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What If God's Particles Does Exist and How Do They Build the Universe

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[Abstract]
God's Particles by definition are the building blocks of the universe. Logically God's Particles should obey Five Principles of The Universe. Also, they should be able to build all matters in the universe especially those subatomic particles with Four Basic Forces. Based on the Five Principles of The Universe, a pair of super fine anti-particles (Yangton and Yington) with an inter-attractive force (Force of Creation) can be created temperately from vacuum space. Consequently, in compliance with Big Bang Theory, a permanent circulating particle pair (Wu's Pair) composed of Yangton and Yington particles can be generated as the building blocks (God's Particles) of the universe. In this review paper, subatomic particle structures and Four Basic Forces based on Wu's Pairs and Yangton and Yington Theory are studied. Also, Standard Model and Quantum Field Theory are compared with Wu's Pairs and Yangton and Yington Theory. As a result, Wu's Pairs as God's Particles (Building Blocks) can be used successfully with String Force and Four Basic Force induced from Force of Creation to produce all matters in the universe.

[Keywords]
God's Particles, Wu's Particles, Yangton and Yington Theory, Force of Creation, String Theory, String Force, Four Basic Forces, Gravitational Force, Electromagnetic Force, Weak Force, Strong Force, Magnetic Force, Proton, Neutron, Unified Field Theory, Subatomic Particles, Standard Model, Quark, Electron, Positron, Neutrino, Gluon, Photon, Graviton, Higgs Boson, Wave Particle Duality, Quantum Field Theory, Quantum Gravity Theory.

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I. Introduction

God's Particles is defined as the building blocks of the universe. They are the finest particles in the universe and they are the fundamental building blocks of everything in the universe. It is believed that everything should be made of simple things instead of complex ones. Taking more than a dozen subatomic particles such as quarks and leptons as the building blocks (God's Particles) of the whole universe is just unbelievable. It is against our experience and common sense. Therefore, it is my belief that something simple and popular such as photons should be the basic building blocks (God's Particles) of all the matters in the universe. Although taking photons as the building blocks of the universe sounds crazy, ask yourself why we can find photons everywhere in the universe such as that in the thermal radiation, nuclear reaction, electron oscillation, particle collision, and even in the early stages of the Big Bang explosion. If indeed that the photons are the building blocks (God's Particles) of all matters in the universe, then what the photon structure is, where it comes from and how to combine them together to build subatomic particles become a big challenge to all scientists.

II. Yangton and Yington Theory

According to "Five Principles of The Universe" [1], a pair of super fine Antimatter particles (named "Yangton" and "Yington") [2] with an inter-attractive force (named "Force of Creation") [2] can be created temperately from None (no space, energy, time and matter). Consequently, in compliance with Big Bang Theory [3], a permanent circulating particle pair (named "Wu's Pair") [2] composed of Yangton and Yington particles can be generated as the building blocks (God's Particles) of the universe. Furthermore, a hypothetical "Yangton and Yington Theory" [2] based on Wu's Pairs (Yangton and Yington circulating pairs) can be used to explain the formation of all matters in the universe as well as the correlations between space, time, energy and matter. As a result, it is believed that Yangton and Yington Theory is a theory of everything.

A. Five Principles of The Universe

God's Particles, the building blocks of all matters in the universe, by logic should obey the "Five Principles of The Universe" [1]:

1. There was Nothing in the universe in the beginning.
2. From Nothing to Something it must be a reversible process.

3. The Something must be a pair of Antimatter particles with an inter-attractive force such that they can attract and destroy each other.
4. From Something to permanent matter there must be an external energy to cause a constant circulation motion between the two Antimatter particles so as to avoid them from recombination and destruction.
5. Eventually the whole universe will end and go back to Nothing.

More specifically, the five principles can be described as follows:

The 1st principle:

"There was Nothing in the universe in the beginning." This is a result of logical thinking. Otherwise, if the universe started from Something then one will always ask where that Something came from.

The 2nd principle:

"From Nothing to Something it must be a reversible process." This is also a result of logical thinking. Common sense tells us that everything that has a beginning must have an end. The question is how it ends? And how long it takes to end? Would it make more sense just to reverse the initial process from Something back to Nothing instead of creating a "new something"? Simply because that Nothing already existed and also the reverse process could happen instantly at an equilibrium condition, therefore, I believe that from Nothing to Something, it must be a reversible process.

The 3rd principle:

"The Something must be a pair of Antimatter particles with an inter-attractive force such that they can attract and destroy each other." As a result of logical thinking, the only possibility that Something can go back to Nothing is that the Something must have a built-in self destruction mechanism such as a pair of Antimatter particles Yangton and Yington Pair, with an inter-attractive Force of Creation for the enforcement of self destruction. The Something is a temporary matter, it is self destroyed immediately after the formation.

The 4th Principle:

"From Something to permanent matter there must be an external energy to cause a circulation motion between the two Antimatter particles so as to avoid recombination and destruction." Since circulation motion can be generated between two particles moving in opposite directions by two opposite external forces while having a centrifugal force holding them together, therefore, with Big Bang explosion as the external forces and Force of Creation as the centrifugal force, two Antimatter particles can form permanent circulation motion without recombination and destruction. This principle complies nicely with Big Bang Theory.

The 5th Principle:

"Eventually the whole universe will end and go back to Nothing." With logical thinking the universe can only be ended with Nothing. Otherwise, it will become a never ending story. Only going back to Nothing can stop this paradox.

B. Yangton and Yington – The Fundamental Particles

In order to satisfy 1st Principle and 2nd Principle of the Five Principles of The Universe, it is obvious that 3rd Principle must contain "Yangton and Yington", a pair of super fine Antimatter particles [2] which can only be produced together with an inter-attractive Force of Creation simultaneously from an empty space (Nothing). This "Yangton and Yington" pair with Force of Creation called Something can recombine and destroy each other so that Something can go back to Nothing, which obeys 2nd Principle. Both Yangton and Yington are the fundamental particles of the universe. They can be used to form Something (Fig. 1) as that in 3rd Principle and also Wu's Pair (Fig. 2) as that in 4th Principle. Something is only a temporary particle, but Wu's Pair is a permanent particle which is the building block of all matters such as photons, quarks, electrons, positrons, neutrons, protons and Dark Matter, etc [4].

Instead of solid particles, Yangton and Yington can also be considered as two tiny energy whirlpools (energy particles) with opposite spin directions, spin up (Yangton) and spin down (Yington), generated by the energy from None or released from the Big Bang explosion.

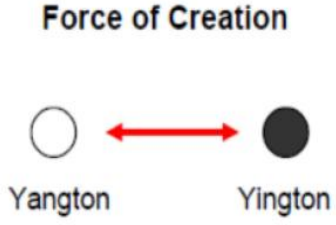

Fig. 1 Something - a Yangton and Yington pair with Force of Creation.

C. Force of Creation – The Fundamental Force

According to 3rd Principle, Yangton and Yington must coexist with an inter-attraction force named "Force of Creation" (Fig. 1), such that recombination and destruction can be enforced and Something will go back to Nothing. Therefore, the reaction of this reversible process can be represented by the following formulas:

$$\text{Nothing} \rightarrow \text{Yangton } \Theta \text{ Yington} \qquad \Delta E = E_{Creation}$$

$$E_{Creation} \leftrightarrow \text{Yangton } \Theta \text{ Yington}$$

Where Θ represents Force of Creation, Yangton Θ Yington represents Something, and $E_{Creation}$ is Energy of Creation including the formation energies of Yangton and Yington (energy particles) and Force of Creation.

The inter-attractive "Force of Creation" between Yangton and Yington is the fundamental force in the universe, which can be used to generate the String Force for the formation of elementary subatomic particles such as quarks, leptons, gluons and bosons; as well as the Four Basic Forces including gravitational force, electromagnetic force, weak force and strong force for the formation of composite subatomic particles such as proton, neutron and nucleus.

D. Big Bang – How the Universe Get Started?

About 13.8 billion years ago, there was nothing – no space, time, energy or matter, which is known as "None". Then a Big Bang [3] exploded. Immediately, space was created and energy was released from a single point known as "Singularity". Energy released from Big Bang explosion could be used to form Yangton and Yington (energy particles) and Force of Creation, also to provide the external force (4th Principle) to cause the circulation of Yangton and Yington Pairs. This circulation can prevent the recombination and destruction of the Yangton and Yington Pairs such that Something cannot go back to Nothing and thus a permanent Wu's Pairs (Fig. 2) [2] could be formed.

E. Circulation – How Matters Become Permanent?

The energy released from the Big Bang explosion could drive Yangton and Yington particles into a circulation motion [2]. This circulation motion not only prevents the attraction and destruction between Yangton and Yington particles, but it also makes them alive in continuous operation.

Circulation can also be found commonly in our cosmos such as that electron circulating the nucleus, moons circulating planets, planets circulating stars, stars circulating the galaxies, etc. Therefore, circulation is the key to make a matter exist permanently. This is a logical thinking.

F. Wu's Pairs – God's Particles

According to the 4th Principle, with the external energy generated from Big Bang explosion, a Yangton and Yington circulating pair with an inter-attractive Force of Creation named "Wu's Pair" (Fig. 2) can be formed so that Something can become a permanent matter. These Wu's Pairs are the fundamental building blocks (God's Particles) of all the matters such as photons, quarks, electrons, positrons, neutrons, protons, etc. in the universe.

From Something to a permanent Wu's Pair, the reaction process can be represented by the following formulas:

$$\text{Yangton } \Theta \text{ Yington} \rightarrow \text{Yangton } \Phi \text{ Yington} \quad \Delta E = E_{Circulation}$$

$$E_{Creation} + E_{Circulation} \leftrightarrow \text{Yangton } \Phi \text{ Yington}$$

Where Yangton Θ Yington represents Something – a temporary Yangton and Yington pair. Yangton Φ Yington represents Wu's Pair – a permanent Yangton and Yington circulating pair. $E_{Creation}$ is Energy of Creation which is used to generate Yangton and Yington (energy particles) and Force of Creation. $E_{Circulation}$ is the circulation energy which includes both potential and kinetic energies of the circulation. The summation of $E_{Creation}$ and $E_{Circulation}$ is called "Wu's Pair Formation Energy" which can be generated from Big Bang explosion and nuclear reaction.

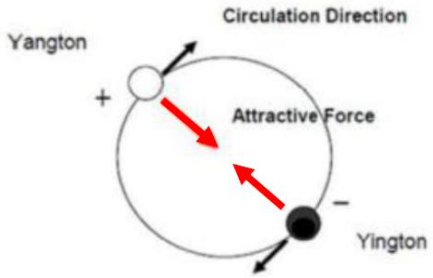

Fig. 2 Wu's Pair - a Yangton and Yington circulating pair.

G. Photon – A Free Wu's Pair

When Wu's Pair released from a substance, it becomes a free particle moving in the normal (axial) direction of Yangton and Yington circulation plane. It is known as "Photon". Photon travels in space at a constant Absolute Light Speed $3x10^8$ m/s, while observed at the light source. The reaction process can be represented as follows:

$$\text{Yangton } \Phi \text{ Yington} \rightarrow \text{Photon} \qquad \Delta E = h\nu$$

Where Yangton Φ Yington is Wu's Pair and hν is photon's kinetic energy.

Since photon is a free Wu's Pair, it is indeed a God's Particle, which also explains why photon is the most popular particle observed in the universe.

III. Subatomic Particles

Subatomic particles are the components of atoms, such as neutrons, protons, electrons, photon, etc. Based on Standard Model [5], there are two types of subatomic particles: (1) Elementary Subatomic Particles such as quarks, electrons, neutrinos, gluons, photon, bosons, etc, and (2) Composite Subatomic Particles which are composed of Elementary Subatomic Particles, such as protons, neutrons, etc. In addition, there are Four Basic Forces: Gravitational Force, Electromagnetic Force, Weak Force and Strong Force that are used to combine the subatomic particles together to form all matters in the universe. However, there is no evidence in Standard Model if God's Particles, the Building Blocks of all subatomic particles, also all matters in the universe, exist.

In contrast, according to Yangton and Yington Theory, Wu's Pairs are the Building Blocks (God's Particles) of the universe. String Structures are composed of Wu's Pairs with String Force, and all subatomic particles are composed of String Structures with Four Basic Forces. In addition, all string force and Four Basic Forces are the forces induced from Force of Creation which is in compliance with Unified Field Theory. More details of subatomic particles based on Yangton and Yington Theory and Wu's Pairs are discussed as follows:

A. String Theory, String Force and String Structures

When I first heard about String Theory, I wondered how it could be possible that all matters have a linear structure, like spaghetti. From my materials science background I know that only polymers and glass have a linear structure, but not single crystals, metals and inorganic compounds, which all have crystalline structures such as cubic, tetragonal and hexagonal, etc., or in other words, they all have a point structure. However, in order to bring general relativity and quantum field theory [6] ogether, physicists suggested that all matters must have a linear structure with 10 dimensions like Calabi-Yau manifold (Fig. 3). This is known as "String Theory" [7].

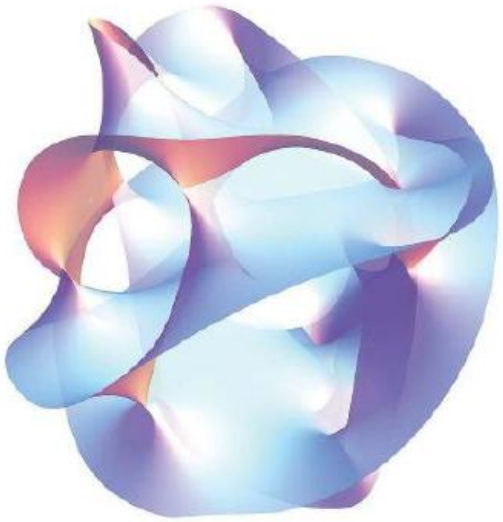

Fig. 3 A cross section of a quintic Calabi-Yau manifold.

Could String Theory be true? The answer is yes and only if all the subatomic particles have a linear structure. Physicists have absolutely no idea what the structures of quarks and photon are, even with their state-of-the-art LHC [8]. However, based on the Yangton and Yington Theory [2], that all subatomic particles should have a string structure is not only very possible, but also quite obvious.

Wu's Pair [2] is a pair of Yangton and Yington Antimatter particles circulating in an orbit held by the inter-attractive Force of Creation between the two particles. When two Wu's Pairs come together with 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 is lined up to the Yington of the second one due to the attraction between Yangton and Yington particles. This induced force between the two Wu's Pairs in the same circulation direction is called "String Force". (There are zero net interactions between two adjacent Wu's Pairs in opposite circulation directions because of the cancellations of attraction and repulsion forces between Yangtons and Yingtons). By repeating the stack up process, strings, rings or other related structures made of Wu's Pairs called "String Structures" [4] can be formed (Fig. 4), which comply very well with the "String Theory". Furthermore, similar to the double helix DNA which forms all the life on earth, the String Structure made of Yangton and Yington particles also has a double helix structure which builds all the matters in the universe.

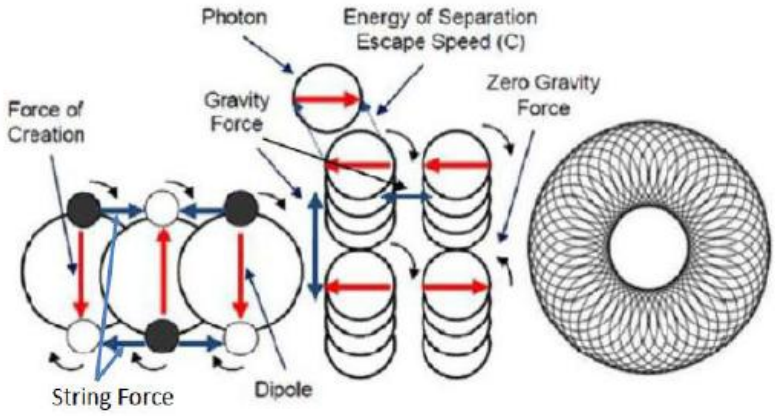

Fig. 4 Wu's Pairs stack up in a preferred direction by string force to form string and ring structures.

B. Standard Model

Standard Model is a group of subatomic particles which is derived from a mathematical model based on Quantum Field Theory and Yang Mills Theory. In contrast, Wu's Pairs, a physical model are proposed as the building blocks of all subatomic particles based on the Yangton and Yington Theory.

Subatomic particles [5] 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. 5) 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.

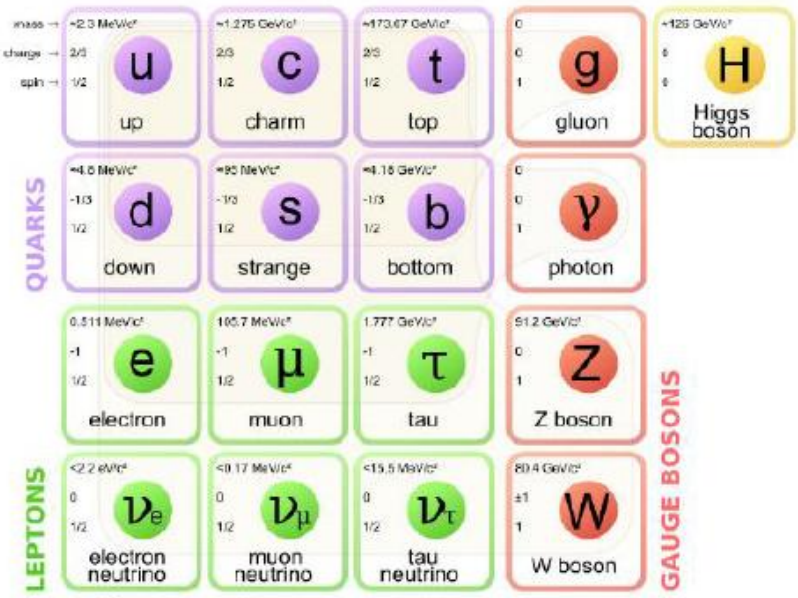

Fig. 5 The elementary particles of the Standard Model.

C. Standard Model and Wu's Pairs

According to Yangton and Yington Theory, all elementary subatomic particles including quarks, leptons, Gauge Bosons, gluons, photon, Higgs Boson and Graviton are composed of Wu's Pairs. They have strings, rings and other related structures (Fig. 6) named String Structures that are glued together by the string force between two adjacent Wu's Pairs (Fig. 4). Composite subatomic particles are made of elementary subatomic particles, which are glued together by four basic forces including gravitational force, electromagnetic force, weak force and strong force that are induced from Force of Creation subject to the subatomic structures and their interactions.

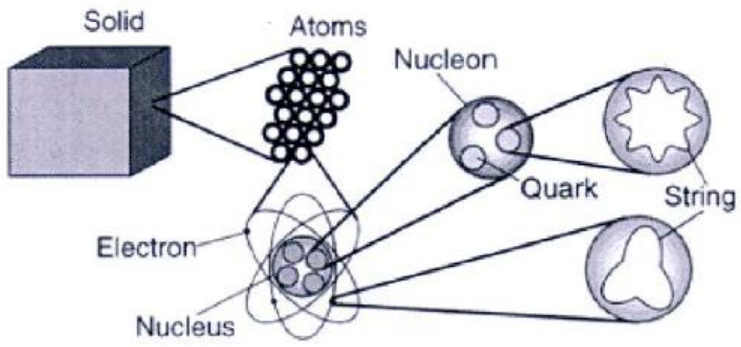

Fig. 6 Subatomic particles made of string structures.

D. Graviton and Gravitational Force

Wu's Pairs can be used to form elementary subatomic particles with string structures in a variety of shapes. When two string structures come together in the same circulation direction, they can attract each other at the ends of the strings by locking the Yangton of one string to the Yington of the other string (this is known as String Force). Otherwise, there is no interaction if they are in the opposite circulation directions. However, when two string structures come together side by side, no matter the circulation directions, they can adjust themselves to attract each other as the Yangtons of one string contact the Yingtons of the other string during each cycle of the circulations. This attractive only force is known as "Gravitational Force" (Fig. 7) and the string structures that produce the gravitational force are called "Gravitons".

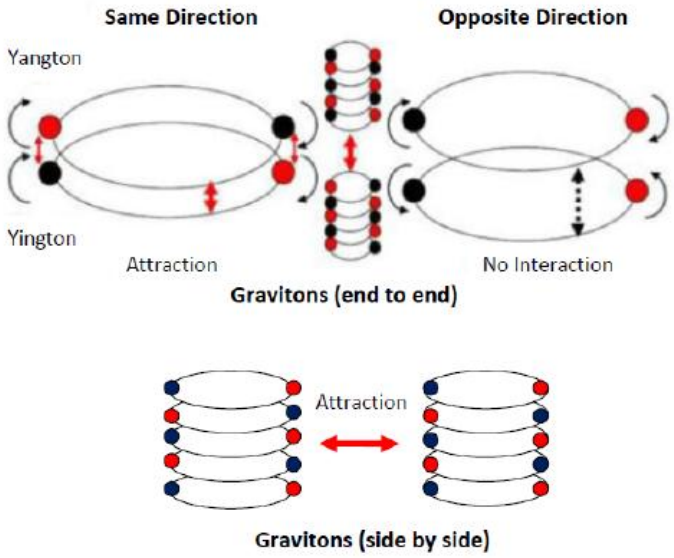

Fig. 7 Gravitational force between two graviton particles

E. Higgs Boson and Higgs Field

According to Standard Model and Quantum Field Theory, the mass of a particle is the magnitude of the barrier of motion applied to the particle by "Higgs Bosons" that are generated from Higgs Field [9]. However, what the Higgs Bosons and Higgs Field are and where they come from remain mysteries. Since Higgs Bosons can be considered as the carriers of string force that are generated between the two adjacent Wu's Pairs, therefore the magnitude of the barrier caused by the string force carried by Higgs Bosons is proportional to the amount of Wu's Pairs. In other words, the mass of a particle is proportional to the amount of Higgs Bosons, as is Wu's Pairs [10]. This concurs with that mass is the total amount of Wu's Pairs in a particle which are bound together by string force based on Yangton and Yington Theory. As a result, a Higgs Boson can be considered as a particle composed of one single Wu's Pair with a string force, and Higgs Field can be interpreted as the distribution of Higgs Bosons in space, or the distribution of string force or Wu's Pairs in space, or in other words, the distribution of mass in space [10].

F. Electron, Positron and Electrical Force

When a number of Wu's Pairs come together they can stack up to form a string or ring structures (Fig. 3), or cross each other's orbits to form a structure that is either with Yingtons circulating the Yangton center as the electrons (Fig. 8) [4] or with Yangtons circulating the Yington center as the positrons (Fig. 8) [4].

Since photon, a free Wu's Pair, can be either absorbed or emitted from an electron jumping between two energy levels in an atom; it is proposed that electron is composed of a number of Wu's Pairs, where Yangtons are loosely confined in the center due to the compression of the centrifugal force caused by the circulation of Yingtons. Similarly, positron is composed of a number of Wu's Pairs, where Yingtons are loosely confined in the center due to the compression of the centrifugal force caused by the circulation of Yangtons. Therefore, electron can have an appearance looks like a sphere of Yingtons, and positron, on the other hand, can have the appearance looks like a sphere of Yangtons (Fig. 8).

Because of the attraction between Yangton and Yington, a strong attractive force can be generated between an electron and a positron. Also, a repulsive force can be formed between two electrons and between two positrons. When a positron meets an electron, because of the attraction, they collide and destroy each other to release Gamma Ray (γ). This phenomenon is known as "Positron-Electron Annihilation" [11].

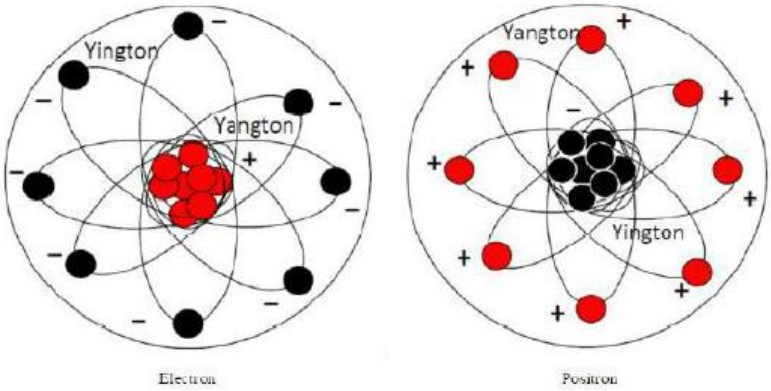

Fig. 8 Hypothetical structures of electrons and positrons.

How do I know about the electron and positron structures? The answer is again based on logical thinking:

1. The attractive force between electron and positron is similar to that between Yangton and Yington.
2. The repulsive forces between two electrons and between two positrons are similar to that between two Yangtons and two Yingtons.
3. Electron must be a cluster of Yingtons and positron must be a cluster of Yangtons.
4. Because Wu's pairs (Yangton and Yington pairs) are the building blocks of all matters, also Yangton and Yington cannot be separated from each other, therefore an electron can only be structured as a sphere made of Yingtons with a core of Yangtons. Similarly, a positron can only be structured as a sphere made of Yangtons with a core of Yingtons.

G. Proton, Neutron, Weak Force and Strong Force

A neutron [12] is composed of three quarks, one up quark and two down quarks, and three gluons. Since all matters have string structures of Wu's Pairs, it is believed that a neutron containing three quarks and three gluons should have the shape as a donut or a triangular pretzel (Fig. 9).

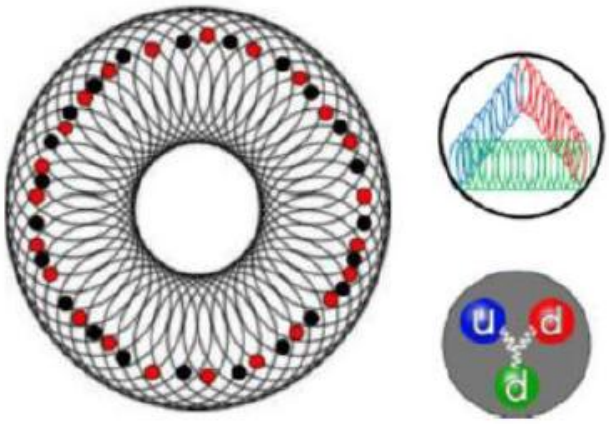

Fig. 9 A hypothetical structure of neutron.

A proton [13] is also composed of three quarks, two up quarks and one down quark, and three gluons. Therefore, like the neutron, a proton containing three quarks and three gluons should also have the shape as a donut or a triangular pretzel. However, because of the Inverse Beta Decay, it is believed that a proton contains a neutron with an embedded positron and electron neutrino (Fig. 10).

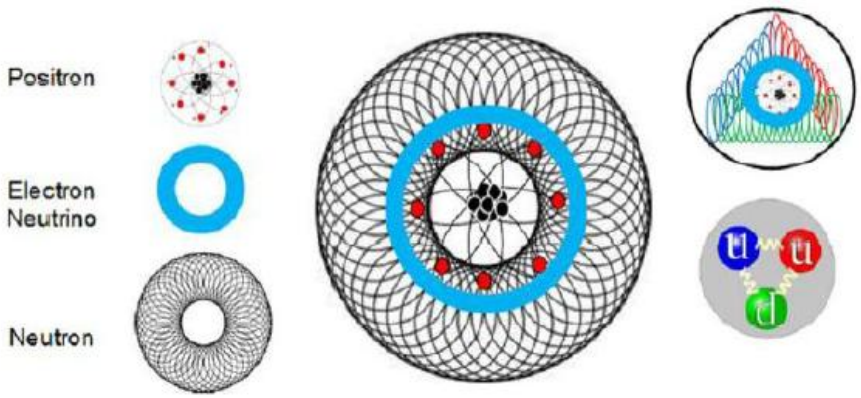

Fig. 10 A hypothetical structure of proton.

The bonding force between a neutron and a positron is known as "Weak Force" (Fig. 10) [14] which is induced between the Yingtons in the neutron and the Yangtons on the surface of the positron.

In order to balance the repulsive electromagnetic force caused between protons, strong force is needed to hold protons together in the nucleus. Strong force is the attractive force generated between two neutrons, and also between a neutron and a proton. When two neutrons with ring structures made of Wu's Pairs come together, attractive force can be generated between the two neutrons with either the same or opposite circulation directions. This attractive force is known as "Strong Force" (Fig. 11) [15], which are many magnitudes larger than the gravitational force.

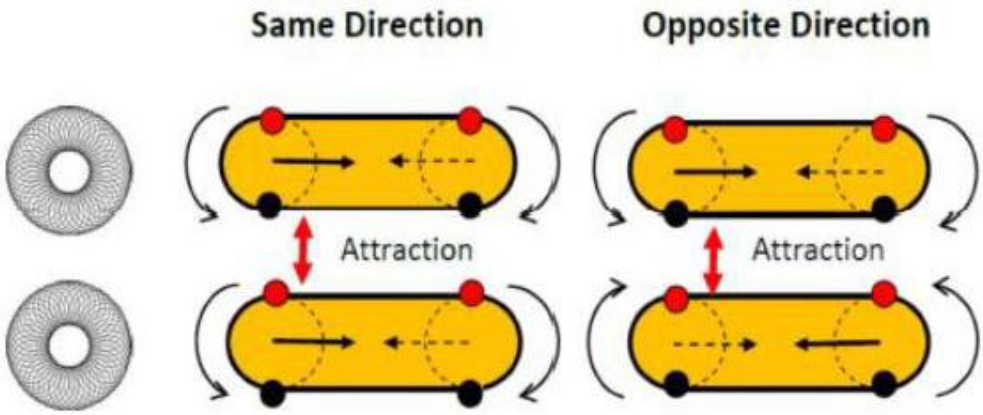

Fig. 11 Strong force between two neutrons.

When a neutron comes close to a proton made of a neutron, positron and electron antineutrino, both the weak force between neutron and positron (Fig. 12), and the strong force between neutron and neutron (Fig. 12) are generated to overcome the repulsive force between protons (or positrons in the protons) so as to keep them together inside the nucleus.

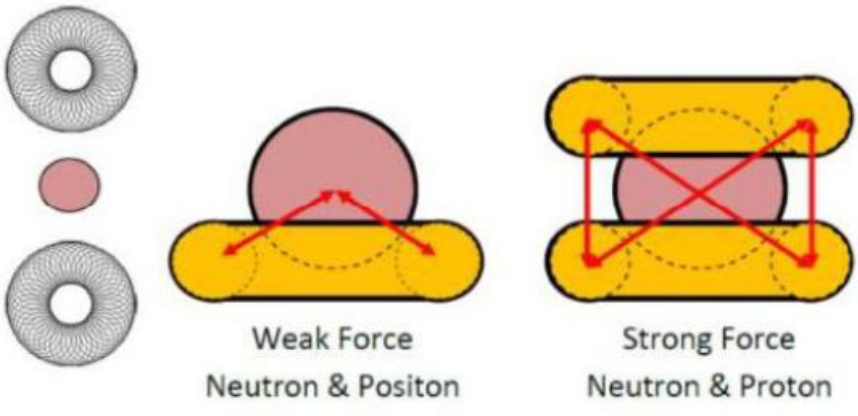

Fig. 12 Weak force and strong force.

H. Colors of Quarks and Gluons

In addition to the asymmetry due to the uneven distribution of Yangton and Yington in Wu's Pairs, there is another asymmetry called "Color" [5] specified by red, blue and green colors that are related to the orientation between two connected quarks. Because each proton or neutron contains three quarks and each quark only allows one color (red, blue or green), there are a total of eight possible gluons with the following arrangements: UDU/RBG, UDU/RGB, UUD/RBG, UUD/RGB, DDU/RBG, DDU/RGB, DUD/RBG and DUD/RGB. For example, UDU/RBG represents a gluon connected between two up quarks with red and green colors, influenced by a down quark of blue color.

I. Strong Forces Between Proton/Neutron and Neutron/Neutron Pairs

According to Yangton and Yington Theory, in both proton and neutron, gluons [5] (the strong force carriers) serve as the connectors of two quarks influenced by the third quark with a mixed color of preferred orientation. It is proposed that the gluon connected between two quarks in the parent neutron or proton will comply with the quark in the adjacent neutron such that a close packed structure can be formed [16]. For example, as illustrated in Fig. 13, a gluon (UDD) in the parent neutron connected between an up quark (U) and a down quark (D) and influenced by the a third down quark (D), can be conected with the up quark (u) of the adjacent neutron, such that the strong force between two adjacent neutrons, or between a neutron and proton makes no difference to that between the three quarks inside a single neutron or proton.

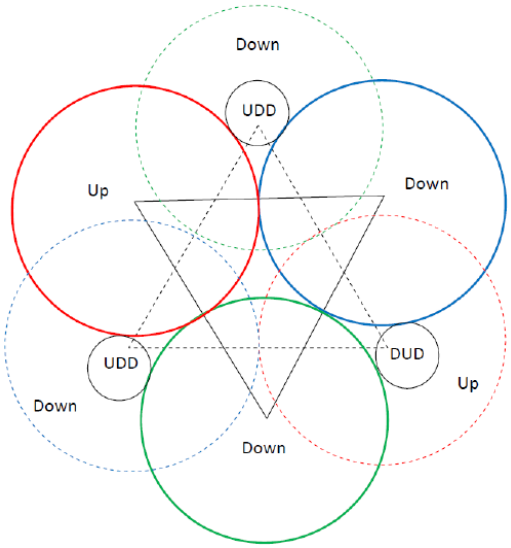

Fig. 13 Strong forces between quarks and gluons and between two neutrons.

J. Gauge Bosons

In Standard Model [5], Gauge Bosons including photon, gluons, W & Z Bosons and graviton are considered as force particles or force carriers. Photon is the carrier of electromagnetic force, gluons are the carriers of strong force, W & Z Bosons are the carriers of weak force and graviton is the carrier of gravitational force.

All Gauge Bosons are force carriers, like photon shouldn't contain any charge and mass. W^+ and W^- Gauge Bosons, however, both have charges and Masses because they are not made of pure force carriers, instead, they are the composites of forces, particles (mass) and charges (electron and positron). On the other hand, Zero Gauge Boson contains force and particles (masses) but charges.

K. Antimatter and Baryogenesis

Antimatter [17] is a matter composed of antiparticles, which have the same mass as particles of ordinary matter but opposite charges, as well as other particle properties such as Lepton and Baryon Numbers. Just like Yangton and Yington, antiparticle pairs can be generated by energy simultaneously such as electron and positron, electron neutrino and electron antineutrino, etc. Collisions between particles and antiparticles leads to the annihilation of both, giving rise to variable proportions of intense photons (gamma rays), neutrinos, and less massive particle–antiparticle pairs. The total consequence of annihilation is a release of energy available for work, proportional to the total matter and Antimatter mass.

There is considerable speculation as to why the observable universe is composed almost entirely of ordinary matter, but an even mixture of matter and Antimatter. This asymmetry of matter and Antimatter in the visible universe is one of the great unsolved problems in physics. The process by which this inequality between particles and antiparticles developed is called "Baryogenesis".

Most subatomic particles composed of Wu's Pairs have symmetrical structures which inhibits the formation of their Antimatters. That is why anti-Wu's Pair, anti-photon and anti-graviton do not exist. Only a few polarized particles such as electrons and positrons (Fig. 8) which have asymmetrical (polarized) distribution of Yangton and Yington particles can form Antimatters. This explains Baryogenesis.

L. Beta Decay and Inverse Beta Decay

Since positron is the Antimatter of electron and electron neutrino is the Antimatter of electron antineutrino, free neutron in Beta Decay at high energy state first incubates two pairs of Antimatter, an electron/positron pair and an electron neutrino/electron antineutrino pair, then emits the electron and electron antineutrino, while maintaining the neutron, positron and electron neutrino to form a proton at low energy state. This phenomenon is known as "Beta Decay".

$n^0 = n^0 + (e^+ + e^-) + (\nu_e + \underline{\nu}_e) = (n^0 + e^+ + \nu_e) + e^- + \underline{\nu}_e = p^+ + e^- + \underline{\nu}_e$

$n^0 \rightarrow p^+ + e^- + \underline{\nu}_e$ (Beta Decay)

In Inverse Beta Decay, the weak force between the neutron and positron in a proton is overcome by the kinetic energy of the proton such that a proton can transfer to a neutron by emitting a positron and an electron neutrino.

$p^+ \rightarrow n^0 + e^+ + \nu_e$ (Inverse Beta Decay)

M. Electrical Force and Magnetic Force

In addition to the attractive and repulsive electrical forces formed between static electrons, positrons and protons, a secondary magnetic force can be generated with the moving electrons, positrons and protons caused by the distribution of electric field.

As two electrons moving straight in the same direction with their particle waves in phase (0^o or 360^o from each others), they can move in parallel or line up with each other by the attractive magnetic force between the magnets generated by the electron spins. Otherwise, with their particle waves out of phase (180^o), they will move away from each other by a repulsive magnetic force between the magnets generated by the electron spins. These induced forces are perpendicular to electron moving direction [18].

Furthermore, as two circulating (orbiting) electrons come together in the same circulation direction, an attractive magnetic force perpendicular to electron circulation direction can be generated between the two magnets produced by electron circulations. Otherwise, as circulating in the opposite directions, a repulsive magnetic force perpendicular to electron circulation direction can be generated between the two magnets produced by electron circulations (Fig. 14).

Similarly, all the electrons in an electron current shall move toward the same direction with circular attractive magnetic forces between the magnets generated by electron spins (right hand thumb rule). These induced forces are named "Magnetic Force" and the distribution of the magnetic forces is called "Magnetic Field" [19].

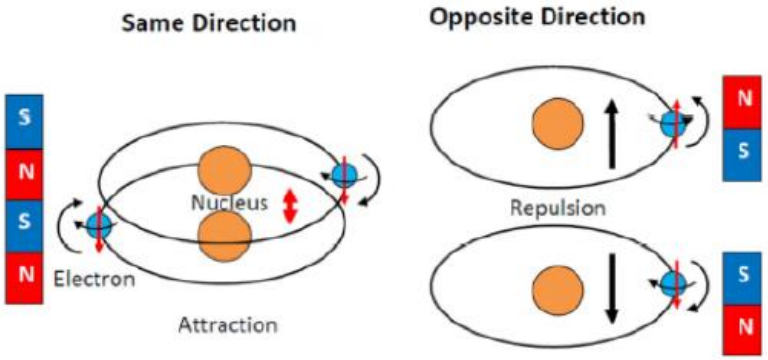

Fig. 14 Electromagnetic force between two atoms each with a single outer layer electron.

N. Wave Particle Duality and De Broglie Matter Wave

Based on Yangton and Yington Theory, it is believed that only polarized spinning particles such as photon and electron can have Wave Particle Duality [20]. Since graviton is not polarized particle therefore it doesn't have Wave Particle Duality.

A spinning particle separated from a spinning system should have a kinetic energy E that is proportional to the particle mass m and the spin frequency ν. This is named "Whirlpool Theory".

$$E = \kappa m \nu$$

Where κ is whirlpool constant. (Note: This is a revised theory corrected from my previous publication [21], in which momentum was mistakenly applied).

Also, the energy and momentum of a spinning particle are related as follows:

$\Delta E = P \Delta V$

Assuming the final speed of the particle is V, then

$$E = PV$$

Therefore,

$P = E/V = \kappa m \nu / V$

$$P = \kappa m / \lambda$$
$$\lambda = \kappa m / P$$

Where κ is the whirlpool constant. m is the mass, E is the energy and P is the momentum of the spinning particle. V is the speed, ν is the frequency and λ is the wavelength of De Broglie Matter Wave [22] of the spinning particle.

1. Photon

According to Whirlpool Theory, for a photon

$E = \kappa m_{yy} \nu$

$E = PC$

$P = \kappa m_{yy} / \lambda$

$\lambda = \kappa m_{yy} / P$

Given

$$h = \kappa m_{yy}$$

Therefore,

$$E = h\nu$$
$$E = PC$$
$$P = h/\lambda$$
$$\lambda = h/P$$

Where E is the kinetic energy, P is the momentum, λ is the wavelength and ν is the frequency of a photon, h is the Planck constant 6.626×10^{-34} m^2kg/s.

It is believed that during the photon separation process, the string energy associated with the string force between two Wu's Pairs on the surface of the substance is converted to the kinetic energy of the photon.

Since whirlpool constant κ is unknown, Planck constant h can be used in the representation of E, P and λ for a spinning particle of mass m as follows:

$$E = (m/m_{yy})\, h\nu$$

$$P = (m/m_{yy})\, h/\lambda$$
$$\lambda = (m/m_{yy})\, h/P$$

2. Electron

For an electron circulating around the atomic nucleus, the wavelength caused by the spin of electron can be represented as:

$$\lambda = m_e\kappa/P$$

Because

$$h = \kappa m_{yy}$$

Therefore,

$$\lambda = (m_e/m_{yy})\, h/P$$

Where m_e is the mass of an electron, m_{yy} is the mass of photon and h is Planck Constant.
According to Bohr model,

$2\pi R = n\lambda = n(m_e/m_{yy})\, h/P$

$m_e(V^2/R) = KZ(e^2/R^2)$

$E = -\frac{1}{2}\, m_eV^2$

Also,

$\hbar = h/2\pi$

Therefore,

$$\lambda = (m_e/m_{yy})h/P$$

$$V = (KZe^2/m_eR)^{1/2}$$

$$R = (n^2\hbar^2/m_eKZe^2)(m_e/m_{yy})^2$$

$$P = m_e(KZe^2)/(n\hbar)(m_e/m_{yy})$$

$$E = -\frac{1}{2}\, m_e(KZe^2)^2/(n^2\hbar^2)(m_e/m_{yy})^2$$

Since m_e/m_{yy} is the amount of Wu's Pairs in an electron, it is a constant and as is $(m_e/m_{yy})^2$. As a result, De Broglie wavelength, momentum and energy of electron in Bohr Model are calculated. All Planck constant h in the old formula should be replaced by $(m_e/m_{yy})h$ in the new version.

O. Dark Matter

Dark Matter [4] like any other subatomic particle is composed of a number of Wu's Pairs [23]. It is proposed that Dark Matter has a tetrahedral structure of four Yangton and Yington Pairs (Fig. 15). Each Yangton and Yington Pair is circulating on its own orbit at 109.5° away from the other three pairs. Because the Yangton center coincides to the Yington center, there is no dipole in the center of the tetrahedral structure. As a result, there is nearly no attractive force between two Dark Matters neither between Dark Matter and any other particles. Also, only limited gravitational force can be generated by Dark Matter. Therefore, Dark Matter cannot be used as the building blocks for any substance. Furthermore, because Dark Matter has a very stable structure and no particle can escape from it, therefore Dark Matter is totally invisible. That is why it is named "Dark Matter".

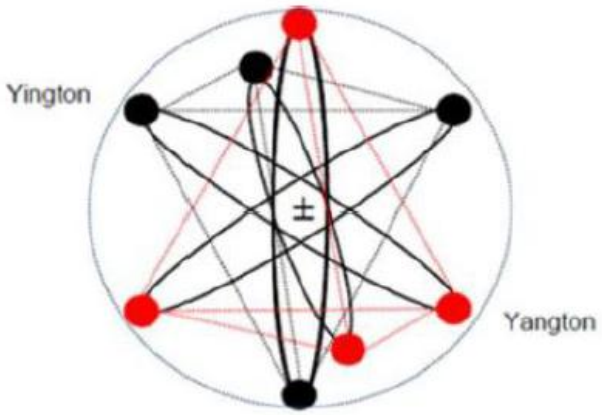

Fig. 15 A hypothetical tetrahedral structure of Dark Matter.

IV. Quantum Field Theory

Quantum Field Theory is a theory based on the assumption that "Everything is made of fields and particles are nothing but the surges of the fields". Standard Model based on Quantum Field Theory is derived from quantum mechanics and Einstein's Special Relativity [39]. Despite the wrong postulation that the light speed in constant, Special Relativity is adopted in Standard Model and Quantum Field Theory mainly because of the Relativism that the mass of an object increases when it moves close to light speed. Otherwise, with zero mass, photon and gluons could never have sufficient energies to participate in the subatomic particle interactions.

A. Uncertainty Principle

Introduced first in 1927, by the German physicist Werner Heisenberg, the Uncertainty Principle states that the more precisely the position of some particle is determined, the less precisely its momentum (or velocity) can be predicted from initial conditions, and vice versa [24]. The formal inequality relating the standard deviation of position ΔX and the standard deviation of momentum ΔP was derived by Earle Hesse Kennard later that year and by Hermann Weyl in 1928 as:

$$\Delta P \, \Delta X \geq \hbar / 2$$

This can also be represented as:

$$\Delta E \, \Delta t \geq \hbar / 2$$

Where ΔP is the standard deviation of momentum, ΔX is the standard deviation of position, ΔE is the standard deviation of energy, Δt is the standard deviation of time and $\hbar$ is the reduced Planck constant $h/(2\pi)$.
Uncertainty Principle allows flexible energies and positions which plays an important role in subatomic particle interactions such as Quantum Electrodynamics (QED) and Quantum Chromodynamics (QCD).

B. Mass and Energy Conversion

It is assumed that mass and energy are convertible such as that Yangton and Yington particles (could also be considered as energy particles) can be produced by the energy generated from the Big Bang explosion and nuclear reaction.

$$E_{Creation} + E_{Circulation} \leftrightarrow \text{Yangton } \Phi \text{ Yington}$$

The conversion between Mass and Energy can also be commonly found in LHC experiments [8]. In some cases, an external energy must be applied to overcome the activation energy like that in chemical reactions. Because of these reasons, antiparticle pairs can be formed from vacuum by external energy. Heavy particles can be produced from light particles [14] and gamma ray can be generated from antiparticle annihilations [11]. Furthermore, a virtual photon [6] can be used to represent an energy transformation process.

C. Field versus Wave

According to Yangton and Yington Theory, waves can be made of polarized spinning particles such as Wu's Pairs, photons and electrons, but not gravitons. But Fields on the other hand reflect the distributions of particles in space such as the gravitational field which represents the distribution of gravitons (more correctly graviton concentration vectors) in space resulting from Graviton Radiation.

D. Field and Particle Radiation

Gravitational field is the summation of the vectors of gravitational forces generated from all the objects in the universe onto a unit mass at a point in space. It also reflects the summation of the graviton vectors emitted from all the objects in the universe to the point based on Particle Radiation and Contact Interaction Theory [25]. With the linear relationship (same amount and direction) between gravitational field and the summation of graviton vectors at any point in space, gravitational field (the distribution) can be considered as a "Replica" of the distribution of graviton vectors in space.

Similar to gravitational field, the electrical field is defined as the vectors of electrical forces applied from all the charged particles in the universe onto a unit charge at a point in space. Therefore, based on Particle Radiation and Contact Interaction Theory, electrical field can also be interpreted as a "Replica" of the distribution of electron vectors in space.

As a result, both the gravitational and electrical fields can be derived from Particle Radiation and Contact Interaction Theory with a linear relationship to the distributions of graviton vectors and electron vectors respectively. Therefore, the Particle Radiation and Contact Interaction Theory can be considered as the foundation of Quantum Field Theory [6], as well as Quantum Gravity Theory [26] and Unified Field Theory [27].

E. Unified Field Theory

According to Yangton and Yington Theory, Force of Creation, the inter-attractive force between Yangton and Yington Pairs is the fundamental force of the universe. Elementary subatomic particles having string structure are composed of Wu's Pairs with string force generated from Force of Creation. Composite subatomic particles, on the other hand, are made of elementary subatomic particles with four basic forces also generated from Force of Creation. Furthermore, subject to the structure, all matters in the universe are composed of various elementary and composite subatomic particles with string force and four basic forces generated from Force of Creation. This is known as "Unified Field Theory" [27].

In the past few decades, physicists tried to develop a quantum gravity theory in compliance with both quantum field theory and general relativity as a unified field theory to explain the interactions between subatomic particles and four basic forces. So far, there has been a little success due to the incompatibility between quantum field theory and general relativity. However, based on Yangton and Yington Theory, subatomic particles with string structures made of Wu's Pairs and Force of Creation can easily interpret unified field theory in compliance with both quantum field theories and general relativity.

F. Quantum Gravity Theory

There are two problems, infinity and non-renormalization [28], involved in the derivation of a quantum gravity theory [26] based on general relativity and quantum field theory. To avoid the problems, string theory [7] and loop quantum gravity [26] are proposed as two possible solutions.

According to Yangton and Yington Theory, gravitational force can be generated between two gravitons with string structures made of Wu's Pairs. In addition, quantum field theory is considered as the distribution of the vectors of particle caused by particle radiation in the universe. Therefore, it is believed that "Quantum Gravity Theory" can be interpreted by Graviton Radiation and Contact Interaction Theory [10] [25].

V. Quantum Field Theory versus Yangton & Yington Theory

In general, a conceptual comparison between Quantum Field Theory and Yangton and Yington Theory can be represented as follows:

A. Quantum Field Theory

Quantum Mechanics (QM) + Special Relativity → Quantum Field Theory (QFT)

Quantum Field Theory (QFT) + Yang-Mills Theory → Standard Model

General Relativity + String Theory (Calabi-Yau Manifold + Quantum Field Theory (QFT)) → Quantum Gravity Theory (QGT) → Unified Field Theory (UFT)

B. Yangton & Yington Theory

Point Particle + Particle Radiation & Contact Interaction (PRCI) → Quantum Field Theory

String Particle + Particle Radiation & Contact Interaction (PRCI) → Quantum Gravity Theory (QGT) → Unified Field Theory (UFT)

In general, Wu's Pairs and Yangton and Yington Theory could provide a particle model and physical picture for the interpretation of Quantum Field Theory, Quantum Gravity Theory and Unified Field Theory.

VI. Conclusion

God's Particles by definition are the building blocks of the universe. Logically God's Particles should obey Five Principles of The Universe. Also, they should be able to build all matters in the universe especially those subatomic particles with Four Basic Forces. Based on the Five Principles of The Universe, a pair of super fine anti-particles (Yangton and Yington) with an inter-attractive force (Force of Creation) can be created temperately from vacuum space. Consequently, in compliance with Big Bang Theory, a permanent circulating particle pair (Wu's Pair) composed of Yangton and Yington particles can be generated as the building blocks (God's Particles) of the universe. In this review paper, subatomic particle structures and Four Basic Forces based on Wu's Pairs and Yangton and Yington Theory are studied. Also, Standard Model and Quantum Field Theory are compared with Wu's Pairs and Yangton and Yington Theory. As a result, Wu's Pairs as God's Particles (Building Blocks) can be used successfully with String Force and Four Basic Force induced from Force of Creation to produce all matters in the universe.

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