mechanics and quantum field theory

Mode Two is Equation 1 and we will look at the Physics of the Universe in this Mode:

$$\frac{\partial}{\partial_r} U_r + \oint U_t \,.dt = 0 \qquad (1)$$

$\oint U_t \,.dt$ is the cross or rotational operational part of the Quantum Unified Force Field and it's represent an energy field potential confined within a close curve in time. In 3-D it represents an energy field potential confined within a close region or volume in time.

The energy flux moves round the close path in the region and physicalizes time.

The greater the Energy density content within the close path in the region the Greater the curvature of the time. The presence of energy is the presence of time and the structure of time is curved because the energy fluxes in a closed path or region.

Since Electric Field arises as a results of energy fluxes in time and since this time is curved, the Electric field in this mode follows a closed curved hence Electric Field possess a dipole that is Positive-Negative Pairs.

This explains the presence of a system of Positive and Negative Charged particle pairs in an atom in space. Also, as Energy Fluxes within a close path or region and Energy brings about the presence of wave and radiation meaning the waves are bound within a close region in Time in this Mode. Radiation is distributed within a close region forming clusters and spheres which we can call quantum particles.

A Greater wave means a greater energy fluxes and a greater curvature of Time.

A lesser wave within the vicinity of the Time created by a Greater wave has his energy flux around it. Meaning all quantum particles with a lesser wave revolve around quantum particles with a greater wave because of the curvature of the Time around them with opposite Charge pairs. This is basically what Quantum Mechanics is talking about.

Now let's look at the other part of the equation $\frac{\partial}{\partial_r} U_r$ which represents the dot or divergent operational part of the Quantum Unified Force Field and it's represents a momentum field potential confined along a divergent straight line in space. In 3-D it represents a momentum field potential confined along a divergent volume in space.

The momentum flux moves along the straight line or divergent volume and physicalizes space.

The greater the momentum density content within the straight line or divergent volume the greater the straight divergence of the space. The presence of momentum is the presence of space, and the structure of space is straight because the momentum fluxes along a straight path or divergent volume.

Since Magnetic Field arises as a results of Momentum fluxes in Space and since this Space is divergent or straight, the Magnetic field in this mode follows a divergent straight path hence Magnetic Field possess a monopole that is Isolated North and South Charged Poles.

This explains the presence of Magnetic Monopole in Space. Also, as Momentum Fluxes within a divergent straight path and Momentum brings about the presence of mass and matter meaning the mass are bound within a divergent straight path in Space in this Mode. Matter is distributed within a divergent straight path forming beams of masses.

A Greater Mass or Matter means a Greater Momentum fluxes and a Greater Divergence along a straight path in Space.

Now looking at the 2 parts of the Equations we can deduce the following:

$$\frac{\partial}{\partial_r} U_r + \oint U_t .dt = 0 \qquad (1)$$

The Equation must represent the Dynamical Connection or Link between the Duals Space-Time, Momentum-Energy, Mass-Wave, Matter-Radiation and Magnetic-Electric Fields.

Since there sum is constant and zero it represents an interconvertibility or conversion of one into the other and defines a conservation principle in the universe.

The work of maxwell helps us to understand that Light is made up of Oscillating Electric and Magnetic Fields which is the oscillation of Time and Space. Meaning as we move through the universe time and space changes dynamically. Since Time is bound by the rotation Operator it means our position in Time in the universe if we are not moving is fixed relative to other parts that is not moving but since Space is divergent by the Dot Operation it means the arrow of Space always move from our Present Position into the Distant. So, we have control over our position in Time if we refuse to translate in Time but do not have control over Space or our Position as it always moves into the Distant whether we move or not. However, if we move, we affect the flow of Space as the 2 entities are linked electromagnetically and as such the limit of our speed is beyond the speed of Light which is the speed of the Electromagnetic wave. Also, some processes within the universe in this mode can exceed the speed of Light. Since Time is bound, the position in Time of all processes is not deterministic and uncertain.

In Conclusion this Mode describes the Quantum Field theory of Paul Dirac and others.

If the Time is becoming less curved that is flatter, then it means the energy content is becoming less significant in Time and the cross operation follows a divergent straight path meaning waves will act lesser as force carriers sources meaning energy will be transformed to momentum in the dot operation and as such Space will run more divergent which is longer expanse. This explains Quantum Electrodynamics (QED) and Quantum Chromodynamics (QCD) in Quantum Field Theory (QFT).

If the Time eventually becomes flat then there will be no energy and hence no waves and hence no force carrier sources and Space will run the fastest divergence and the longest expanse for any process this explains the classical electromagnetic field.

To make Space expands slower in the flat time I must acquire energy somehow, since my increase in energy cannot be exchanged from the momentum content in the divergent Space, it means an external force outside the Quantum Unified field must act on my waves so as to cause me to gain energy which I cannot gain spontaneously. As I acquire energy, Space in my frame of reference expands slower based on the equation but remains at the same rate in the reference frame of other waves that were previously at rest with me in my reference frame and remain at rest with my reference frame previously at rest, and as I exceed the speed of Light, Space expansion slows down to zero or becomes infinitesimal.

This explains the Wave or Quantum Mechanics and the Quantum Field theory.

Looking from another perspective since the Quantum Unified Field Equation has a Multi-Dimensional Interpretation, we can say that Quantum force exchange is a spontaneous process in the universe that arises because of the presence of waves or energy in the universe.

Also, from the dynamic connection we can see that

Momentum and Wave is related thus confirming the De Broglie's Wave-Particle Duality Relationship $\lambda = \dfrac{h}{p}$ and since Momentum is related to Space and Wave is related to Time meaning the birth of Time is the birth of Space and that the origin of Waves must come from a point in Space.

As a Christian I believe this point in Space is when God spoke the universe into existence out of nothing. Because the Equation shows a spontaneous process that occurs without the need of any support so it is not a big bang that brought about the creation of the universe as this Momentum must come from somewhere. It is the word of God that creates the Waves within the universe and all that we now see without the support of any process or substance and such point in Space is only known by God. The equation only describes the underlying laws and principles that arises.

Using the theorem to understand modern physics more deeply quantum mechanics

$$\frac{\partial}{\partial_r} U_r + \oint U_t\,.dt = 0$$

From the above we can describe an elementary particle such as an electron and a proton as a matter wave due to the $\dfrac{\partial}{\partial_r} U_r$, part of the equation which is the divergence operation of the momentum in space. Since the arrow of momentum always points into the distant and we do not have control over it, it shows that the mass of the elementary particle cannot be localized within a region in space but at every point in space the electron can be found.

Also remember momentum has taken the role of energy meaning the electron is a matter wave that spreads about space and its momentum p is given by h/λ. Also, the $\oint U_t\,.dt$ part of the equation is the rotation operation of the energy in time. Since time is represented in a closed loop form, meaning the energy is bound within time or localized in time.

Meaning any quantum process or action such as spin or excitation and de-excitation or decay of a states though localized in time is non-localized in space. So if I have 100 atoms decaying by the emission of a beta particle it will be practically impossible to identify the individual atom that decayed but all I know is that an atom has undergo a decay within a particular time. Even if I single out an individual atom and it decay by the release of a beta particle at a time t, I cannot precisely tell where the atom was when it decayed.

If am able to precisely measure when the decay occurred, then since time is relative I need to consider an event that happened before the decay occur as a reference so I will need to look for another atom that decayed before it decayed and the process goes on and on giving rise to a system of decaying atoms meaning I cannot know for certainty which atom is decaying. Suppose the atoms are packed inside a small enclosure to limit the number of atoms as possible as to make them countable. Under this situation it would be easy to observe an atom decaying as I can easily reference a previously decaying atom. So meaning the time of decaying is close to certainty and as such the energy of the process is well defined.

Superposition as a consequence of a multi-dimensional time

From our preceding chapters, we understand that the physics of the universe needs 3 spatial and 3 temporal dimensions to be described.

In this section we will proceed to show how the introduction of multi-dimensional time naturally leads to the principle of superposition in quantum theory.

Three-temporal and one spatial dimensional universe

Consider a reference system used in describing the laws of physics having 3 temporal and 1 spatial dimension below:
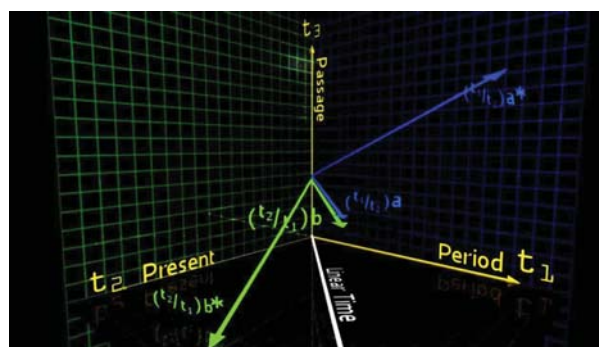
Observe that any event in such space can be described by tx ty tz and s parameters. Since the temporal dimensions described events in the universe.

These temporal dimensions have unit vectors tx ty tz characterizing any event within this space as well as the 1-spatial dimension.

Using the principle of quantum unified flips, there is a flip of the temporal and spatial dimensions such that the temporal dimensions act as position basis in time while the spatial dimensions acts as time or duration basis in space. In principle we can assign to an event a position in time as well as a duration in space. In a nutshell space acts like time and time acts like space. Forwarding this idea joining 2 points in time is a vector describing how time travels into the future, so any event or processes we described in our physical universe travels through one of these lines or timelines. Here is the catch, since we are introducing a multidimensional time concept, we can have 2 or more timelines or 2 or more multiple physical universes with its own timeline. In our physical universe and within the laws of physics that have been developed such as Newtonian Mechanics, Relativity and Quantum Mechanics the 3 spatial dimensions forms the core of analytical geometry

and can also be used in describing other areas of geometry that are concrete and measurable.

In this universe having 3 temporal dimensions and 1 spatial dimension we can by extension introduce analytical geometry involving these 3 temporal dimensions and describe geometries that can help resolve challenging areas in physics.

Here is a way we can use this analytical geometry in time to describe quantum processes in the universe.

Consider a flat-2-dimensional temporal space in which three timelines intersects at O. note the extra 1 spatial dimension is treated here as a time coordinate or parameter.
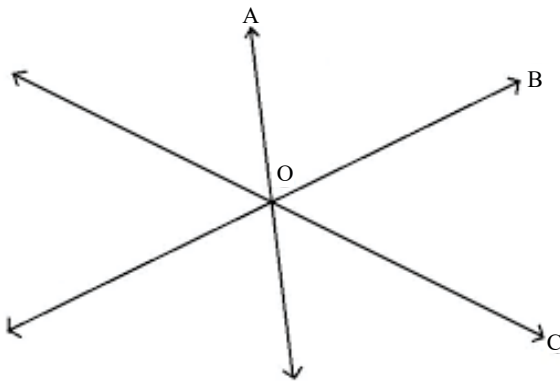
From the point of the observer in this universe at the point of intersect O, the 3 timelines exist as a superposition of OA, OB and OC. If we consider the events, they describe to be the state of an elementary particle such as an electron. The point O, therefore must be the state of the system or particle before the measurement was done. The acts of measurements collapse the wave functions of the system into either OA, OB and OC respectively which we can describe using the Dirac wave function ψ_a, ψ_b, ψ_c. Let us take a look at Quantum Mechanics:

We will see how this principle relates to the axioms of Quantum Mechanics below:

1. The state of the system is represented by a vector in Hilbert space.

2. Observables are represented by Hermitian Operators.

3. The measurements of an observable yields one of its eigenvalues as the result.

Mathematically it is put in this form: $i\hbar \frac{\partial}{\partial t} H |\psi, t\rangle = H |\psi, |t\rangle$ where H is the Hamiltonian Operator representing the total energy of the system.

Vector OA, OB and OC describes any events in the timeline of the particle and in the language of Quantum Mechanics is the state of the system described by its wave function ψ_a, ψ_b, ψ_c. Where the angles between the vectors $\theta_1 and \theta_2$ are the small temporal angular displacements that acts as a basis of collapsing the wavefunctions ψ at point O before the

measurement was done into ψ_a, ψ_b, ψ_c. If $\theta_1 and \theta_2$ were so small as to be close to zero then the wavefunction ψ will not collapse but will continue to remain in the superposition state, however this is not the case as the act of measurements always collapse the wave function ψ into any of the 3 states ψ_a, ψ_b, ψ_c given as a basis for representing the wave.

Using the language of vectors, we can write the state ψ as a linear combination of the 3 states ψ_a, ψ_b, ψ_c with a probability amplitude α, β and γ as shown.

$\psi + \alpha\psi_a + \beta\psi_b + \gamma\psi_c$ where ψ_a, ψ_b, ψ_c are complex numbers as well as α, β and γ.

The complex conjugate is given by $\psi^* = \alpha^* \psi_a^* + \beta^* \psi_b^* + \gamma^* \psi_c^*$ and $\psi\psi^* = |\psi\psi_*|^2$

Let's suppose point O which is a superposition of ψ_a, ψ_b, ψ_c be a projection timeline along OD in 3-dimensional temporal coordinate system.
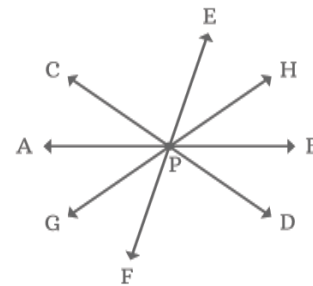
The direction cosines $cos\theta_1, cos\theta_2, cos\theta_3$ is the projection of vector PH (ψ) onto the vector PE (ψ_a), PB (ψ_b) and PD (ψ_c) respectively. So, we can write PH in terms of its direction cosines as

$$\psi = cos\theta_1\psi_a + cos\theta_2 \psi_b + cos\theta_3\psi_c.$$

According to Quantum Mechanics the probability that the vector PH will collapse into the state PE, PB and PD depends on their probability amplitudes which is $cos\theta_1, cos\theta_2, cos\theta_3$ respectively which is similar to α, β and γ. Since the probability of the wave function in its state is given by $\psi\psi^* = |\psi\psi_*|^2 = \alpha^2 + \beta^2 + \gamma^2 = cos\theta_1^2 + cos\theta_2^2 + cos\theta_3^2 = 1$

If we apply the principle of normalization then we come to the conclusion that the probability of the wave ψ collapsing into any of the states ψ_a, ψ_b, ψ_c is given by, $cos\theta_1^2, cos\theta_2^2, cos\theta_3^2$ respectively, meaning the smaller the temporal angular displacements from the superposition wave function to the given states ψ_a, ψ_b, ψ_c the greater the chances or probability of the state collapsing into that basis states after the experiment is done. A 50 - 50 chance is when the temporal angular displacements are the same.

One of the mysteries of quantum mechanics is that we don't know the states the wave function will collapse into

until after the experiments is done and even if we have some information about the state of the wave function before the experiments is done we can only in principle and by probability estimates the chances of the states collapsing into one of the 3 states ψ_a, ψ_b, ψ_c whose temporal angular displacements is smallest but cannot guarantee if it will indeed collapse into that state based on our knowledge unless the experiment is performed a very large number of times. We will try to explain why this is so in the next chapter using some powerful principles called the stationary action principles.

Before then, we observe that in the 2-D temporal system the superposition wave function is a point source while in the 3-D temporal system the superposition wave function is a timeline.

Since 3-D system is built from 2-D system. We can say the superposition wave function in 3-D system is a point where all the timelines describing the events, travels with the same gradient and intercepts using the language of analytical geometry. With this we have a theory consistent in all dimensional system.

If we move to 1-D temporal system then the concept of superposition is lost as all events travels through one past to the future which describes the physical system or universe in which the laws of classical physics we know are built.

So in 3-D temporal system the universe is more complex than the physical universe we perceive and as such the reason why naturally the weirdness of quantum mechanics evolved. So we can in principle say that we live in a multidimensional temporal system in which the time coordinates is 3-dimensional. For now we have refused to emphasized the spatial dimensions since we have are already used to its geometric properties from the laws of physics we have already developed. We will introduce it in the light of the new role its plays in the concept and the principle of quantum unified flips.

Stationary action principle a consequence of the principle of nature that collapse the states after the experiment is done

In order for we to measure some conserved quantities in the 3-D temporal and 1-D spatial dimensional system we will introduce the stationary action principle.

To completely describe the system for quantitative measurements we will derive the corresponding Lagragian for this system and develop an Euler-Lagrange equation for the geometry involved in this complex universe. Using these methods we will describe the trajectory the system takes based on the information embedded in its Lagragian to explain the choices of the state the system or wavefunction chooses to collapse into probabilistically.

Lagragian of the wavefunction in 3-d temporal and 1-d spatial universe

The Lagragian of a system is defined by the difference in the kinetic and potential energy of the system in a 3-D spatial and 1-D temporal system.

$L(\text{x}, \dot{x}, t) = T(\dot{x}) - U(x)$ *for an object in a gravitational system of falling bodies the Lagrangian L is given by* $L(x, \dot{x}, t) = \frac{1}{2}m\dot{x}^2 - mgx$ *which are the kinetic and potential energy of the body.*

Using the principle of the Quantum unified flips and some radical propositions in the previous volume of this work we will find the corresponding Lagragian for this system in 3-D temporal and 1-D spatial universe. The Lagragian can be written as such:

$L(\text{t}, \dot{t}, x) = T(\dot{t}) - U(t)$ *where,* $\dot{t} = \frac{t}{x}$ *which is the velocity of time per unit meter. Recall that according to the principle of the quantum unified flips x which is the spatial dimensions acts as a clock and as such will describe the wavelength of the wave function. We can use a diagram to illustrate it to make it more concrete.*
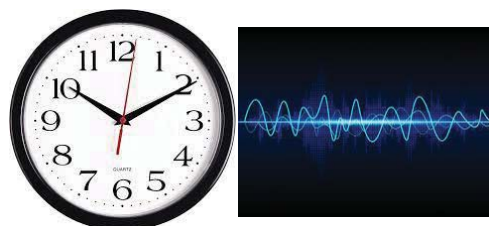
Every tick of s describes 2 points separated in space-like fashion using the language of Minkowski intervals of space-time in Minkowski space-time.

Every complete cycle of s is λ and every tick of s ticks out 2 points separated in space-like fashion by λ and this process continues indefinitely. As the clock ticks into the future so s ticks by λ into the future of space-like fashion.

The temporal dimension t on the other hand acts as a position basis in time. So t_a *and* t_b can describe 2 points in time, the line joining them can either be a line segment $\left| t_b - t_a \right|$ which can be the duration t along the vector $\vec{t} = |t|\hat{t}$ where $|t| = \left| t_b - t_a \right|$ and always point into the future(that is present to future) or into the past (that is present to past) in that case that will be its negative vector $\overleftarrow{t} = |t|\hat{t}$ and $\hat{t}$ acts as a unit temporal vector in the universe which for 3-D temporal system is the t_a, t_b *and* t_c or wave functions ψ_a, ψ_b, ψ_c wave function states.

So $\dot{t} = \frac{t}{x} = \dot{t} = \frac{|t|}{x}$ *or* $\vec{t} = \frac{\vec{t}}{x}$ (where x is a scalar which can be λ) and $\overleftarrow{t} = |t|\hat{t} = \left| t_b - t_a \right| \frac{\hat{t}}{x}$

This quantity like velocity in the 3-D spatial and 1-D temporal system measures how fasts the quantum processes occurs in a given temporal direction along which the wave function collapses and it's acceleration $\ddot{t}$ could either be a change in the temporal length of this quantum processes in a unit wave function in a given temporal displacements, so like Newtonian Mechanics the system undergoes a force when this acceleration $\ddot{t}$ occurs in the 3-D temporal and 1-D spatial dimensions.

So in principle, the act of measurements of a system whose wave function ψ is in a state ψ is the act of introducing an external force which usually cause an angular temporal displacements whether big or small so that the system ψ collapse into any of the 3 states ψ_a, ψ_b, ψ_c depending on the angular displacements. A large angular displacement will distort the system wave function ψ and the probability of the state ψ collapsing into it will become smaller so a very small angular temporal displacements is what makes the wavefunction to collapse in the state we want with a greater probability. The greatest probability of the state collapsing into a given state ψ is when the system is least distorted or when the system spontaneously undergoes distortion without the need for an external displacements or distortions. This kind of process occurs in a unitary transformation.

Let's return to the derivation of the Lagrangian of the system L t(t,x). The kinetic of the system $T(\dot{t})$ as the processes occurs along a space-like fashion during the tick of the clock S. From Noether's theorem since $T(\dot{t})$ is a conserved quantity as a results of translation in space-like fashion as the clock S ticks λ into the future of space. $T(\dot{t})$ must be kinetic momentum representing the momentum of the wave function ψ as the processes is going on along the temporal path $\vec{t} = |t_b - t_a| \hat{\vec{t}}$ and with temporal velocity $\vec{\dot{t}} = \frac{|t|\hat{\vec{t}}}{x} = |t_b - t_a| \frac{\hat{\vec{t}}}{x}$ within the duration λ as the clock S ticks out λ into the future of space-like fashion.

Also, the potential of the system *U(t)* as the processes occurs along a space-like fashion during the tick of the clock S at a point in space Sa must be the potential momentum representing the momentum of the wave function ψ by virtue of its position in the unified force field space Sa which is also is a conserved quantity.

Thus in a conservative force field similar to the gravitational system describing the motion of falling masses in space, the unified force field describing the wavefunctions or the particle field undergoing this transformations is given by the following Lagrangian:

$$L(t, \dot{t}, x) = T(\dot{t}) - U(t) = \frac{1}{2} m_\psi \dot{t}^2 - m_\psi g_\psi t$$ Let us make sense

of the quantity m_ψ and g_ψ.

The Lagragian L $(t, \dot{t}, x)$ is a momentum-based function,

what we have on the right-hand side of the Lagragian is a temporal based function.

From the principle of quantum mechanics using the Heisenberg's uncertainty principle we know that $Äx Äp \geq \hbar$ and also $ÄEÄt \geq \hbar$. we can in principle say either $\Delta X \Delta p = \Delta E \Delta t$ or $\Delta X \Delta p \leq \Delta E \Delta t$ or in $\Delta X \Delta p \leq \Delta E \Delta t$ principle. If we use the principle of equivalence we can say in principle $\Delta X \Delta p = \Delta E \Delta t$ and make Δp which is a momentum function the subject of the formula this will give us the following:

$$\Delta p = \Delta E \frac{\Delta t}{\Delta x}$$ Now the Lagragian

$$L(t, \dot{t}, x) = T(\dot{t}) - U(t) = \frac{1}{2} m_\psi \dot{t}^2 - m_\psi g_\psi t$$

From Einstein-Mass energy relationship $\Delta E = \Delta mc^2$ and $\Delta m = \frac{\Delta E}{c^2}$ by the principle of equivalence set

$$m_\psi = \Delta m \quad L(t, \dot{t}, x) = T(\dot{t}) - U(t) = \Delta p \frac{\Delta E}{c^2}(\frac{1}{2}\dot{t}^2 -$$

$$g_\psi t = \Delta E \frac{\Delta t}{\Delta x} = \frac{\Delta E}{1}(\frac{1}{2c^2}\dot{t}^2 - \frac{1}{c^2}g_\psi$$

thus $\frac{\Delta t}{\Delta x} = \frac{1}{2c^2}\dot{t}^2 \frac{1}{c^2}g_\psi t$ To determine the dimension of g_ψ we use dimensional analysis:

Setting c = 1 unit and setting t = T and x = L we have the following:

$$\frac{T}{L} = \frac{(\frac{T}{L})^2}{2c^2} - \frac{g_\psi T}{c^2}$$ simplifying we get $g_\psi = \frac{T-L}{L^2}$ where T-L

is the interval of space in the Minkowski-Hilbert like space of the unified force field. T-L is timelike T>L and as such must be the $\Delta s = \sqrt{c\Delta t^2} - (\Delta x^2 + \Delta y^2 + \Delta z^2)$ having the unit of T-L dimensions and L^2 is the space-like clock ticks of S ticking into the future of space.

So g_ψ is the proper acceleration we expect in this system according to the principle of quantum unified flips. We shall explore more into the nature of g_ψ because that will help us to understand the force of gravity at the quantum level. Thus, we have derived the simplified version of the Lagragian of the system using the 1-D temporal and 1-D Spatial system.

Also, if we quantum flip g_ψ we obtain the proper acceleration in Minkowski Space-time and the unit is which represent the gravitational acceleration of quantum objects in the sub-atomic scale and is different from the normal acceleration we are familiar with $g = \frac{L}{T^2}$ from Newtonian mechanics. This results only confirms that gravitational fields behave different in the quantum world from the macroscopic world or cosmos.

Applications, analysis and interpretations extended law of relativity

The principle behind Einstein theory of relativity simply

tells us that time and space are to be treated on equal footings and the coordinate system used in describing the geometry must be invariant or symmetric with respect to the Lorentz transformations. This is clearly manifest in the Minkowski space-time coordinate system.

With this idea we will propose 2 Laws of Relativity based on this principle of equivalence of time and space namely:

First law of relativity or the special theory of relativity

Postulate 1: The laws of physics is invariant or symmetric with respect to Lorentz group of transformation in all inertia coordinate system.

Postulate 2: The speed of light is the only constant in all inertia coordinate system.

The generalization of this postulates to include all reference frames led to the developments of the General theory of relativity which makes use of the following assumptions:

The general theory of relativity

Postulate 1: The laws of physics is invariant or symmetric with respect to Poincare group of transformation in all coordinate system be it inertial or non-inertia.

Postulate 2: A uniform gravitational system is equivalent to a uniform accelerated system.

These two laws of physics have been experimentally verified to be indeed a correct description of physical realities involving the physics of objects travelling at tremendous velocity close to the speed of light (Special theory of relativity) and the description of the force of gravity and the dynamics of very massive bodies such as the planets, stars, blackholes etc. (General relativity).

On the other hand, Quantum Mechanics have been highly successful in explaining the dynamics of elementary particles such as atoms, protons, electrons, neutrons, quarks etc.

The Axioms of Quantum Mechanics are stated below:

Quantum mechanical theory

Postulate 1: The state of a system is represented by a vector in Hilbert Space also known as the wave function which is the superposition of all the basis states.

Postulate 2: Observables are represented by Hermitian Operator.

Postulate 3: The measurement of an Observables yields one of its Eigenvalues as the result.

Postulate 4: The measurement of a state collapses the state into one of its proper states which is known as the Eigen vector of the system.

Postulate 5: The Probability of an Observables does not change with time.

In an attempt to develop a Quantum Mechanical theory describing the physics of elementary particles travelling close to the speed of light arose Quantum Field theory which reassesses the requirements of Quantum Mechanical theory.

One of the difficulties arising from producing a quantum mechanical theory consistent with the special theory of relativity is that time and space are not treated equally in Quantum mechanics because time is the only observables that do not have a Hermitian operator whereas space has and Special relativity requires both time and space to either have a Hermitian Operator or both should not have a Hermitian Operator.

Paul Dirac solved this problem by promoting both time and space as a label on an operator known as the Quantum field by resolving the Klein-Gordon Equation which is a Quantum Field theory that obeys Special theory of relativity but do not obey Quantum Mechanics. This Quantum field is the collection of quantum harmonic oscillators vibrating at a given frequency.

However, there is a fundamental difficulty developing a Quantum Field theory consistent with the General theory of relativity. This is because the position of the elementary particles affecting the geometry of space-time due to their masses is a superposition of states and as such cannot be localized (chunky) whereas the force of gravity described by the general relativity is localized and smooth. This is the major reason while for millennium scientists have tried without success in constructing a Quantum Field theory describing gravity.

Time and Space although treated equally in the Theory of Relativity are still not equal in absolute form of equality. Reason is that I can choose to move in space or not to move in space but I cannot choose to move in time, I always move in time whether I like it or not.

Although this is what we experience in our physical reality to develop an absolute theory of relativity space also must have this property that time have whether we experience it in our physical reality or not.

One of the ways we can construct this is to interchange this property so that I can choose to move in time or not to move in time but I cannot choose to move in space, that is I always move in space.

We will call this new coordinate system where I can choose to move in time or not to move in time but cannot choose to move in space the Hilbert Space-time coordinate system and we shall postulate the second laws of relativity based on this new system.

We can then develop the extended dual law of relativity using the principle in the first and second laws of relativity which we propose below and we shall use these principles to resolve the problem of unifications as well as solve some of the current problems in the frontiers of physics.

We shall begin by developing a geometric system by establishing a dynamic between the Minkowski and Hilbert Space-Time coordinate system as a necessary requirement in resolving the problem of unifications.

These dynamics shall be a group that transforms by mapping the Minkowski and Hilbert Space-time elements outwardly and inwardly through the Poincare group.

We will call this group of transformations as a whole the Abrahamic group of transformations and the new coordinate system shall be called Minkowski-Hilbert Space-time coordinate system as we shall see in future.

We shall propose a third law of relativity which is the dynamics of the geometry in the Minkowski-Hilbert Space-time.

Second law of relativity

Postulate 1: All laws of physics are invariant or symmetric in the Hilbert Space-time coordinate.

Postulate 2: Time and Space are spontaneously Hermitian in operation.

Postulate 3: The Speed of light is a reference for subluminal and superluminal processes.

Postulate 4: There exists an observer in the universe that makes impossibility possible.

Third law of relativity

Postulate 1: There exists a dual and a relation between all laws of physics which are invariant or symmetric in the Minkowski-Hilbert Space-time coordinate.

Postulate 2: The Speed of Light is an integral multiple of the speed of light (in Minkowski Space-time) in the Minkowski-Hilbert coordinate.

We will proceed by constructing this new coordinate system based on the above postulates.

For simplicity we will only work in 2-dimensions and will extend later in upcoming works.

The diagram below shows a 2-D Minkowski Space-time for simplicity
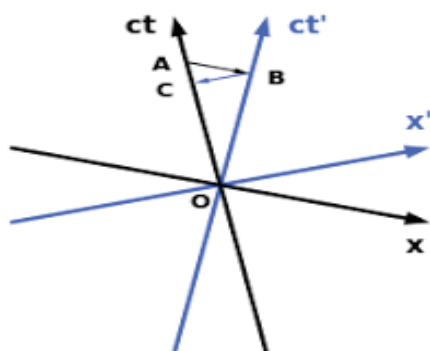
Under the Abrahamic transformation $ict \rightarrow ic_g x$ and $x \rightarrow t$ where $= c_g = \dfrac{1}{c}$ which helps in converting the unit of metres to seconds in the new coordinate.

So, we define a new Group of transformations $G: X \rightarrow Y$ where X (ict, x) is the Minkowski Space-time and Y (ic$_g$x, t) is the Hilbert Space-time coordinate system.

Since G has an inverse $G^{-1}: Y \rightarrow X$.

Also, G has an inner transformation that H: $X \rightarrow X'$ and H: $Y \rightarrow Y'$ that preserves the interval of space and the interval of time ΔS^2 respectively. This is the Poincare group of transformations which is the Lorentz group of transformation and a translation with a new role in the new coordinate system.

Consider the new coordinate system below in 2-D for simplicity:
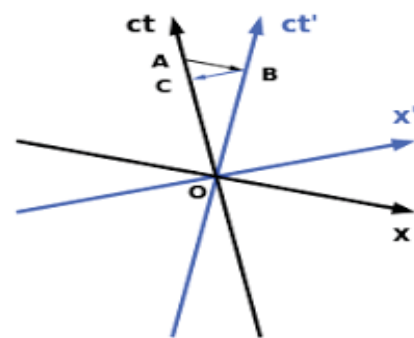
We will determine the invariant quantity ΔS^2 which is the interval of time under this new system:

$\Delta S^2 = (ic_g \Delta x)^2 + (\Delta t)^2 = -c_g^2 \Delta x^2 + \Delta t^2$ here we use the metric signature (-,+) and this represents a timelike events to be consistent with our physical reality in the Minkowski-Space-time. However, we shall see in future that using the metric signature (+,-) doesn't change the physics in this new system. ΔS^2 remains invariant under the transformations.

H: $Y \rightarrow Y'$. Also, the velocity of an object along the t axis acting as position coordinate with respect to x axis acting as temporal coordinate is given by $v_g = \dfrac{t}{x} = v^{-1}$ since in this system I can choose to move in time or choose not to move in time but can't choose to move in space because I always move in space.

Consider the new Lorentz transformations H: $Y \rightarrow Y'$ where $Y(ic_g x, t)$ and $\dot{Y}(ic_g \dot{x}, i)$ for 2 observers in S and frames $\acute{S}$ of reference with $\acute{S}$ frames moving with velocity v_g wrt S frames.

$t = \gamma(t - v_g x)$ -------(i) for a transformation from $\acute{S}$ frames to S frames (This is how S views $\acute{S}$).

$\dot{t} = \gamma(t - v_g \text{x})$ --------- (ii) for a transformation from S frames to $\acute{S}$ frames (This is how $\acute{S}$ views S)

Multiplying (i) and (ii) we have the following:

$$t\dot{t} = \gamma^2 (t\dot{t} - v_g \dot{t}x + v_g \dot{x}t - x\dot{x}v_g{}^2) \text{--------------(iii)} \quad \text{also}$$

note that $x = \dfrac{t}{c_g}$ and $\dot{x} = \dfrac{\dot{t}}{c_g}$ because of the second postulates of the first law of relativity.

Substituting this into (iii) we have the following:

$$t\dot{t} = \gamma^2 (t\dot{t} - v_g \frac{t\dot{t}}{c_g} + v_g \frac{t\dot{t}}{c_g} - \frac{t\dot{t}}{c_g{}^2} v_g{}^2) \text{-----------(iv)} \quad \text{upon}$$

simplification we have:

$$1 = \gamma^2 (1 - \frac{v_g{}^2}{c_g{}^2}) \text{ which becomes}$$

$$1 = \gamma^2 (1 - \frac{c^2}{v^2}) \quad -1 = \gamma^2 (\frac{c^2}{v^2} - 1) \quad \gamma = j \frac{1}{\sqrt{\frac{c^2}{v^2} - 1}} \quad \text{or} \quad \gamma = -j \frac{1}{\sqrt{\frac{c^2}{v^2} - 1}} \text{---(v)}$$

which is the correction operator implying that the coordinate must be Hilbertian in nature.

Using this system, we can find the new Lorentz transformation equations as shown below:

$$t = j \frac{\dot{t} + v_g \dot{x}}{\sqrt{\frac{c^2}{v^2} - 1}} \text{ and } \dot{t} = j \frac{t - v_g \text{x}}{\sqrt{\frac{c^2}{v^2} - 1}} \quad \text{also}$$

$$\dot{x} = j \frac{\text{x} - \frac{v_g}{c_g{}^2} t}{\sqrt{\frac{c^2}{v^2} - 1}} \text{ and } \text{x} = j \frac{\dot{x} + \frac{v_g}{c_g{}^2} \dot{t}}{\sqrt{\frac{c^2}{v^2} - 1}} \text{-----------------(vi)}$$

Our goal here is not to develop a new kind of special relativity but to resolve the problem of unifications.

This new system has promoted time and space as an operator which naturally fits into the world of quantum mechanics.

We shall consider addition and subtraction of velocity of motion along the temporal axis.

Addition and subtraction of velocities

Consider $\acute{S}$ moving with a velocity u_g wrt to S. Suppose an object O moves in S along the time axis with a velocity v_g. Then $v_g = \dfrac{t}{x}$, to find the corresponding velocity w_g which an observer in $\acute{S}$ measures we use the new Lorentz transformations given above:

$$w_g = \frac{\dot{t}}{\dot{x}} = \gamma^2 (v_g - u_g) \text{ .------(vii)} \text{ Suppose } w_g = c_g \text{ that is}$$

an object in $\acute{S}$ moves at c_g the limiting speed along the temporal axis, then an observer in frame S measures the speed as $v_g = c_g$.

Meaning all objects in $\acute{S}$ no matter the speed they move into the future cannot exceed the limiting speed c_g at which all objects move into the future as viewed by an observer in S frame.

If an observer in $\acute{S}$ frame of reference moves backward in time with a velocity $-u_g$ towards an observer in S frames of reference whose measurement of all events in $\acute{S}$ frame of reference moving with velocity w_g is v_g then the transformation becomes:

$$w_g = \gamma^2 (v_g + u_g) \text{---(viii)} \text{ where } v_g + u_g = \frac{1}{v} + \frac{1}{u} \text{ and } w_g = \frac{1}{w}$$

rewriting this equation, we have:

$$\frac{1}{w} = \gamma^2 (\frac{1}{v} + \frac{1}{u}) \text{ if } u_g = 0 \text{ meaning the observers in } \acute{S} \text{ frames of}$$

reference moves into the past or into the future with an infinite velocity u (such velocity is only possible in this coordinate system where the observer in $\acute{S}$ frames of reference moves to the very beginning of time or to the very end of time). I believe absolutely as a Christian only God (Jesus) knows the beginning and the ending of time as He is regarded as the Alpha and Omega in the Scriptures (Revelation 1 *vs*. 8) so in other word this observer in the $\acute{S}$ frames of reference is the Triune God (God the father, the son and the holy spirit for confirmations see Genesis 1 *vs*. 26) so then $\gamma^2 = 1$ so the equation (viii) becomes:

$$\frac{1}{w} = \frac{1}{v} + \frac{1}{u} \text{ which is the related to the familiar lens or mirror}$$

equation analogous to $\dfrac{1}{f} = \dfrac{1}{v} + \dfrac{1}{u}$.

Here is the meaning and interpretations: What we observe or measure as v_g in our time or S frame of reference or universe of w_g (*that which is of God*) which God measures of us (representing absolute reality of events as viewed by God in His $\acute{S}$ time frame of reference which we can call God time frame of reference) is like we looking through a lens or a mirror or a crystal or precious stones whose focus power is w_g which is what God measures of us. We will be able to see clearly through this crystal when γ^2 is truly 1(interpretations means when we are truly one with God) that is when u is infinite (interpretations means when God is glorified) that is when our observation v_g becomes equal to his observation w_g (interpretations means when we truly see things the way God sees things). This is when we have truly reflected God's image in our life for we are created in his own image. This is what exactly $\dfrac{1}{w} = \dfrac{1}{v} + \dfrac{1}{u}$ is telling us about.

But as γ^2 is truly not one in our time frame of reference we can only see his Glory through a glass darkly but the more we see God through Christ, through his word and his Spirit the more we are transformed into his image as $\dfrac{1}{w} = \dfrac{1}{v} + \dfrac{1}{u}$ for confirmations see 2 Corinthians 3 *vs*. 18.

Time dilation

Consider a clock $\dot{t}$ in $\acute{S}$ frames of reference moving with a velocity u_g wrt to S frames. The observer in S frame of reference measures $\dot{t}$ as t in his reference frame according to the equation:

$$\dot{t} = j\frac{t - u_g x}{\sqrt{\dfrac{c^2}{u^2} - 1}}$$ since we are measuring this time at a

particular point in space, we can set x=0

So, we have $\dot{i} = j\dfrac{t}{\sqrt{\dfrac{c^2}{u^2} - 1}}$ this is the time wavefunction

or state describing this event using the language of Quantum

Mechanics. We rewrite as $t = -ji\sqrt{\dfrac{c^2}{u^2} - 1}$ the complex

conjugate of this is $t^* = ji^*\sqrt{\dfrac{c^2}{u^2} - 1}$ so we can find the

probability amplitude for this event as follows:

$$\langle t^*|t\rangle = t^* t = |t|^2 = ii^*\left(\frac{c^2}{u^2} - 1\right) = |i|^2\left(\frac{c^2}{u^2} - 1\right)$$ if u=c then

the probability amplitude $\langle t^*|t\rangle = o$ meaning in the language of Quantum mechanics this event can't happen because the probability $|\langle t^*|t\rangle|^2 = o$ so as an inertia object approaches the speed of light the probability of it reaching this speed decreases to zero as time also runs down to zero.

However, for an object that is not an inertia object (an object in this new coordinate system) this is possible and we use the complex quantity directly as $t = -ji\sqrt{\dfrac{c^2}{u^2} - 1}$ so every $\dot{t}$ measured with a clock by an observer in $\dot{s}$ frames of reference moving with a velocity $u_g = c_g$ wrt to S frames is measured by an observer in the S frame of reference as t = 0.

Interpretation: Time behaves to an observer in S frame of reference as a single point in time and acts as a position basis meaning we have control over our movement in time.

However, if u=0 then the probability amplitude $\langle t^*|t\rangle = o$ infinite meaning in the language of Quantum mechanics this event can't happen because the probability $|\langle t^*|t\rangle|^2 =$ infinite so an inertia object cannot absolutely come to rest because the probability of it coming to rest increases to infinity as time also runs down to infinity.

However, for an object that is not an inertia object (an object in this new coordinate system) this is possible and we use the complex quantity directly as $t = -ji\sqrt{\dfrac{c^2}{u^2} - 1}$ so

every $\dot{t}$ measured with a clock by an observer in $\acute{S}$ frames of reference moving with a velocity u_g = infinity wrt to S frames is measured by an observer in the S frame of reference as t = infinity.

However, if $u = nc$ which an integral multiple of the speed of light then the probability amplitude $\langle t^*|t\rangle$ becomes proportional to $\dfrac{1}{n^2} - 1$. Meaning $\langle t^*|t\rangle \leq 0$ for $n \geq 1$ in the language of Quantum mechanics this event can't happen when $n = 1$ as we have shown earlier but when $n > 1$ and $ii^* = 1$ that is impossibility becomes possible also known as normalization in the $\dot{s}$ frame of reference or the God frame of reference $\langle t^*|t\rangle < 0$ and $0 < |\langle t^*|t\rangle|^2 < 1$ as long as n do not tend to infinity. This result is the correct definition of probability. So, impossibility has become a possibility.

So, there is a possibility that an inertia object can travel at an integral multiple of the speed of light provided the one who make impossibility possible makes $ii^* = 1$.

However, for an object that is not an inertia object (an object in this new coordinate system) this is possible and we use the complex quantity directly as $t = -ji\sqrt{\dfrac{c^2}{u^2} - 1}$ so every $\dot{t}$ measured with a clock by an observer in $\acute{S}$ frames of reference moving with a velocity $u_g = 1/nc$ wrt to S frames is measured by an observer in the S frame of reference as

$t = i\left(1 - \dfrac{1}{n^2}\right)$. Let's rewrite this equation as follows

$t_i = i_i\left(1 - \dfrac{1}{i^2}\right)$ ------(*) now we choose the indices $i = n$ and i = m to represent 2 points on a timeline

So, equation (*) becomes 2 equations:

$$t_n = \dot{i}_n\left(1 - \frac{1}{n^2}\right) = \text{ and } t_m = \dot{i}_m\left(1 - \frac{1}{m^2}\right)$$

$$\Delta t = t_m - t_n = \dot{i}_m\left(1 - \frac{1}{m^2}\right) - \dot{i}_n\left(1 - \frac{1}{n^2}\right).$$ If $\dot{i}_m = \dot{i}_n\dot{i}$ that

is $\Delta \dot{i} = 0$ which is a timepoint or eternity in the $\acute{s}$ frames of reference or the God frame of reference which only can be made possible by the one who makes impossibility possible then:

$$\Delta t = \dot{i}\left(\frac{1}{n^2} - \frac{1}{m^2}\right)$$ which represents a timeline in S frame

of reference.

This is related to the familiar line spectrum of light formula that shows the relationship between various energy levels in the atom as shown below:

$$\frac{1}{\lambda} = R\left[\frac{1}{n_f^2} - \frac{1}{n_i^2}\right]$$

Where,

λ = wave length

R = Ryderg Constant

n_f = final orbit

n_i = initial orbit

So $\dot{i}$ must analogously be a constant and $\Delta t = 1/\lambda$ and λ is the photon of light emitted or absorbed along the temporal coordinate while n and m are the Principal Quantum number denoting the energy level of the non-inertia objects in the S frame of reference.

So, a non-inertia objects can be excited to a higher energy level by absorbing a photon of light along the temporal coordinate or be deexcited by losing energy in terms of this photon of light along the temporal coordinate and move to a lower energy level.

However, it does this in quantum jumps and not in continuous form reason for the spectra we observed above. The ground state is $n = 1$ and this is the lowest or first state of eternity when $u = c$ (when observer in S becomes or draws closer to God) yet in this state γ^2 is still not equals to 1 as we have shown previous. However, as n increases we move to a higher excited state beyond $n = 1$ that is when $u = nc$ we get to higher state of eternity and as such γ^2 becomes closer and closer to 1. When n tends to infinity which is the ionization energy level that is when u tends to infinity the equation becomes:

$|t|^2 + |\dot{i}|^2 = 0$ meaning the sum of the probability of our time and His time is a singularity in eternity time and as such we can see it is zero for an inertia object meaning we can never comprehend in time and in eternity how this can be possible.

However, for a non-inertia object this is possible as t becomes $\dot{i}(t = \dot{i})$ or $\Delta t = \Delta \dot{i} = \alpha$

Interpretation: The only suitable explanations to the above is found in the scriptures.

We understand that u becoming closer and closer to infinity means one getting closer and closer to God. From our results if $u = nc$ and $n = 1$ we get to the lowest level of eternity which is only possible because $\dot{i}\dot{i}^* = 1$ or $|\langle \dot{i}^* | \dot{i} \rangle|^2 = 1$ this is the salvation that our Lord Jesus has made possible through his death, burial and resurrection. So, everyone who believes in the Gospel of our Lord Jesus Christ has been translated from the state where $n \leq 0$ to the redemption state $n = 1$, the state of light or truth.

However, from the spectrum of light formula $\Delta t = \dot{i}\left(\dfrac{1}{n^2} - \dfrac{1}{m^2}\right)$, he needs to absorb the photon of light

along the temporal axis which is the Rhema of the word of God from the scriptures so he can be excited to a higher energy level so he becomes closer and closer to God so γ^2 becomes closer and closer to 1 so $\dfrac{1}{w} = \gamma^2\left(\dfrac{1}{v} + \dfrac{1}{u}\right)$ becomes closer and closer to $\dfrac{1}{w} = \dfrac{1}{v} + \dfrac{1}{u}$ which is the mirror or lens formula in which our perspective v_g becomes closer and closer to his perspective w_g so we can reflect his image and Glory. So, our live becomes a mirror that reflects his life or Glory.

This is the original purpose while God created man so we can continue to have fellowship with him in time and in eternity. (Genesis 1 *vs.* 26).

Also, we see that it is only God that can make an inertia observer (a mortal man) to become a non-inertia observer (an immortal man) through the power of his resurrection and salvation $\left|\langle \dot{i}^* | \dot{i} \rangle\right|^2 = 1$.

Also, just as it is possible for a deexcitation to occur so is it possible for one to fall or lose his salvation ($n = 1$) so there is no eternal security for any one that continues in sin.

We can see that it is sin that cause one to be deexcited and as $n \leq 0$ so one loose his salvation and become an ordinary man ($n = 0$) and if he continues in sin that is continues to be deexcited his n becomes more and more negative and he gets farther and farther away from God and become closer and closer to the Devil.

Also, we observe that only the observer in the $\acute{S}$ frames of reference which is the God frame of reference can move with $u = $ infinity which is n tends to infinity which is the ionization state when $\Delta t = \Delta \dot{i} = \alpha$ and $|t|^2 + |\dot{i}|^2 = 0$ which we as human cannot comprehend in time or in eternity. Only Jesus Christ who is the image of the invisible God perfectly described this state where His Δt is united equal with God's $\Delta \dot{i}$ and have been with God from eternity past to eternity future. He is the only one whose γ^2 has truly become 1 and he is the absolute definition of perfection and all goodness in which words are not enough to describe is Glory because he perfectly reflects $\dfrac{1}{w} = \dfrac{1}{v} + \dfrac{1}{u}$ God's nature because Christ perspective v_g is not different from God's perspective w_g ($v_g = w_g$).

Length contraction

Consider a ruler $\dot{x}$ in $\dot{s}$ frames of reference moving with a velocity u_g wrt to S frames. The observer in S frame of reference measures $\dot{x}$ as x in his reference frame according to the equation:

$\dot{x} = j\dfrac{x - \dfrac{v_g}{c_g^2}t}{\sqrt{\dfrac{c^2}{v^2} - 1}}$ since we are measuring this length at a

particular point in time, we can set $t = 0$.

So, we have $\dot{x} = j\dfrac{x}{\sqrt{\dfrac{c^2}{u^2}-1}}$ this is the length wavefunction or state describing this event using the language of Quantum Mechanics. We rewrite as $x = -j\dot{x}\sqrt{\dfrac{c^2}{u^2}-1}$ the complex conjugate of this is $x^* = -j\dot{x}\sqrt{\dfrac{c^2}{u^2}-1}$ so we can find the probability amplitude for this event as follows:

$\langle x^*|x\rangle = x^*x = |x|^2 = \dot{x}\dot{x}^*(\dfrac{c^2}{u^2}-1) = |\dot{x}|^2(\dfrac{c^2}{u^2}-1)$ if u = c then the probability amplitude $\langle x^*|x\rangle = 0$ meaning in the language of Quantum mechanics this event can't happen because the probability $|\langle x^*|x\rangle|^2 = 0$ so as an inertia object approaches the speed of light the probability of it reaching this speed decreases to zero as space also runs down to zero.

However, for an object that is not an inertia object (an object in this new coordinate system) this is possible and we use the complex quantity directly as $x = -j\dot{x}\sqrt{\dfrac{c^2}{u^2}-1}$ so every $\dot{x}$ measured with a ruler by an observer in $\dot{s}$ frames of reference moving with a velocity $u_g = c_g$ wrt to S frames is measured by an observer in the S frame of reference as $x = 0$.

Interpretation: Space behaves to an observer in S frame of reference as a single point in Space and acts as a position basis meaning we have control over our movement in space which is what we experienced in our physical reality.

However, if u = 0 then the probability amplitude $|\langle x^*|x\rangle| =$ infinite meaning in the language of Quantum mechanics this event can't happen because the probability $|\langle x^*|x\rangle|^2 =$ infinite so an inertia object cannot absolutely come to rest because the probability of it coming to rest increases to infinity as space also runs down to infinity.

However, for an object that is not an inertia object (an object in this new coordinate system) this is possible and we use the complex quantity directly as $x = -j\dot{x}\sqrt{\dfrac{c^2}{u^2}-1}$ so every $\dot{x}$ measured with a ruler by an observer in $\dot{s}$ frames of reference moving with a velocity $u_g =$ infinity wrt to S frames is measured by an observer in the S frame of reference as $x =$ infinity.

Interpretation: Space behaves to an observer in S frame of reference as a spaceline (space with infinite points) in which Space acts as a time basis meaning we do not have control over our movement in space.

However, if u = nc which is an integral multiple of the speed of light then the probability amplitude $x^*|x$ becomes proportional to $\dfrac{1}{n^2}-1$. Meaning $\langle x^*|x\rangle \leq 0$ for ≥ 1 n in the language of Quantum mechanics this event can't happen when n = 1 as we have shown earlier but when >1 and $\dot{x}\dot{x}^* = 1$ that is impossibility becomes possible also known as normalization in the $\dot{s}$ frame of reference or the God frame of reference $\langle x^*|x\rangle < 0$ and $0 < |\langle x^*|x\rangle|^2 < 1$ as long as n do not tend to infinity. This result is the correct definition of probability. So, impossibility has become a possibility.

So, there is a possibility that an inertia object can travel at an integral multiple of the speed of light provided the one who make impossibility possible makes $\dot{x}\dot{x}^* = 1$

However, for an object that is not an inertia object (an object in this new coordinate system) this is possible and we use the complex quantity directly as $x = -j\dot{x}\sqrt{\dfrac{c^2}{u^2}-1}$ so every $\dot{x}$ measured with a clock by an observer in $\acute{S}$ frames of reference moving with a velocity u_g = 1/nc wrt to S frames is measured by an observer in the S frame of reference as

$x = \dot{x}\left(1-\dfrac{1}{n^2}\right)$. Let's rewrite this equation as follows

$x_i = \dot{x}_i\left(1-\dfrac{1}{i^2}\right)$ ------(*) now we choose the indices i = n and i = m to represent 2 points on a timeline

So, equation (*) becomes 2 equations:

$x_n = \dot{x}_n\left(1-\dfrac{1}{n^2}\right)$ and $x_m = \dot{x}_m\left(1-\dfrac{1}{m^2}\right)$

$\Delta x = x_m - x_n = \dot{x}_m\left(1-\dfrac{1}{m^2}\right) - \dot{x}_n\left(1-\dfrac{1}{n^2}\right)$.

If $\dot{x}_m = \dot{x}_n = \dot{x}$ that is $\Delta\dot{x} = 0$ which is a space-point or eternity in the $\dot{s}$ frames of reference or the God frame of reference which only can be made possible by the one who makes impossibility possible then:

$\Delta x = \dot{x}\left(\dfrac{1}{n^2}-\dfrac{1}{m^2}\right)$ which represents a space-line in S frame of reference.

This is related to the familiar line spectrum of light formula that shows the relationship between various energy levels in the atom as shown below:

$$\dfrac{1}{\lambda} = R\left[\dfrac{1}{n_f^2}-\dfrac{1}{n_i^2}\right]$$

Where,

λ = Wave length

R = Rydberg constant

n_f = final orbit

n_i = Initial orbit

So $\dot{x}$ must analogously be a constant and $\Delta x = 1/\lambda$ and λ is the photon of light emitted or absorbed along the spatial coordinate while n and m are the Principal Quantum number denoting the energy level of the non-inertia objects in the S frame of reference.

So, a non-inertia objects can be excited to a higher energy level by absorbing a photon of light along the spatial coordinate or be deexcited by losing energy in terms of this photon of light along the spatial coordinate and move to a lower energy level.

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$|x|^2 + |\dot{x}|^2 = 0$ meaning the sum of the probability of our position and His position is a singularity in eternity space (meaning omnipresent or everywhere at the same time) and as such we can see it is as zero for an inertia object meaning we can never comprehend in space and in eternity space how this can be possible.

However, for a non-inertia object this is possible as x becomes $\dot{x}(\mathrm{x} = \dot{x})$ or $\ddot{\mathrm{A}}x = \ddot{\mathrm{A}}\dot{x} = \alpha$.

Interpretation: The only suitable explanations to the above is found in the scriptures.

We understand that u becoming closer and closer to infinity means one getting closer and closer to God. From our results if $u = nc$ and $n = 1$ we get to the lowest level of eternity which is only possible because $\dot{x}x = 1$ or $\left|\langle \overset{'}{x}{}^{*} | \overset{'}{x} \rangle\right|^2$ this is the salvation that our Lord Jesus has made possible through his death, burial and resurrection. So, everyone who believes in the Gospel of our Lord Jesus Christ has been translated from the state where $n \leq 0$ to the redemption state $n = 1$, the state of light or truth.

However, from the spectrum of light formula $\Delta x = \dot{x}\left(\dfrac{1}{n^2} - \dfrac{1}{m^2}\right)$, he needs to absorb the photon of light along the temporal axis which is the Rhema of the word of God from the scriptures so he can be excited to a higher energy level so he becomes closer and closer to God so γ^2 becomes

closer and closer to 1 so $\dfrac{1}{w} = \gamma^2(\dfrac{1}{v} + \dfrac{1}{u})$ becomes closer and closer to $\dfrac{1}{w} = \dfrac{1}{v} + \dfrac{1}{u}$ which is the mirror or lens formula in which our perspective v_g becomes closer and closer to his perspective w_g so we can reflect his image and Glory. So, our live becomes a mirror that reflects his life or Glory.

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Also, we see that it is only God that can make an inertia observer (a mortal man) to become a non-inertia observer (an immortal man) through the power of his resurrection and salvation $\left|\langle \overset{'}{x}{}^{*} | \overset{'}{x} \rangle\right|^2$.

Also, just as it is possible for a deexcitation to occur so is it possible for one to fall or lose his salvation ($n = 1$) so there is no eternal security for any one that continues in sin.

We can see that it is sin that cause one to be deexcited and as $n \leq 0$ so one loose his salvation and become an ordinary man ($n = 0$) and if he continues in sin that is continues to be deexcited his n becomes more and more negative and he gets farther and farther away from God and become closer and closer to the Devil.

Also, we observe that only the observer in the $\acute{S}$ frames of reference which is the God frame of reference can move with $u =$ infinity which is n tends to infinity which is the ionization state when $\ddot{\mathrm{A}}x = \ddot{\mathrm{A}}\dot{x} = \alpha$ and $|x|^2 + |\dot{x}|^2 = 0$ which we as human cannot comprehend in space or in eternity space. Only Jesus Christ who is the image of the invisible God perfectly described this state of omnipresence where His Δx is united equal with God's $\Delta \dot{x}$ and he dwells in God who dwelleth in eternity dwelling in Light were no one can approach. He is the only one whose γ^2 has truly become 1 and he is the absolute definition of perfection and all goodness in which words are not enough to describe is Glory because he perfectly reflects $\dfrac{1}{w} = \dfrac{1}{v} + \dfrac{1}{u}$ God's nature because Christ perspective v_g is not different from God's perspective $w_g (v_g = w_g)$.
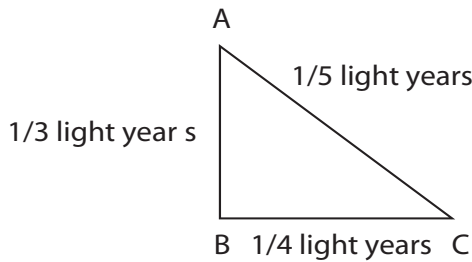
Causality

Consider the events happening in the Minkowski space-time as shown below:

A

5 light years

3 light years

B   4 light years   C
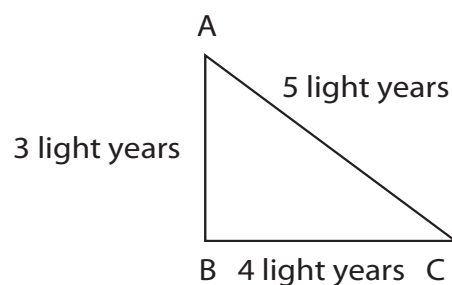
By the triangle inequality AB + BC > AC. If the vector AB represent the cause and the vector BC represents the effect then cause precedes effect as we observe in our physical reality.

A

1/5 light years

1/3 light year s

B   1/4 light years   C

Using the Abrahamic transformation, we have the following diagram:

By the triangle inequality AB + BC > AC but AB > BC > AC. If the vector AB represent the cause and the vector BC represents the effect then effect precedes cause meaning what happens in our physical reality (as cause and effect) has already been effected in this new system of coordinate.

It is only God that has the power to effect something now that will happen in the future.

And also, as we align our perspective v_g with his perspective w_g we can be made to effect in time now what we happen in the future through the word of prophecy as we align ourselves to his word and his will.

Anything that doesn't align to his word is not the will of God so the ultimate goal of man is to align to his will which can be seen through his word.

The more we align to his will the more God effects in time what will happen in the future which is yet to happen and through faith we can bring into our present what we desire or what is yet to happen in the future through faith in his word as Enoch walked with God and brought into his experience in his present time and reality the rapture of the saints which God has promised to all his people who are waiting for his eminent return in purity.

Simultaneity

Consider the following transformations $\dot{t} = j \dfrac{t - u_g \mathrm{x}}{\sqrt{\dfrac{c^2}{u^2} - 1}}$

if a simultaneous event in S frames of reference happens at the same time($t = 0$) and at the same place ($x = 0$) is it also simultaneous for an observer in S' frame of reference, we answer this by putting $x = 0$ and $t = 0$ we have:

$t' = 0$ which means all events that are simultaneous for one observer are simultaneous for all observers.

It means there is no events that happens by coincidence that is not known by God. So, the observer in the S' frame of

reference can cause an event to happen by coincidence in our frame of reference so it works in our favour or for our good. He knows how to arrange situations and circumstances to work in our favour as along as we work in his ways and will. That is, He is the only one that can set $t' = 0$ and $x' = 0$.

Four vectors

We will however consider 2 vectors (x_1, x_1) for simplicity: Let $\beta = \dfrac{c}{u}$ and $x_0 = \dfrac{x}{c}$ and $x_1 = t$ and $\dot{x}_o = \dfrac{t - \beta x_0}{\sqrt{\beta^2 - 1}}$ and $\dot{x}_1 = \dfrac{t - \beta x_0}{\sqrt{\beta^2 - 1}}$ and $\Delta S^2 = \dot{x}_0^2 - \dot{x}_1^2$ which on simplifying becomes $x_0^2 - x_1^2$ which is the new Lorentz invariance.

Proper space

$$\Delta S^2 = x_0^2 - x_1^2 = (\frac{x}{c})^2 - t^2 = \frac{x^2}{c^2} - t^2 = \frac{x^2}{c^2}(1 - \frac{c^2 t^2}{x^2}) =$$

$$\frac{x^2}{c^2}(1 - \frac{c^2}{u^2}) \ \Delta S \ = \frac{x}{c}\sqrt{1 - \frac{c^2}{u^2}}$$

$$c\Delta S = \pm j \ \mathrm{x}\sqrt{\frac{c^2}{u^2} - 1} \ = \pm \frac{x}{\gamma} = \tau$$ which is the proper space

operator state or wave function whose modulus is invariant and it is the space which you measure as the probability amplitude $\left\langle \tau^* | \tau \right\rangle = \tau^* \tau = |\tau|^2 = xx^*(\frac{c^2}{u^2} - 1) = |x|^2 (\frac{c^2}{u^2} - 1)$ in your frame of reference (as the ruler clock moves with you).

The probability $|\left\langle \tau^* | \tau \right\rangle|^2$ is proportional to the square of $(\frac{c^2}{u^2} - 1)$ and becomes exactly its square when the probability of the state of the system space wave function is normalized or $|x|^2 = 1$. The proper space wave function is invariant and as such every observer in the universe we agree to these measurements.

Four momentum vector and dark matter

For simplicity we shall consider 2-momentum vector $P = m_g (\frac{x_0}{\tau}, \frac{x_1}{\tau})$ where

$$p_0 = \frac{m_g x}{\tau c} \ and \ p_1 = \frac{m_g t}{\tau}$$ recall that $\frac{x}{\tau} = -\gamma$ so $p_0 = -\frac{m_g}{c}\gamma$ and $p_1 = -\frac{m_g}{u}\gamma$

By Binomial expansion

$$\gamma = j(\frac{c^2}{u^2} - 1)^{-\frac{1}{2}} = -(1 - \frac{c^2}{u^2})^{-\frac{1}{2}} = -(1 + \frac{c^2}{2u^2} + ...)$$

So $p_0 = \frac{m_g}{c}(1 + \frac{c^2}{2u^2} + ...) = = \frac{m_g}{c} + \frac{m_g c}{2u^2}$ if you divide p_0 / c you will have:

$$\frac{p_0}{c} = \frac{m_g}{c^2} + \frac{m_g}{2u^2} + ...$$ If we perform an inverse

Abrahamic transform, we realize that $\frac{m_g}{c^2}$ is equivalent to Δm from Einstein's mass-energy equation $\Delta E = \Delta mc^2$ which means ΔE *is the inverse transform of m_g* under the Abrahamic transformation.

So, the component of the momentum along the space coordinate axis p_0 is nothing but the mass of the wavefunction.

Also $p_1 = \frac{m_g}{u}(1 + \frac{c^2}{2u^2} + \ldots\ldots) = \frac{m_g}{u} + \frac{m_g c^2}{2u^3}$ if you set $u = c$

then $p_1 = \frac{m_g}{c} + \frac{m_g}{2c}$ using the proper inverse transformation $= \frac{m_g}{c} = \frac{\Delta E}{c^3}$ which is the Energy Density in a volume of time.

This results shows us that *the components of the momentum along the time coordinate axis p_1* must be the Energy density in space which leads us to the results that time is 3-Dimensional as space is.

This shows that the universe can be sufficiently described as 3-D space and 3-D time under the Abrahamic Group of transformations which has an internal Poincare group of transformations that preserves the interval of Space and Time in the universe.

Another implication is that the universe is Geometrically Dynamical and a dual transformation of Minkowski and Hilbertian Space-Time.

Let's consider the value of the quantity

$$\Delta p^2 = p_0{}^2 - p_1{}^2 = (\frac{m_g}{c}\gamma)^2 - (\frac{m_g}{u}\gamma)^2 = m_g{}^2 \frac{1}{(\frac{c^2}{u^2}-1)}(\frac{1}{c^2} - \frac{1}{u^2})$$

upon simplifications we have: $\Delta p^2 = -m^2 c^2$

which gives 2 solutions $\Delta p = jmc$ and $\Delta p = -jmc$ this again shows that momentum is a complex quantity in the Hilbert Space-time coordinate system.

Δp^2 is an invariant quantity under the new Lorentz transformations as expected.

Using this equation, we derived the total energy of the system as follows:

$$p_0 = \frac{m_g}{c} + \frac{m_g c}{2u^2} + \ldots\ldots\ldots\ldots\ldots$$

As u tends to infinity or higher multiples of the speed of light (which is travelling to the limit of the universe), the spatial component of the momentum $p_0 = \frac{m_g}{c} = \frac{\Delta E}{c} = \Delta m$ is a mass term which is the total possible mass in the universe.

At the same time as u tends to infinity or higher multiples of the speed of light, the temporal component of the momentum

$p_1 = \frac{m_g}{u} + \frac{m_g c^2}{2u^3} + \ldots\ldots\ldots = 0$. Meaning there is no momentum component along the temporal coordinate when we reach the limit of the universe.

Interpretations: Since the momentum component along the temporal coordinate represents the Energy density in the universe $\frac{\Delta E}{c^3}$ which tends to zero when we reach the limit of the universe, meaning all energy and matter processes involving the emission of light vanishes.

So, the only component of momentum left is the mass term which is distributed along the spatial coordinate and it is the Dark matter component of the universe.

Recall we got 2 solutions for the total invariant momentum in the universe $\Delta p = jmc$ and $\Delta p = -jmc$ as a complex quantity. The complex nature indicates the reason why Dark matter have proved difficult to be detected by astronomical telescopes.

Also, the 2 solutions show Dark matter has it antiparticle partner just as ordinary matter.

The total relativistic energy and dark energy

$$\Delta p^2 = p_0{}^2 - p_1{}^2 = (\frac{E}{c})^2 - (p^2) = -m^2 c^2$$

$$E^2 = (pc)^2 + m^2 c^4$$

If we set the total momentum along the temporal coordinate $p = 0$ we obtain the following solutions:

$E^2 = -m^2 c^4$ which becomes $E = \pm jmc^2$ which is the rest energy in time or temporal coordinates.

According to Einstein general theory of relativity, The Gravitational fields energy experienced by the celestial bodies in the cosmos is as a result of the time component of the Stress-Energy momentum which cause the universe to shrink as it collapses as time passes. However, this is not so because there is a rest energy $E = \pm jmc^2$ which doesn't depend on a translation in time but constantly cause the universe to expands. This energy as we can see is a complex quantity and cannot be detected experimentally directed with our devices.

This energy is the Dark energy which is the reason behind the expansion of the universe after it was created by the word of God and as we can see has its antiparticles.

In Einstein theory the total relativistic energy is

$$E^2 = (pc)^2 + m^2 c^4$$

The former equation shows a reduction in the total amount of energy and matter distributed in the universe than the actual amount predicted by Einstein theory which is as a result of the Dark Matter and Dark Energy we discussed earlier.

If we set $m = 0$ we see that the actual mass and energy we measure $E^2 = (pc)^2$ comes from the visible matter around us radiating their matter and energy in form of photons of light.

Quantum mechanical nature of the Minkowski-Hilbert coordinate

Consider the Minkowski-Hilbert system below: In this

coordinate we do not have control over our movements in space as we always move in space. So, space acts as a clock that ticks out intervals from point to point. We will introduce the unit of this interval as λ = h which is equal to the Planck's length so that all movement along this clock will be an integral multiple given by $n \lambda = nh$. To convert this unit interval to its equivalent in time we divide it by the speed of light $v = \dfrac{h}{c}$ this is Planck's time.

Recall that the proper space $\tau = \pm \dfrac{x}{\gamma}$ this is an invariant quantity so $\tau = nh$ since h is constant and n depends on u in γ.

Also Recall the proper momentum $\Delta p = \pm jmc^2$ is also an invariant quantity.

Multiplying the 2 invariant quantity we $\Delta p \; \tau$ which is also an invariant quantity depending on γ which depends on u = nc.

Now consider an interval in the spatial coordinate Δx measured by an observer in this coordinate an equivalent time Δt can be measured by the observer by transforming Δx into using the transform $\Delta t = \dfrac{\Delta x}{c}$.

The space-time diagram representing this event will be sinusoidal line or wavy curve going through a circle or a fixed length with radius $r = \Delta x/2$ along the spatial or temporal coordinate. The invariant length Δs along this path is given by $\Delta s = 2\pi r = n\lambda = nh.$

So, $r = nh/2\pi$. Converting the unit to the seconds in this system we divide $r/c = nh/2\pi c$.

Also note along the spatial axis the component of the momentum is a mass term so we again divide $r/m = nh/2\pi mc$.

This quantity is our proper space so $\Delta p \; \tau = \Delta p \; \Delta x = n \pm h/2\pi$

which is the familiar Heisenberg uncertainty principle in Quantum Mechanics with its minimum when $n = 1$.

The reason why the path is a sinusoid is to avoid the component of motion along the path tangential to the spatial and temporal coordinate which would lead to infinite velocity and infinite rest. This gives us an astonishing fact that the universe is composed of tiny strings vibrating without rest with definite frequencies and energy with its mass component along the spatial coordinate and its energy density components along the temporal coordinates avoiding infinities. This is in agreements to the superstring theory which is a necessity to avoid infinities in higher energy scales beyond the Standard Model of Particle physics.

We can see that this new framework readily avoids the infinities encountered in the framework of Quantum Field theory describing the general theory of relativity.

If the theory does not want to incorporate gravity, then the space-time diagram must be a straight line through a path in

between the spatial and temporal coordinates representing a uniform velocity of motion which is enough for the Quantum field theory but the moment the space-time diagram becomes curved it must of necessity vibrates sinusoidally like a string to avoid the infinities as it transverse the spatial and the temporal components of its motions.

So, it could be in loops or wounded up in a compactified space-time described by the various topological Manifolds in string theory.

Also, since the path is curved its shows the path of the space-time is curved and according to special relativity this is an accelerated reference frame. Since the vibration is uniform and harmonics the accelerated reference frames is uniform and by the principle of equivalence in the General theory of relativity this is equivalents to a uniform gravitational system.

The bosonic mechanism

According to Quantum Mechanics all states can be derived from superposition of basis states which are orthogonal to each other.

Since the component of the momentum along the spatial coordinate represents a mass term and the component of the momentum along the temporal coordinate represents an energy density term. We define a basis Quantum field states with a potential which is a function of spatial coordinate alone and another basis Quantum field states with a potential which is a function of the temporal coordinate alone. So, we used to have 6 of this Quantum field states all Orthogonal.

We now couple to every particle in the universe this 6 Quantum field states so we can completely describe their Quantum fields.

Particles or Quantum fields that moves solely along the temporal coordinates system will acquire energy density by the 3 Quantum basis states in the 3-dimensional temporal system and also massless as none of their components moves along the spatial components.

These particles are the Bosons discovered in the Quantum field theory of the standard model and interacts for a longer length of time and a longer interval of space in the Minkowski Space-time with other particles. The photon in the Quantum Electrodynamics is a candidate for this quantum fields and communicates it electromagnetic force between charged objects.

Particles or Quantum fields that moves solely along the spatial coordinates system will acquire mass by the 3 Quantum basis states in the 3-dimensional spatial system which undoubtedly must be the Higgs particle or fields which gives mass to every particle it is interacting with.

For a Boson to acquire mass it must slightly have a component of its motion along the spatial coordinate by so

doing it initial path will now be bent along like a curve thereby shortening the length of time in which it interacts with other particles and a shorter interval of space within which it interacts with other particles.

The Fermions and the Hadrons which moves along the spatial coordinate because they have mass or massive still bend slightly towards the temporal coordinate to acquire energy density which enables them to be charged in Quantum Electrodynamics or coloured in Quantum Chromodynamics.

The Gluons are the bosons that communicate the strong nuclear force between the Quarks fields or particles within the Hadrons.

The origin of the universe

As a Christian I belief that the origin of the universe began when God spoke into existence all that we now know and see as the visible universe.

Out of nothing he created what we now see, all the various laws of physics we have discussed here was created by him for the Glory of his Holy name.

Whatever processes occurred during the creation is what we now observe and use scientific investigations and theories to gain an insight into what happened.

Summary and conclusion

We conclude this work with this quote giving by Ramanujan: Any equation that doesn't express the thought of God his incorrect.

As a Christian I believe any theory that doesn't support the bible is bound to be done incorrectly.

Dedication

This research work is dedicated to the Almighty God who is the source of all wisdom, knowledge and understanding without which this work will not have been possible. I say may his Holy name be glorified.

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