

The Incompatibilities Between Quantum Field Theory And Einstein's General Relativity Interpreted By Yangton And Yington Theory As A Unified Field Theory

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Abstract

Quantum Gravity Theory fails in the prediction of graviton as the carrier of remote gravitational force (Newton's Universal Gravitation applying to Einstein's General Relativity) mainly because of the incompatibilities between Newton's Universal Gravitation and Quantum Field Theory. According to Yangton and Yington Theory, Newton's Universal Gravitation is a long range remote gravitational force made of a group of String Forces with adjustable circulation generated between a stationary graviton (gravitons) and an incident graviton (gravitons) from a distance through Graviton Radiation and Contact Interaction process. Newton's Universal Gravitation carries potential energy in reverse proportional to the distance between two gravitons (or groups of gravitons). It is different from that of the short range forces (quantum forces) such as electromagnetic force, weak force, strong force and short range gravitational force between two adjacent stationary particles, which carry energies (quantum energies) in normal distribution of the distance. Because electromagnetic force, weak force and strong force are all perturbatively renormalizable, therefore the infinitely many independent parameters produced by perturbation can be reduced to finite parameters through normalization, such that sensible solutions can be achieved and thus corresponding elementary subatomic particles can be predicted by Quantum Field Theory and Standard Model. On the contrary, remote gravitational force (Newton's Universal Gravitation) is perturbatively nonrenormalizable which results in irreducible infinitely many independent parameters, such that no sensible solution can be obtained and thus no graviton can be predicted by Quantum Gravity Theory.

According to Quantum Field Theory, it is assumed "The universe is made of various fields (forces) and with particles considered as the surges of fields". This is equivalent to the proposal based on Yangton and Yington Theory "The universe is composed of various forces including four basic forces between elementary subatomic particles, and String Forces between Wu's Pairs inside of the elementary subatomic particles, and with particles considered as the clusters of String Forces". Because of the similarities between Quantum Field Theory and Yangton and Yington Theory, all elementary subatomic particles associated with electromagnetic force, weak force and strong force except graviton and remote gravitational force, predicted in Standard Model based on Quantum Field Theory and Yang Mills Theory, should have counterparts with string structures made of Wu's Pairs bonded together by String Force induced from Force of Creation in Yangton and Yington Theory. As a result, Standard Model can serve as a guideline to construct all elementary subatomic particles except graviton, with string structures composed of Wu's Pairs bonded together by String Force based on Yangton and Yington Theory. Even though Standard Model fails in predicting graviton and gravitational force because of the incompatibilities between Einstein's General Relativity and Quantum Field Theory, gravitons associated with both long range remote gravitational force (Newton's Universal Gravitation) and short range gravitational force can be very well structured and interpreted by Yangton and Yington Theory. Furthermore, it is suggested that 125 GeV is the energy generated by String Force between two adjacent Wu's Pairs (indicating that Higgs Boson is Wu's Pair). Also, 4.8 TeV recently discovered in LHC data by Google AI, which do not fit within the Standard Model, is the interaction energy between Force of Creation and Yangton and Yington particles inside Wu's Pairs. As a result, all elementary subatomic particles including graviton have string structures composed of Wu's Pairs bonded together by String Forces, and also all four basic forces are composed of String Forces induced from Force of Creation. Therefore, it is believed that Yangton and Yington Theory is not only a Unified Field Theory, but also a theory of everything.

Keywords: *Quantum Field Theory, Subatomic Particle, Standard Model, Quantum Gravity Theory, String Theory, Unified Field Theory, General Relativity, Special Relativity, Spacetime, Einstein's Field Theory, Wu's Pairs, Force of Creation, String Force, String Structure, Four Basic Forces, Yangton and Yington Theory, Wu's Spacetime Transformation, Wu's Spacetime Equation, Wu's Spacetime Shrinkage Theory, Newton's Law of Universal Gravitation, Graviton, Graviton Radiation and Contact Interaction, Remote Gravitational Force, Graviton Flux*

I. Introduction

What is the reason that Quantum Field Theory and Standard Model as mathematical models can be used for the predictions of subatomic particles? Why gravity cannot be incorporated to Quantum Field Theory? What is graviton and gravitational force? Is there a physical model to represent subatomic particles? Is there a true Unified Field Theory? All these questions have bothered particle physicists in many decades. In this paper, all the above questions will try to be answered by Yangton and Yington Theory.

Standard Model

Standard Model [1] is a group of subatomic particles which is derived from a mathematical model based on Quantum Field Theory [2] and Yang Mills Theory [3]. Subatomic particles [1] are very much smaller than atoms. There are two types of subatomic particles: elementary particles, which according to current theories are not made of other particles, and composite particles which are made of elementary particles. Particle physics and nuclear physics study these particles and how they interact.

The elementary particles of the Standard Model (Fig. 1) include:

- Six flavors of quarks: up, down, bottom, top, strange, and charm.
- Six types of leptons: electron, electron neutrino, muon, muon neutrino, tau, tau neutrino.
- Twelve Gauge Bosons (force carriers): the photon of electromagnetism, the three W and Z Bosons of the weak force, and the eight gluons of the strong force.
- The Higgs Boson.

Various extensions of the Standard Model predict the existence of an elementary Graviton particle and many other elementary particles.

Composite subatomic particles such as protons or atomic nuclei are bound states of two or more elementary particles. For example, a proton is made of two up quarks and one down quark, a neutron is made of two down quarks and one up quark, while the atomic nucleus of Helium-4 is composed of two protons and two neutrons.

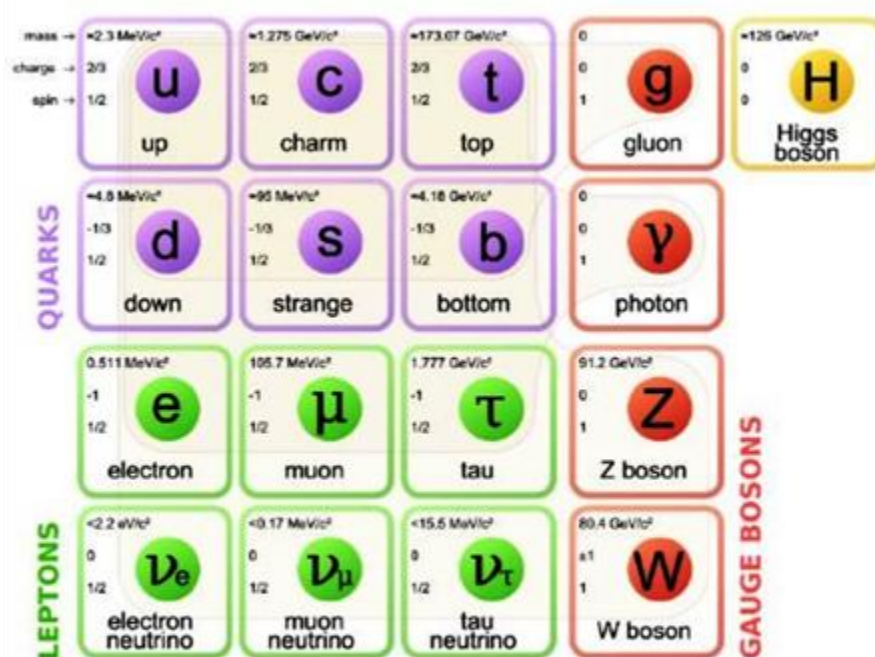


Fig. 1 The elementary particles of the Standard Model.

Yangton and Yington Theory

Yangton and Yington Theory [4] is a hypothetical theory based on a pair of superfine Yangton and Yington antimatter particles with built-in inter-attractive Force of Creation circulating against each other on an orbit. These pairs of Yangton and Yington circulating particles are named “Wu’s Pairs” which is considered as the building blocks of all matters in the universe.

Yangton and Yington Theory can successfully explain that elementary subatomic particles are composed of string structures built upon Wu’s Pairs with String Force in accordance to Quantum Field Theory [2] and String Theory [5]. Also, Four Basic Forces are composed of String Force induced from Force of Creation in compliance with Unified Field Theory [6].

Furthermore, Yangton and Yington Theory can bridge Quantum Theory with General Relativity [7], also interprets and correlates space, time, energy and matter in the universe. Therefore, it is believed that Yangton and Yington Theory is not only a Unified Field Theory but also a theory of everything.

Wu’s Pairs and Force of Creation

According to Space and Energy Correlated Five Principles of Universe [8], with the activation energy provided by Big Bang Explosion, a permanent Yangton and Yington circulating pair with an inter-attractive Force of Creation named “Wu’s Pair” (Fig. 2) can be formed from a temporary “Yangton and Yington Bubble”. These Wu’s Pairs are the building blocks (God’s Particles) of all matters in the universe.

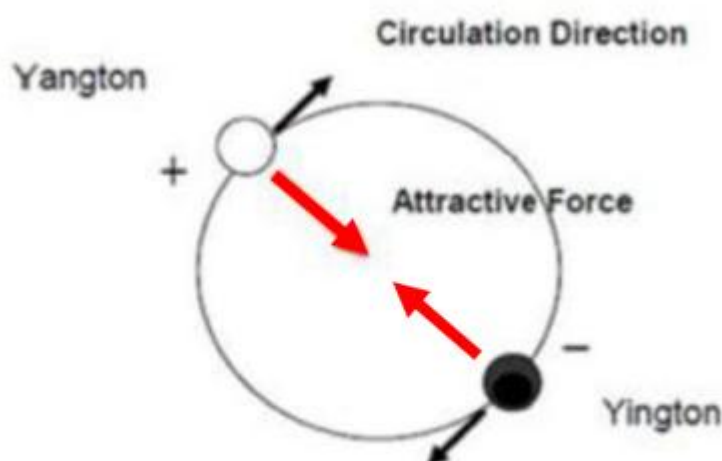
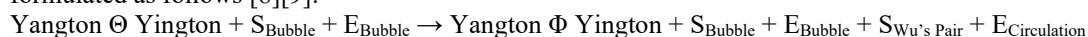


Fig. 2 Wu’s Pair - a Yangton and Yington circulating pair.

From a temporary Yangton and Yington Bubble to a permanent Wu’s Pair, the reaction process can be formulated as follows [8][9]:



Where Yangton \ominus Yington represents temporary Yangton and Yington Bubble. Yangton Φ Yington represents Wu’s Pair, a permanent circulating Yangton and Yington pair. S_{Bubble} is the corresponding space (Vacuum Space) generated by the Bubble and E_{Bubble} is the corresponding energy (Vacuum Energy) as Bubble’s internal energy generated by the interaction between Force of Creation and the corresponding space generated by the Bubble. $S_{\text{Wu's Pair}}$ is the corresponding space (Matter Space) generated by Wu’s Pair and $E_{\text{Circulation}}$ is the corresponding energy (Matter Energy) as Wu’s Pair’s circulation energy generated by the interaction between Force of Creation and the corresponding space created by Wu’s Pair.

String Structures and String Forces

Wu’s Pair [4] is a superfine Yangton and Yington Antimatter particle pair circulating on an orbit held by the inter-attractive Force of Creation between the two particles. When two Wu’s Pairs come together in the same circulation direction (both spin up or spin down), they stack up on each other at a locked-in position, where Yangton of the first Wu’s Pair lines up to the Yington of the second one due to the attractive force between Yangton and Yington particles. This induced force from Force of Creation between the two stacking Wu’s Pairs in the same circulation direction is called “String Force”. (There is no interaction between two stacking Wu’s Pairs in opposite circulation directions because of the cancellations of alternative attraction and repulsion forces between two stacking Wu’s Pairs). By repeating the stacking processes, strings (such as

gravitons), balls (such as electrons and positrons) and other related structures can be made of Wu's Pairs with string force. These are called "Basic String Structures" (equivalent to Elementary Subatomic Particles in Standard Model) (Fig. 3) [4]. Furthermore, "Compound String Structures" (equivalent to Composite Subatomic Particles in Standard Model) are composed of Basic String Structures (Elementary Subatomic Particles) with four basic forces, such as neutrons and protons with ring structures (Compound String Structures) made of Quarks and Gluons (Basic String Structures). As a result, all these string structures including basic string structures and compound string structures comply nicely with "String Theory".

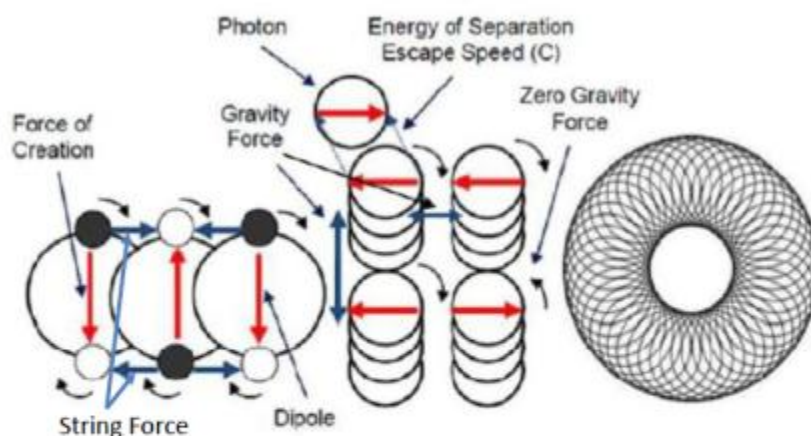


Fig. 3 Wu's Pairs stack up in a preferred direction by string force to form string and ring structures.

Quantum Field Theory versus Yangton and Yington Theory

According to Quantum Field Theory, it is assumed "The universe is made of a variety of fields (forces), with particles as the surges of fields". This is equivalent to the proposal based on Yangton and Yington Theory "The universe is composed of the fields of various forces including four basic forces between elementary subatomic particles and String Forces between Wu's Pairs with particles as clusters of String Forces". Because of the similarities between Quantum Field Theory and Yangton and Yington Theory, all elementary subatomic particles associated with electromagnetic force, weak force and strong force except graviton and remote gravitational force, predicted in Standard Model based on Quantum Field Theory and Yang Mills Theory, should have counterparts with string structures made of Wu's Pairs bonded together by String Force induced from Force of Creation based on Yangton and Yington Theory. As a result, Standard Model can serve as a guideline to construct all elementary subatomic particles except graviton, with string structures composed of Wu's Pairs bonded together by String Force based on Yangton and Yington Theory [10].

Standard Model versus Yangton and Yington Theory

Standard Model is a mathematical model involving Quantum Field Theory based on quantum mechanics and special relativity, and Yang Mills Theory based on non-abelian symmetry. Yang Mills Theory provides the foundation to the symmetry of Bosons (force particles) and their associated interactions (forces). Elementary subatomic particles such as Quarks, Electrons, Neutrinos, Photon, Gluons, W and Z Bosons and Higgs Boson, except graviton, subject to their structural symmetries and associated electromagnetic, weak and strong interactions (forces), can be successfully predicted by Standard Model and also detected by LHC.

In contrast, Yangton and Yington Theory is a realistic physical model of subatomic particles. It obeys Five Principles of the Universe and employs Wu's Pairs as the building blocks of all matters in the universe, which is a pair of superfine Yangton and Yington antimatter particles with built-in inter-attractive Force of Creation circulating against each other on an orbit. Because of the similarities between Quantum Field Theory and Yangton and Yington Theory, except Graviton and remote gravitational force (Newton's Universal Gravitation), a corresponding string structure composed of Wu's Pairs bonded together by String Force induced from Force of Creation can be successfully structured in accordance to each elementary subatomic particle derived from Standard Model and detected by LHC. For examples, graviton of linear shape string structure [10], quark of three threads shape string structure [11], electron and positron of ball shape string structure [10], and gluons of twisted shape structures [11]. In addition, quarks and their charges and colors [11], as well as gluons

and their symmetries [11] derived from Standard Model can also be interpreted by string structures based on Yangton and Yington Theory.

Even though, there are several discrepancies between Standard Model and Yangton and Yington Theory indicated as follows:

1. Graviton is unpredictable in Standard Model because of the incompatibilities between Quantum Field Theory and Newton's Universal Gravitation due to mathematical inconsistencies and infinite possible solutions. But, graviton and short range gravitational force (gravitational force between two adjacent stationary gravitons) can be constructed very well by Wu's pairs and String Forces based on Yangton and Yington Theory. However, because graviton has a flexible and asymmetrical structure with variable size, also gravitational force is extremely weak compared to other basic forces, therefore graviton and short range gravitational force cannot be detected by high energy LHC.
2. Photon and gluons have no mass in Standard Model, which based on Yangton and Yington Theory, may actually mean that they don't have either string structure or adjustable circulation in string structure. In contrast, according to Yangton and Yington Theory, all elementary subatomic particles including photon and gluons should have masses which are equivalent to the amount of Wu's Pairs in their structures. For examples, photon as a free Wu's Pair should have a mass equal to one single Wu's Pair (Wu Unit Mass) and Gluons should have masses dependent on the amount of Wu's Pairs in their structures.
3. In Standard Model, W^+ , W^- and Z bosons have large masses which can be converted to energy during particle transition process. But in Yangton and Yington Theory, they are considered as composite force particles containing elementary subatomic particles with four basic forces. For examples, W^+ boson contains positron and electron neutrino with weak force, W^- boson contains electron and electron antineutrino with weak force, and Z boson contains neutrinos with weak force.
4. Higgs Boson is equivalent to a single Wu's Pair (Wu Unit Mass). It can also be considered as one single Wu's Pair with one single String Force. In addition, Higgs Field can be interpreted as the distribution of Higgs Bosons in space, or the distribution of either String Forces or Wu's Pairs in space, or even the distribution of mass in space [75][12].

Furthermore, it is suggested that 125 GeV is the energy generated by String Force between two adjacent stationary Wu's Pairs meaning that Higgs Boson is actually Wu's Pair itself. Also, 4.8 TeV recently discovered in LHC data by Google AI, which do not fit within the Standard Model, is the interaction energy caused by Force of Creation and Yangton and Yington particles inside Wu's Pairs.

Incompatibilities of Quantum Gravity Theory

Quantum Gravity Theory failed in the prediction of graviton associated with remote gravitational force (Newton's Universal Gravitation in compliance with Einstein's General Relativity) mainly because of the incompatibilities between Newton's Universal Gravitation and Quantum Field Theory. According to Yangton and Yington Theory, Newton's Universal Gravitation is a long range remote gravitational force made of a group of String Forces with adjustable circulation generated between a stationary graviton (gravitons) and an incident graviton (gravitons) from a distance through Graviton Radiation and Contact Interaction process. Newton's Universal Gravitation carries energy in reverse proportional to the distance between two separate gravitons (groups of gravitons). It is different from that of the short range forces (quantum forces) such as electromagnetic force, weak force and strong force (also short range gravitational force) between two adjacent stationary particles, which carry quantum energies in normal distribution to the distance.

Because of these reasons, electromagnetic force, weak force and strong force are all perturbatively renormalizable, meaning that the infinitely many independent parameters produced by perturbation can be reduced to finite parameters through normalization, such that reasonable solutions can be achieved and thus corresponding elementary subatomic particles can be predicted by Quantum Field Theory and Standard Model. Also, on the contrary, remote gravitational force (Newton's Universal Gravitation) is perturbatively nonrenormalizable which results in irreducible infinitely many independent parameters, such that no sensible solution can be obtained and thus no graviton can be predicted by Quantum Gravity Theory. As a result, the incompatibilities between remote gravitational force (Newton's Universal Gravitation) and Quantum Field Theory assures that quantum gravity is mathematically inconsistencies and cannot be applied for the prediction of graviton and gravitational force.

String Theory versus Yangton and Yington Theory

Quantum Gravity Theory failed in the prediction of graviton associated with remote gravitational force (Newton's Universal Gravitation in compliance with Einstein's General Relativity) mainly because of the incompatibilities between Newton's Universal Gravitation and Quantum Field Theory. Remote gravitational force (Newton's Universal Gravitation) is a long range force made of a group of String Forces with adjustable circulation generated between a stationary graviton (gravitons) and an incident graviton (gravitons) from a

distance through Graviton Radiation and Contact Interaction process. Newton's Universal Gravitation carries energy in reverse proportional to the distance between two separate gravitons (groups of gravitons). It is different from electromagnetic force, weak force and strong force between two adjacent stationary particles, which carry energies in normal distribution to the distance. Because of these reasons, Newton's Universal Gravitation is perturbatively nonrenormalizable and thus no graviton can be predicted by Quantum Gravity Theory.

To solve this problem, String Theory [5] based on string particles instead of point particles is proposed. Even though, elementary subatomic particles including gravitons can be represented by various string vibration modes, however extra dimensions are needed in order to increase the symmetry, compact the amount of solutions and reduce the mathematical inconsistencies. As a consequence, this multi dimensional approach such as Calabi-Yau Manifold (Fig. 4) and M-Theory (11 Dimensions) [13] raises a big challenge in the reality of String Theory.

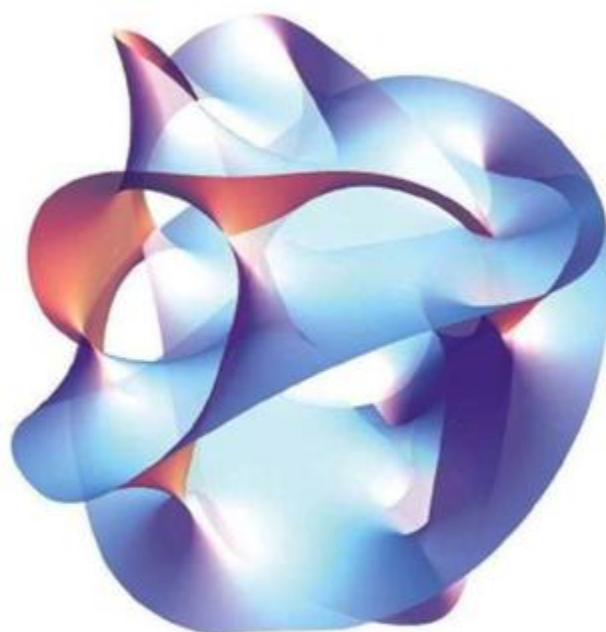


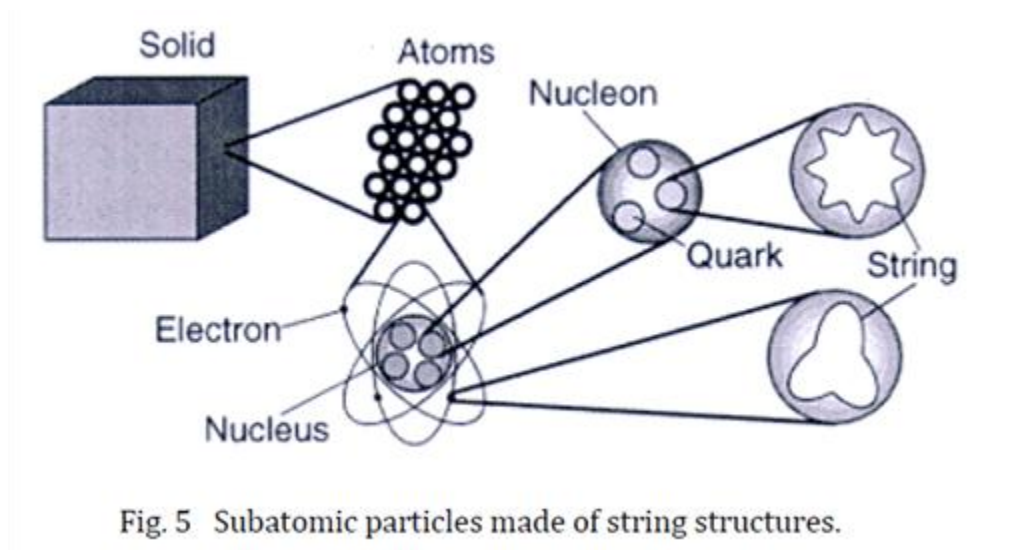
Fig. 4 A cross section of a quintic Calabi-Yau manifold.

On the other hand, string particles proposed by String Theory matches very well with the string structures in Yangton and Yington Theory. However, it doesn't really prove that string structure is the true structure of elementary subatomic particles or Yangton and Yington Theory is a true theory. It only helps to reduce the mathematical inconsistencies in Quantum Gravity Theory. The fundamental problem still remains which is the incompatibilities between Quantum Field Theory and Newton Universal Gravitation due to the wrong approach by adapting long range remote gravitational force between two distanced gravitons instead of short range gravitational force between two adjacent stationary gravitons.

Subatomic Particles and String Structures

According to Yangton and Yington Theory, all elementary subatomic particles including quarks, leptons, Gauge Bosons, gluons, photon, Higgs Boson and Graviton, have basic string structures composed of Wu's Pairs, the building blocks of all matters in the universe (Fig. 5), glued together by string forces induced from Force of Creation (Fig. 3).

In addition, all composite subatomic particles including neutron and proton, have compound string structures made of elementary subatomic particles (basic string structures) glued together by four basic forces including gravitational force, electromagnetic force, weak force and strong force composed of String Forces induced from Force of Creation.



More specifically, in compliance with Standard Model, Elementary Subatomic Particles could have basic string structures in a variety of shapes composed of Wu's Pairs bonded together by String Forces as follows:

1. Graviton – linear shape string structure [10].
2. Quark – three threads shape string structure [11].
3. Electron & Positron – ball shape string structure [10].
4. Gluon – twisted shape structure [11].
5. Neutrino – plate shape string structure [10].
6. Photon (free Wu's Pair) – point particle, an exception of string structure [10].

Also, Composite Subatomic Particles (compound string structures) composed of elementary subatomic particles (basic string structures) bonded together by four basic forces could have structures as follows:

1. Neutron contains 3 quarks (udd) and 3 gluons bonded together by strong force [10].
2. Proton contains 3 quarks (uud) and 3 gluons bonded together by strong force [10].
3. Proton contains Neutron, Positron and Electron Neutrino bonded together by weak force (Inverse Beta Decay) [10].
4. Neutron and Neutron pair bonded together by strong force [10].
5. Neutron and Proton pair bonded together by weak force and strong force [10].
6. Graviton and Graviton pair bonded together by gravitational force [10].
7. Electron and Electron, Positron and Positron, Electron and Positron pairs bonded together by electromagnetic force [10].
8. Gluon and close packed Quarks bonded together by strong force [14].

In Standard Model, W^+ , W^- and Z bosons have large masses which can be converted to energy during particle transition process. But in Yangton and Yington Theory, they are considered as composite force particles containing elementary subatomic particles with four basic forces. For examples, W^+ boson contains positron and electron neutrino with weak force, W^- boson contains electron and electron antineutrino with weak force, and Z boson contains neutrinos with weak force.

Graviton and Gravitational Force

Based on Yangton and Yington Theory, Wu's Pairs are the Building Blocks of the universe. When two Wu's Pairs come together with the same circulation direction (either spin up or spin down), they can stack up on each other at a locked-in position, where Yangton of one Wu's Pair lines up to the Yington of the other one due to the attractive string force between Yangton and Yington particles from each Wu's Pair. This attractive force is called "String Force". By repeating this stacking process, various linear structures can be formed such as single string, multiple strings and ball type strings, which complies with String Theory. The one dimension single string structure is named "Graviton".

When two stationary gravitons in the same object stay together side by side, no matter the circulation directions, they can adjust themselves so as to attract each other at the contact points by a group of alternating string forces generated between the Yangtons of one graviton and the Yingtons of the other graviton in each cycle of circulations. This process is called "Contact Interaction" and the group of attraction only alternating string forces generated between the two adjacent stationary gravitons in the same object is named "Gravitational

Force” (aka short-range gravitational force to differentiate from remote gravitational force aka Newton's Universal Gravitation) (Fig. 6).

All elementary subatomic particles have basic string structures such as quarks, leptons and bosons should carry gravitational forces. However, according to Standard Model, photon and gluons have zero mass, which based on Yangton and Yington Theory, may actually indicate that they have zero gravity instead of zero mass, due to the lack of either string structure or adjustable circulation in string structure. In fact, according to Yangton and Yington Theory, like any other matters in the universe, photon and gluons should have masses equivalent to the amount of Wu's Pairs in their structures. Therefore, photon as a free Wu's Pair should have a mass equal to one single Wu's Pair (Wu Unit Mass) and Gluons should have masses dependent on the amount of Wu's Pairs in their structures.

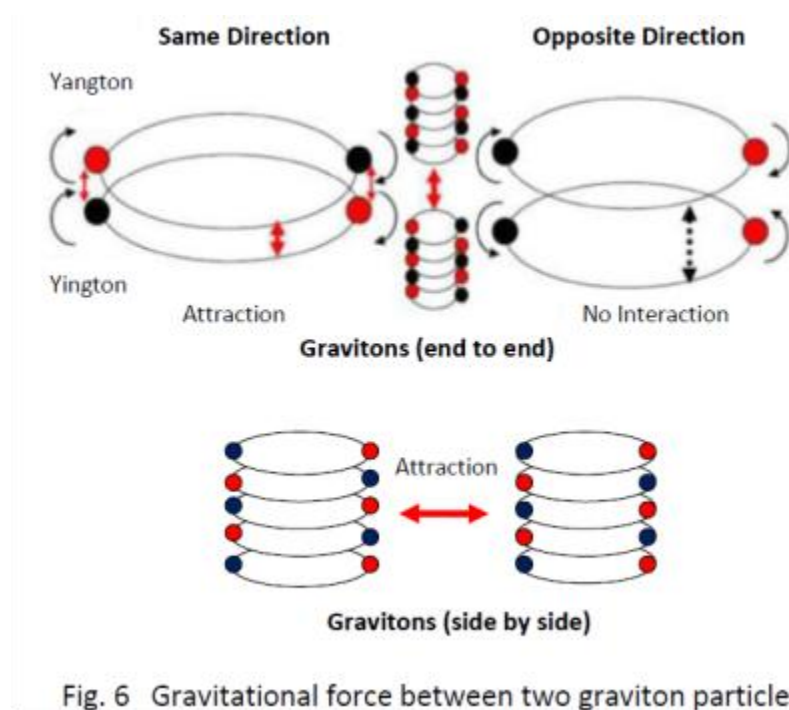


Fig. 6 Gravitational force between two graviton particles

Remote Gravitational Force – Newton's Universal Gravitation

Like photon, graviton can also be radiated from a parent object by absorbing thermal or kinetic energies. This process is called “Graviton Radiation”. As a graviton emitted from the parent object reaches the target object, it makes a contact side by side with the graviton on the target object where the two gravitons can adjust themselves so as to attract each other at the contact points by a group of alternating string forces generated between the Yangtons of one graviton and the Yingtons of the other graviton in each cycle of circulations. This interaction is called “Contact Interaction” and this group of alternating string forces generated between two gravitons from different objects is called “Remote Gravitational Force”. Also, the entire process is called “Graviton Radiation and Contact Interaction Theory” [15]. In general, Remote Gravitational Force contains “a group of gravitational forces” generated by the contact interactions between two groups of gravitons, one group from target object and the other group from parent object through graviton flux generated by graviton radiation. It is different from the ordinary short range gravitational force which is “a single gravitational force” generated by the contact interaction between two adjacent stationary gravitons on the same object. In addition, Remote Gravitational Force applied on target object is always towards the opposite direction of the graviton flux from parent object.

As a result, instead of the propagation of gravitational force generated from parent object, Newton's Universal Gravitation as the remote gravitational force is generated by Graviton Radiation and Contact Interaction process between two objects. In fact, gravitational force cannot propagate by itself, only gravitons can move through graviton flux generated by graviton radiation from parent object to target object and such that Remote Gravitational Force can be generated.

Graviton Flux

Graviton flux is generated by graviton radiation, it is the graviton streams emitted from parent object to target object. There are two types of graviton fluxes: static graviton flux and dynamic graviton flux.

Static graviton flux is the graviton flux emitted from a parent object to a stationary target object observed at the stationary target object. The intensity of static graviton flux is dependent on the speed of static graviton flux, mass of parent object and the distance between the parent object and the stationary target object.

Dynamic graviton flux on the other hand is the graviton flux emitted from parent object to a moving target object observed at moving target object, which is dependent on the speed of dynamic graviton flux observed at moving target object, mass of parent object and the distance between the parent object and the moving target object (It is different from the distance between parent object and the stationary target object. However, the difference is negligible because the speed of moving target object is much smaller than the speed of graviton flux assuming equal to the light speed). In addition, based on Equation of Relative Velocity, the velocity of dynamic graviton flux observed at target object is the vector summation of the velocity of parent object observed at target object and the velocity of static graviton flux observed as parent object.

According to Wu's Spacetime Shrinkage Theory, Wu Unit Length and Wu Unit Time of the subatomic particles in an object or event are dependent on the local gravitational field (graviton bombardment strength). Furthermore, based on Wu's Spacetime Transformation (in accordance to Principle of Parallelism and Wu's Spacetime Equation), all the properties of an object or event are dependent on the Wu Unit Length and Wu Unit Time of the subatomic particles in the object or event, therefore they are dependent on the local gravitational field (graviton bombardment strength) as well, also as is on the total intensities of graviton fluxes.

Since the intensity of dynamic graviton flux is dependent on the speed of graviton observed at target object which can vary with the relative motion between target object and parent object, therefore, the dimension, duration, velocity and acceleration of an object or event, as well as wavelength [16], light speed [17] and time dilation [18][19] on the target object as functions of the local gravitational field (graviton bombardment strength) can all be affected by the relative motion between parent object and target object.

Furthermore, static graviton flux and dynamic graviton flux cannot coexist at the same time between the same parent object and target object. In other words, only static graviton flux can be applied on a stationary target object, and also only dynamic graviton flux can be applied on a moving target object (this is revised from [20]).

Static Graviton Flux and Newton's Law of Universal Gravitation

According to Particle Radiation and Contact Interaction Theory, Newton's Law of Universal Gravitation [16] can be derived from Static Remote Gravitational Force (Universal Gravitation) generated by the static graviton flux between two stationary objects.

Like photon emitted from a heat source by absorbing thermal energy to overcome the string force, graviton can also be emitted from an object by absorbing thermal energy to overcome the gravitational force. In case that both parent object and target object are stationary, it is obvious that Static Graviton Flux (i_s), the gravitons emitted from parent object to stationary target object per unit area per unit time, should be proportional to the mass of the parent object (m_1), and also inversely proportional to the square of the distance (r) between parent object and stationary target object (Fig. 7). Therefore,

$$i_s = p m_1 / r^2$$

$$\mathbf{i}_s = p m_1 / r^2 \mathbf{r}$$

Where \mathbf{i}_s is the static graviton flux vector and i_s is the static graviton flux emitted from parent object to stationary target object observed at stationary target object, p is static graviton flux constant, m_1 is the mass of parent object, r is the distance from m_1 and \mathbf{r} is the unit vector with direction from parent object m_1 to stationary target object m_2 .

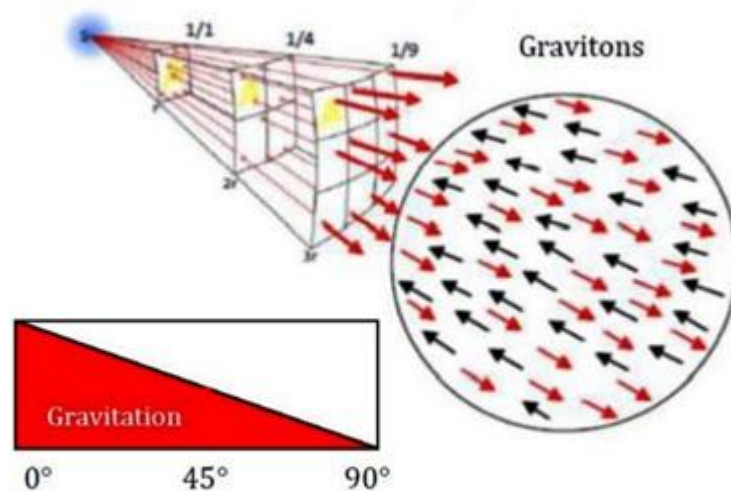


Fig. 7 Gravitational force caused by Graviton Radiation and Contact Interaction.

As a consequence, the static remote gravitational force (F_s) generated by contact interaction between the gravitons emitted from the parent object and the gravitons on the stationary target object should be proportional to the static graviton flux (i_s) arriving at the stationary target object and the total quantity of the gravitons on the stationary target object which is proportional to the mass of the stationary target object (m_2) (Fig. 7). Therefore,

$$F_s = q(p m_1 / r^2) m_2$$

$$\mathbf{F}_s = q(p m_1 / r^2) m_2 \mathbf{S}$$

Where F_s is the static remote gravitational force and \mathbf{F}_s is the static remote gravitational force vector applied on stationary target object by parent object observed at stationary target object, q is graviton contact interaction constant, p is static graviton flux constant, m_1 is the mass of parent object and m_2 is the mass of stationary target object, r is the distance between parent object m_1 and stationary target object m_2 and \mathbf{S} is the unit vector with direction from stationary target object m_2 to parent object m_1 .

In addition, because of the random angles from 0° to 90° between the emitted gravitons from the parent object and the gravitons on the target (Fig. 14), an average 50% of the full contact interactions should be expected.

Furthermore, given $G = pq$, then Newton's universal gravitational force (Fig. 8) which is the same as static remote gravitational force can be represented as follows:

$$\mathbf{F} = G (m_1 m_2 / r^2) \mathbf{S}$$

Where \mathbf{F} is universal gravitational force vector (static remote gravitational force vector) applied on stationary target object by parent object observed at stationary target object (also at parent object), G is gravitational constant, also known as static remote gravitational force constant (G is a Universal Physical Constant independent of gravitational field and aging of the universe, $G = 6.674 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$ measured on earth with earth units), m_1 is the mass of parent object and m_2 is the mass of stationary target object, r is the distance between parent object m_1 and stationary target object m_2 and \mathbf{S} is the unit vector with direction from stationary target object m_2 to parent object m_1 . This equation is called "Newton's Law of Universal Gravitation".

Both m_1 and m_2 are masses which by nature are fixed physical quantities (Absolute Physical Quantities). They are fixed physical quantities also because of the uniform distribution of the mass over the whole volume of the objects. Besides, r is distance which is also a fixed physical quantity. Therefore, Gravitational Constant G as a Universal Physical Constant is a true constant physical quantity. It contains a variable real numbers and a group of variable unit physical quantities which are dependent on the gravitational field and aging of the universe at the location of measurement (reference point).

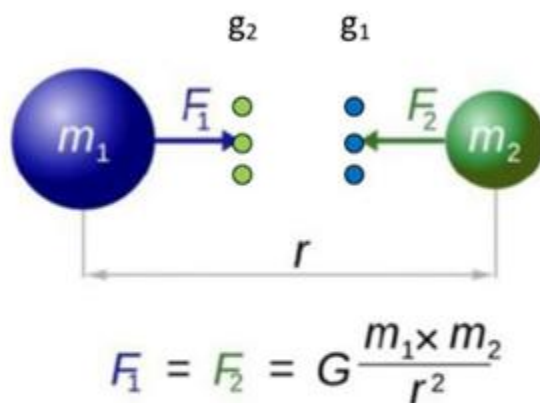


Fig.8 Remote gravitational force F_2 applied on target object m_2 by graviton g_1 emitted from parent object m_1 , and remote gravitational force F_1 applied on parent object m_1 by graviton g_2 emitted from target object m_2 .

Also vice versa, the same Newton's universal gravitational force except in the opposite direction can be applied to the parent object by stationary target object.

$$\mathbf{F}' = G (m_1 m_2 / r^2) \mathbf{S}'$$

Where \mathbf{F}' is universal gravitational force vector (static remote gravitational force vector) applied on parent object by stationary target object observed at parent object (also at stationary target object), G is gravitational constant, also known as static remote gravitational force constant (G is a Universal Physical Constant independent on gravitational field and aging of the universe, $G = 6.674 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$ measured on earth with earth units), m_1 is the mass of parent object and m_2 is the mass of stationary target object, r is the distance between parent object m_1 and stationary target object m_2 and \mathbf{S}' is the unit vector with direction from parent object m_1 to stationary target object m_2 .

Einstein's General Relativity versus Yangton and Yington Theory

Space and Time are absolute quantities. They don't change with anything at all. However, Dimension and Duration are the associated properties of a corresponding identical object or event. Their quantities can change with local gravitational field and aging of the universe.

Based on Einstein's General Relativity, the dimension of an object ("Space" in Einstein's word) and the duration of an event ("Time" in Einstein's word) are bigger at massive gravitational field ("Acceleration" in Einstein's word). The change of duration ("Time" in Einstein's word) due to gravitational field ("Acceleration" in Einstein's word) is known as Gravitational Time Dilation [21]. Also, light traveling path bends with the curvature (acceleration due to gravitational field) of spacetime (potential energy).

On the other hand, according to Wu's Spacetime Shrinkage Theory based on Yangton and Yington Theory, under large gravitational field complying with heavy bombardment of gravitons caused by graviton flux based on Graviton Radiation and Contact Interaction Theory, the diameter of Yangton and Yington circulation in Wu's Pairs is bigger, also the circulation speed is slower and the frequency is smaller. In other words, Wu Unit Length (diameter) and Wu Unit Time (period) of Wu's Pairs in the elementary subatomic particles of the object or event are bigger at large gravitational field. Furthermore, based on Wu's Spacetime Transformation (in accordance to Principle of Parallelism and Wu's Spacetime Equation), because of the larger Wu Unit Length and Wu Unit Time in the object or event due to the massive gravitational field, the dimension of the object is bigger and the duration of the event is longer, also the velocity and acceleration of the object are smaller, while wavelength is bigger and light speed is slower. These results agree very well with Einstein's General Relativity and Gravitational Time Dilation.

Einstein's Spacetime is nothing but the potential energy of an object or event, which likes dimension and duration, is also dependent on the local gravitational field and aging of the universe (Spacetime is a fancy name which has confused people in decades). In fact, it is the image of the local gravitational field and aging of the universe [22][23]. However, Einstein believed that Space (dimension) and Time (duration), as well as Spacetime (potential energy) of an object or event are naturally generated by the universe. Also, the curvature of spacetime (acceleration) conducts the distribution of matter and energy in the universe.

Einstein derived his theories including Special Relativity, General Relativity, Spacetime, Field Equations and Mass and Energy Conservation, all based on two wrong assumptions: (a) Light speed is always constant no matter the light sources and observers, and (b) Acceleration is the principle factor in the universe, which can affect space and time, and also the properties of all the objects and events. In contrast, according to Yangton and Yington Theory, it is believed that (a) Light speed is not constant, instead it is the vector summation of Absolute Light Speed C and Inertia Light Speed, and (b) Acceleration is not a principle factor, instead gravitational field and aging of the universe are the principle factors in the universe.

Despite the light speed which causes the major difference between Special Relativity and Yangton and Yington Theory, a major discrepancy between General Relativity and Yangton and Yington Theory is due to the relativity nature of both velocity and acceleration. As two reference points (twin brothers) moving away from each other at a velocity or acceleration, according to Einstein's Relativity, the same time dilations produced by the same velocity or accelerations but opposite directions can be observed at two reference points (twin brothers). This conflict is called "Twin Paradox". However, according to Yangton and Yington Theory, Twin Paradox is not a corresponding identical object or event. Even it is, based on Wu's Spacetime Shrinkage Theory, duration is larger at bigger gravitational field. Thus there is no twin paradox could ever exist. As a result, both Special Relativity and General Relativity are false. In fact, Einstein's General Relativity is true only if acceleration of a corresponding identical object or event is solely generated by gravitational field [24].

Under both thermal and subatomic equilibriums, for corresponding identical object or event, Einstein's General Relativity agrees with Gravity Affected Wu's Spacetime Shrinkage Theory [70] and Wu's Spacetime Transformation (in compliance with Wu's Spacetime Equation and Principle of Parallelism) based on Yangton and Yington Theory. At a massive gravitational field (or large acceleration by remote gravitational field), the dimension and duration of an object or event are bigger, while velocity and acceleration are smaller, also wavelength is bigger and light speed is slower. However, it is more understandable that Gravitational Redshift and Deflection of Light are generated by massive gravitational force instead of that by the acceleration or the curvature of Einstein's Spacetime. Also, in case of Perihelion Precession of Mercury, the speed of Mercury reliant on the gravitational field is actually dependent on both Newton's Universal Gravitation (static graviton flux) and the relative moving direction between mercury and sun. In other words, the speed of Mercury is dependent on dynamic graviton flux instead of static graviton flux, which is reflected more precisely by the potential energy of Mercury. Therefore, it is more accurate to calculate Perihelion Precession of Mercury by the potential energy of Mercury based on Einstein's General Relativity rather than that by the remote gravitational force generated by Mercury based on Newton's Universal Gravitation.

Furthermore, Einstein's Field Equation is derived from the correlations between potential energy (Einstein's spacetime) and acceleration on earth with the transformation of potential energy from a nonlinear geometry system (geodesics) to a Normal Spacetime System (Cartesian coordinate system). In contrast, Wu's Spacetime Field Equation is derived from the correlations between acceleration and gravitational field on earth with Wu's Spacetime Transformation. Because Wu's Spacetime Field Equations observed on earth based on t_{yy0} and l_{yy0} of Wu's Pairs in the reference elementary subatomic particle have G and C_0^{-4} on the matter and energy side (right hand side) and the amount of normal unit acceleration a_0 on the acceleration side (left hand side) of the equations, which is similar to Einstein's Field Equation. Therefore, the curvature of Einstein's Spacetime in a Normal Spacetime System on earth is in compliance with the amount of normal unit acceleration in Wu's Spacetime System on earth. In other words, Einstein's Field Equation is true and also it is equivalent to Wu's Spacetime Field Equation only if acceleration is generated by gravitational field.

Einstein's Spacetime versus Wu's Spacetime

Wu's Spacetime is a measurement system which contains a single Spacetime unit (Wu Unit Length l_{yy} of Wu's Pairs in a reference elementary subatomic particle such as a designated up quark) [25] (revised from [26]), compared to MKS system which contains a dual space unit (meter of a ruler) and time unit (second of a clock).

Under thermal equilibrium at a constant temperature and pressure, and a subatomic equilibrium at a constant gravitational field and aging of universe, according to Wu's Spacetime Transformation (in accordance to Principle of Parallelism and Wu's Spacetime Equation), a compound unit quantity composed of both space and time units in MKS system can be converted to a single Wu unit quantity composed of Wu Unit Length l_{yy} and Wu's Spacetime Constant γ . For example, meter/second² in MKS system can be converted to $m \cdot n^{-1} \cdot \gamma^{-1} \cdot l_{yy}^{-1/2}$ in Wu's Spacetime system composed of reference-dependent constants m and n , and exponent of Wu's Spacetime Constant γ (a true physical constant) independent of local gravitational field and aging of the universe, also exponent of Wu Unit Length l_{yy} (the diameter of Wu's Pairs in the reference corresponding identical elementary subatomic particle such as a designated up quark) dependent on the local gravitational field and aging of the universe. In addition, all the properties of an object or event such as dimension, duration,

velocity and acceleration, as well as wavelength and Absolute Light Speed can also be transformed to Wu's Spacetime Quantities represented by Wu Unit Length l_{yy} and Wu's Spacetime Constant γ .

Furthermore, based on Wu's Spacetime Shrinkage Theory and Wu's Spacetime Transformation (in accordance to Principle of Parallelism and Wu's Spacetime Equation), all the properties of a corresponding identical object or event including dimension, duration, velocity, acceleration and potential energy (Einstein's Spacetime), as well as wavelength and light speed are dependent on the local gravitational field and aging of the universe. For examples, under thermal and subatomic equilibriums, Absolute Light Speed is 3×10^8 m/s, where m/s is dependent on the local gravitational field and aging of the universe. Also the wavelength of a photon with fixed frequency has a constant amount (number) of normal unit length (meter), where meter is dependent on the local gravitational field and aging of the universe (revised from [27][24]). (It is different from Einstein's Special Relativity and Relativism, that light speed is always constant, no matter of observation and the local gravitational field and aging of the universe of the light source. Also wavelength observed at reference point (earth) is dependent on the speed of light source). As a result, Wu's Spacetime Transformation (in accordance to Principle of Parallelism and Wu's Spacetime Equation) and Wu's Spacetime Shrinkage Theory can be applied successfully in explanation of many important physical phenomena such as Gravitational Redshift, Cosmological Redshift, Gravitational Time Dilation, Hubble's Law, Universe Expansion, Deflection of Light, Absolute Light Speed, Anisotropic Light Speed, Gravitational Waves, Perihelion Precession of Mercury and Einstein's General Relativity, Spacetime and Field Equations.

On the other hand, Einstein's Spacetime is interpreted by theoretical physicist as a relative and inextricably interwoven into what has become known as the space-time continuum. Unlike Wu's Spacetime which is a measurement system containing a single Spacetime unit. Einstein's Spacetime in fact is the potential energy of an object or event. It is also a solution of Einstein's Field Equations derived from the equality between the curvature of potential energy and acceleration of an object or event, reflecting the distribution of matter and energy in the universe. According to Wu's Spacetime Shrinkage Theory and Wu's Spacetime Transformation (in accordance to Principle of Parallelism and Wu's Spacetime Equation), potential energy (Einstein's Spacetime) can be represented as an Wu's Spacetime Quantity containing Wu's Spacetime constant γ and Wu Unit Length l_{yy} of Wu's Pairs in a reference elementary subatomic particle such as a designated up quark. In addition, like dimension and duration, it is dependent on the local gravitational field and aging of the universe (Spacetime is a fancy name which has confused people in decades). In fact, it is the image of the local gravitational field and aging of the universe [22][23]. However, Einstein believed that Space (dimension) and Time (duration), as well as Spacetime (potential energy) of an object or event are naturally generated by the universe independent of local gravitational field and aging of the universe. Also, the curvature of spacetime (acceleration) conducts the distribution of matter and energy in the universe.

Einstein's Field Equation versus Wu's Spacetime Field Equation

Einstein's Field Equation is derived from the equality between acceleration and the derivative of potential energy (curvature of potential energy). Einstein's Field Equation gives a solution, Einstein's Spacetime, the potential energy as a property function of the object or event, having derivative in compliance with the acceleration reflecting the distribution of matter and energy. It is a space-time continuum originated from a nonlinear geometry system (geodesics) and transformed to 3D Cartesian System on earth.

In contrast, Wu's Spacetime Field Equation is derived from the equality between acceleration and gravitational field. Wu's Spacetime Field Equation gives a solution, the amount of normal unit acceleration, as a property function of the object or event reflecting the distribution of matter and energy. It is coordinated in 3D Cartesian System on earth.

In comparison between Wu's Spacetime Field Equation and Einstein Field Equation,

$$a_0 = \delta \gamma^{-2} C_0^{-4} (GM/R^2)$$

$$R_{\mu\nu} - \frac{1}{2} R g_{\mu\nu} + \Lambda g_{\mu\nu} = \frac{8\pi G}{c^4} T_{\mu\nu}$$

Because the same terms GC_0^{-4} and G/C^4 (C in Einstein's Field Equation is the Absolute Light Speed on earth $C = C_0$ which is the same as that in Wu's Spacetime Field Equation on earth. $G = 6.674 \times 10^{-11} \text{ m}^3 \text{kg}^{-1} \text{s}^{-2}$ where 6.674×10^{-11} is the amount measured on earth and $\text{m}^3 \text{kg}^{-1} \text{s}^{-2}$ is earth units) appeared in both equations, Einstein's Field Equation and Wu's Spacetime Field Equation are considered equivalent. However, instead of a single unit for measurement as Wu's Spacetime, Einstein's Spacetime is the potential energy of the object or event. Also, there is no gravitational force in Einstein's Field Equation. In fact, the curvature of spacetime is the acceleration which reflects to the distribution of matter and energy in the universe. On the other hand, in Wu's Spacetime Field Equation, matter does exist, as is the gravitational field.

As a result, Einstein's Field Equation is Energy and Acceleration correlated field equation, and Wu's Spacetime Field Equation is Acceleration and Gravity correlated Field Equation. Both Einstein Field Equation and Wu's Spacetime Field Equation on earth are equivalent only if acceleration is generated by gravitational field.

Furthermore, the potential energy (Einstein's spacetime) applied to Einstein's Field Equation is derived from remote gravitational force (Newton's Universal Gravitation) which is reverse proportional to the distance between two gravitons. It is incompatible to the energy derived from short range forces such as electromagnetic force, weak force and strong force, with normal distribution to distance between two particles. Because of these reasons, Einstein's General Relativity is incompatible to Quantum Field Theory, therefore Standard Model fails in predicting graviton and gravitational force.

Unified Field Theory versus Yangton and Yington Theory

Based on Quantum Field Theory, it is assumed "The universe is made of a variety of fields (forces), with particles as the surges of fields". This is consistent to that based on Yangton and Yington Theory "The universe is composed of the fields of various forces including four basic forces (between elementary subatomic particles), String Forces (between Wu's Pairs) and Force of Creation (between Yangton and Yington Pairs), with particles (various string structures) as clusters of the forces". Because of the similarities, all elementary subatomic particles associated with electromagnetic force, weak force and strong force except graviton and remote gravitational force, predicted in Standard Model based on Quantum Field Theory and Yang Mills Theory, should have their counterparts with string structures made of Wu's Pairs bonded by String Force induced from Force of Creation based on Yangton and Yington Theory. As a result, Standard Model can serve as a guideline to construct all elementary subatomic particles except graviton, with string structures composed of Wu's Pairs bonded by String Force based on Yangton and Yington Theory [10].

Because of the incompatibilities between Einstein's General Relativity and Quantum Field Theory, Standard Model fails in predicting graviton and gravitational force. However, graviton with long range remote gravitational force (Newton's Universal Gravitation) and that with short range gravitational force can all be very well structured and interpreted by Yangton and Yington Theory. Furthermore, it is suggested that 125 GeV [28] is the energy generated by String Force between two adjacent Wu's Pairs (indicating that Higgs Boson is Wu's Pair). Also, 4.8 TeV [29] recently discovered in LHC data by Google AI, which do not fit within the Standard Model, is the interaction energy between Force of Creation and Yangton and Yington particles inside Wu's Pairs.

As a result, all elementary subatomic particles are composed of Wu's Pairs bonded together by String Forces induced from Force of Creation, and also all four basic forces are composed of String Force induced from Force of Creation. Therefore, it is believed that Yangton and Yington Theory not only is a Unified Field Theory, but also a theory of everything.

II. Conclusion

Quantum Gravity Theory fails in the prediction of graviton as the carrier of remote gravitational force (Newton's Universal Gravitation applying to Einstein's General Relativity) mainly because of the incompatibilities between Newton's Universal Gravitation and Quantum Field Theory. According to Yangton and Yington Theory, Newton's Universal Gravitation is a long range remote gravitational force made of a group of String Forces with adjustable circulation generated between a stationary graviton (gravitons) and an incident graviton (gravitons) from a distance through Graviton Radiation and Contact Interaction process. Newton's Universal Gravitation carries potential energy in reverse proportional to the distance between two gravitons (or groups of gravitons). It is different from that of the short-range forces (quantum forces) such as electromagnetic force, weak force, strong force and short-range gravitational force between two adjacent stationary particles, which carry energies (quantum energies) in normal distribution of the distance. Because electromagnetic force, weak force and strong force are all perturbatively renormalizable, therefore the infinitely many independent parameters produced by perturbation can be reduced to finite parameters through normalization, such that sensible solutions can be achieved and thus corresponding elementary subatomic particles can be predicted by Quantum Field Theory and Standard Model. On the contrary, remote gravitational force (Newton's Universal Gravitation) is perturbatively nonrenormalizable which results in irreducible infinitely many independent parameters, such that no sensible solution can be obtained and thus no graviton can be predicted by Quantum Gravity Theory.

According to Quantum Field Theory, it is assumed "The universe is made of various fields (forces) and with particles considered as the surges of fields". This is equivalent to the proposal based on Yangton and Yington Theory "The universe is composed of various forces including four basic forces between elementary subatomic particles, and String Forces between Wu's Pairs inside of the elementary subatomic particles, and with particles considered as the clusters of String Forces". Because of the similarities between Quantum Field

Theory and Yangton and Yington Theory, all elementary subatomic particles associated with electromagnetic force, weak force and strong force except graviton and remote gravitational force, predicted in Standard Model based on Quantum Field Theory and Yang Mills Theory, should have counterparts with string structures made of Wu's Pairs bonded together by String Force induced from Force of Creation in Yangton and Yington Theory. As a result, Standard Model can serve as a guideline to construct all elementary subatomic particles except graviton, with string structures composed of Wu's Pairs bonded together by String Force based on Yangton and Yington Theory. Even though Standard Model fails in predicting graviton and gravitational force because of the incompatibilities between Einstein's General Relativity and Quantum Field Theory, gravitons associated with both long range remote gravitational force (Newton's Universal Gravitation) and short range gravitational force can be very well structured and interpreted by Yangton and Yington Theory. Furthermore, it is suggested that 125 GeV is the energy generated by String Force between two adjacent Wu's Pairs (indicating that Higgs Boson is Wu's Pair). Also, 4.8 TeV recently discovered in LHC data by Google AI, which do not fit within the Standard Model, is the interaction energy between Force of Creation and Yangton and Yington particles inside Wu's Pairs. As a result, all elementary subatomic particles including graviton have string structures composed of Wu's Pairs bonded together by String Forces, and also all four basic forces are composed of String Forces induced from Force of Creation. Therefore, it is believed that Yangton and Yington Theory is not only a Unified Field Theory, but also a theory of everything.

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