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## RESEARCH ARTICLE

# THE CREATION OF THE UNIVERSE (BEYOND THE BIG BANG – UNIFICATION OF PHYSICS)

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### ARTICLE INFO

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### ABSTRACT

“Absolute Unconditional Zero” is explained which was the condition before the creation of the Universe (Before the Big Bang) equal to non-existence of Space, Time and Mass-Energy. Because of non existence of Relative Conditions (like Space-Time and Energy), Absolute Unconditional Zero projected itself as “One Dimensional Unidirectional Upward Positive Imaginary Straight Unconditional Absolute Infinite Line  $\{i; i=\sqrt{-1}\}$ ” which was equivalent to “Infinite Imaginary Mass” with no existence of Space-Time. Its point like Dark Shadow i.e. “Absolute Infinitesimal Point  $\{-i\}$ ” sucked Segment of Infinite Positive Line in downward direction for distance of  $iQ$  ( $Q$ =Value of Charge) and for Quanta of Time  $iT_Q$  ( $T_Q = Q/c = \text{ON/OFF Action}$ ) with the help of Vacuum (Differential Pressure = Infinite Pressure – Zero Vacuum Pressure) which was present everywhere. The moment when ON/OFF action was finished (Equivalent to cyclic rotation; either clockwise or anti-clockwise i.e. Rotational Asymmetry), this action oriented segment called as Energy along with equal amount of Absolute Positive Massive segment ( $H_Q^2 = G_0 * M_c$ ;  $H_Q = 1/\{2*\pi*T_Q\}$ ) was Collapsed instantaneously (Time=0) in terms of Quanta particles. Each quanta one dimensional Massive ( $k$ ) Boson particle ( $h=Q*c*k$ ;  $k \approx \text{TeV}$ ; Spin=0) was enveloped by equal amount of Massless Boson particle (Spin=0). Asymmetry in rotation of this Massless Boson particle shifted Massive Boson Particle diagonally to 4<sup>th</sup> Dimension such that each Massive particle was converted into Quadra particle with 2 Pairs of Fermion particles- 1) Pair of Top Neutrino and Bottom Anti-Neutrino, and 2) Pair of Quark and Anti Quarks. Further process of creation from this Quadra particle into Internal 3 Dimensional Space is already explained by Author in his previous paper “Theory of 3 Folds and 5 Dimensional Universe”. For this, The Standard Model of Particle Physics is used to arrange all known Fundamental particles (Fermions and Bosons) in 3 Folds way in 4<sup>th</sup> Imaginary Space. Some of the views of above paper are replaced with simplified concepts in order to better understand creation of our Universe (For e.g., Matter - Antimatter Asymmetry is explained through 4<sup>th</sup> Dimensional Rotation by Vertical Massless Boson Energy Particles instead of 5<sup>th</sup> Dimensional Rotation). While overall concept of evolution of the Universe in terms of 3 Folds in 4<sup>th</sup> Imaginary Dimension remains same.

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## I. INTRODUCTION {UNCONDITIONAL ABSOLUTE ZERO=ABSOLUTE VACUUM}

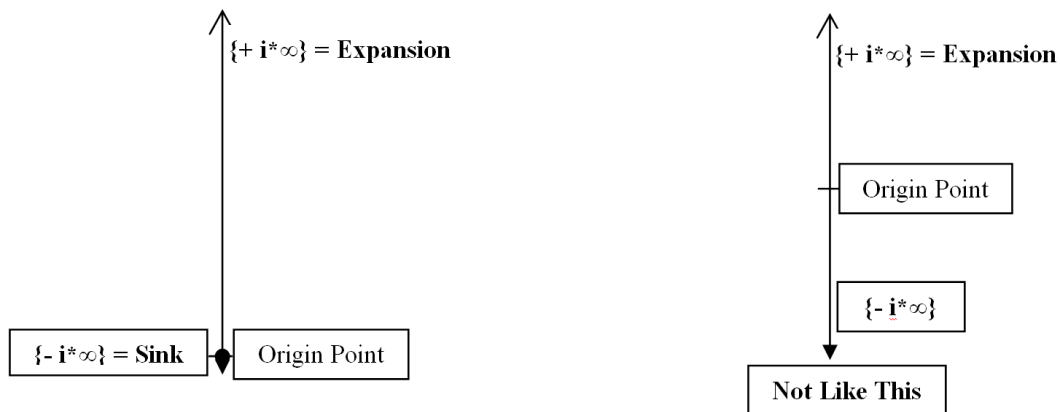
In Cosmology, The Big Bang Model is a broadly accepted theory for the origin and evolution of our universe. It postulates that  $13.7 \pm 0.13$  billion years ago, the portion of the universe we can see today was only a few millimeters across. It has since expanded with a primordial explosion from this extremely hot and dense state into the vast and much cooler cosmos we currently inhabit. The Big Bang Model is supported by a number of important observations like, the expansion of the universe (Edwin Hubble's 1929 observation and Type-Ia Supernova Observations of Accelerating Universe); The abundance of the light elements H, He, Li (20–30% helium); Detection of The cosmic microwave background (CMB) radiation (a residual temperature of 2.726 K) independently by COBE, BOOMERanG, WMAP. The framework for the model relies on Albert Einstein's general relativity and on simplifying assumptions of Cosmological Principle (such as homogeneity and isotropy of space on large scale). The governing equations had been formulated by Alexander Friedmann. To this end, the cosmological principle has been confirmed to a level of  $10^{-5}$  via observations of the CMB. The Universe has been measured to be homogeneous on the largest scales at the 10% level. If the creation of the Universe started from expansion (primordial explosion) of mass-energy from infinitesimal point having infinite density (Singularity), then there must be reason behind that explosion. In this theory, attempt is made to know creation of our Universe from point of nothingness i.e. Absolute Zero.

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Originally, there was nothing; Neither Space-Time, Nor Mass-Energy. In the beginning of things, what was there? Nothing was there; there was neither existence, nor non-existence. What we called it as “Absolute Zero”. Nothing was there in that Absolute Zero from Infinite as well as Infinitesimal Point of view. It means, It was “Pure (Uniform) Imaginary Absolute Unconditional Zero”. No condition was present there. Condition requires presence of other thing and in daily routine; we see them in our Reality Space. For e.g. when we say, there is no apple in the basket (Qty. of Apple = 0), we use conditional zero or relative (Quanta) aspect by putting condition to see/ count only whole apples in that basket and no other things (i.e. Given Condition separates or divides things from each other). Thus, R.H.S. zero in above equation solely depends upon L.H.S. (Qty. of Apples limited to that Basket only). While Unconditional thing, doesn’t depend upon other things (Conditions). It doesn’t hold Quanta Aspect. It is Continuous and Homogeneous. You can’t imagine such an Absolute Unconditional Zero at any point in Reality Space. Hence, it is Absolute and Imaginary Zero. Though Absolute (Imaginary) Zero and Conditional (Relative) Zero, both are Zeros, but still they are opposite to each other from Absolute (Non-Quanta, Imaginary) and Relative (Quanta, Reality) point of view. One is Simply Zero while other requires condition or Quanta of Reality Space to make it zero like ( $a=0$ ). Thus, in the beginning, “Condition” was in the form of “Non-Existence” as no condition was present there i.e. no relativity was there. And “Un-Condition” was in the form of “Existence”. Only, one thing was present there i.e. Absolute Unconditional Zero. Thus, Absolute Unconditional Zero means Neither Existence and Relative Conditional Zero means Nor Non-Existence. From Adhyatma Point of view, one can say that, “Relative Condition was equivalent to Death, while Absolute Un-Condition was in the Form of Absolute Life”. Conditional aspect always grabs other object to make it conditional (Apple=0) and as there was nothing to grab in reality space (Real Space itself was in Non-Existence form); there was only presence of Pure Imaginary Unconditional Zero. Relative conditional zero was equivalent to non existence of Death (Death puts condition on Life i.e. how much Life to live i.e. in case of non existence of death, life will become Infinite- Endless). In other words, one can say that, existence of Absolute Unconditional Zero destroys existence of Relative Conditional Zero. Thus, Absolute Unconditional Zero was Destroyer of Relative Conditional Zero. Everything should come into existence from this “Absolute Imaginary Unconditional Zero”.

There was nothing to hold or Gravitate Absolute Zero in its Form, Obviously Absolute Zero will separate from Non-Existence Conditional Zero within no Time ( $T=0$ ). Division (Separation) of Absolute Un-Conditional Zero from Relative Conditional Zero means zero divided by zero  $\{0/0\}$  which is non sensual equation from Math’s aspect. But, as told earlier, both zeros are not same from Absolute and Relative point of view. One can write, Numerator Unconditional imaginary Zero in the form of  $(i - i = 0)$ . As Unconditional Zero was in the form of “Pure Imagination”, it is not possible to measure it in terms of MKS or CGS system. So, this Equation can be written as,

$$\{0/0\} = \{(i) + (-i)\}/0 = \{(i*\infty) + (-i*\infty)\} \quad (1)$$



**Fig. 1. Upward Absolute Infinite Imaginary Line and its Dark Shadow (Downward Absolute Infinitesimal Point)**

R.H.S. 1<sup>st</sup> Term in Equation (1) says that, Absolute Unconditional Zero (Pure Imaginary Space) through destroy of Conditional Zero projected in upward direction in terms of “One dimensional unidirectional positive imaginary straight unconditional absolute infinite line”. Absolute Unconditional Infinite Line didn’t come into existence, because actually it was existed there in the form of Infinite Nowhere i.e. Pure Imagination. It just expanded into One directional Infinite Imaginary Space within no Time ( $T=0$ ). Its expansion was not restricted by means of speed limit (Condition) for e.g. Speed of Light. More you will stretch your Imagination to find its end, more it will expand forever. There is no end to its expansion. From Adhyatma view, He is Absolute Life with Infinite Future. When there is no end to anything, there is Future for that Thing.

And 2<sup>nd</sup> Term in above equation, points out projection of Absolute Unconditional Zero in downward direction in terms of “Infinitesimal point (Black Dot) i.e. Absolute Conditional Zero”. It is a Point Shadow (Darkness) of that Absolute Infinite Positive Imaginary Straight Line. It was conditional because, though it has downward direction, still it was not moving beyond Origin point (i.e. condition of not to go beyond Origin point was present there). Also, though it was Absolute Downward Infinite Line, because of above restriction, still it was in the form of Absolute Infinitesimal point. It is interesting to note that, Infinite ( $\infty$ ) property of Absolute Unconditional Line automatically is shared by this Absolute Infinitesimal Point which is equivalent to Negative Infiniteness. In Negative Infiniteness, if you start to run from origin point, then instead of going in downward direction, you will actually move in upward reversed direction with decrease in your speed (i.e. deceleration) and at some point you will stop. It does

not matter with which speed you started, but at the end, you will definitely stop. There was pressure difference at Origin Point between Absolute Imaginary Positive Upward Straight Line (Infinite Pressure) and surrounding Vacuum (Zero Pressure). With the help of this “Infinitesimal downward point (Black Dot), Relative Vacuum sucked Absolute Infinite Positive Imaginary Line into Downward Direction (Similar like Flow of Liquid takes place from High Pressure to Low Pressure). As it is action or Conditional Process, it should take place within Quanta of Time ( $T_Q$ ). Quanta of Time means ON/OFF Action. Process exists for particular interval of Time and not after that. This Infinitesimal Point with the help of Relative Vacuum sucked some part of Absolute Infinite Positive Line into downward direction for Quanta of Time ( $T_Q$ ). It was raised towards Upward Direction (As it was not possible to go beyond Origin Point) and was converted into Dark Imaginary Line Segment (Say, Length of Imaginary Line =  $Q$ ) from its original existence of Infinitesimal Dark Point. Definitely, this process should take place with Conditional Speed equal to Speed of Light,  $c$  which as we know from Maxwell’s Equation, depends upon Vacuum properties viz. Permittivity & Permeability of Vacuum  $\{c=1/\text{Sqrt}(\epsilon_0*\mu_0)\}$ . But, here it is not possible to measure this speed equal to  $3*10^8$  m/Sec because this process was happening inside Imaginary Line and not into real space. After it was charged and stopped up to Definite Line Segment ( $Q$ ), it again fell down (It decelerated while going upward and stopped at some point, then came downward and again stopped at origin point. This motion is similar like circular motion with constant speed). But, at this time, because it was already converted into action oriented Imaginary Line Segment, this Dark Line Segment called as Energy fell down along with equal amount of Absolute Positive Massive segment (Critical Mass =  $M_c = G_0 * H_q^2$ ;  $H_q = 1/\{2*\Pi*T_Q\}$ ) and was Collapsed instantaneously (Time=0) into (3+1) Dimensional Space (3 Dimensional Real Space and 4<sup>th</sup> Imaginary Space) in terms of Quanta particles. Each quanta one dimensional Massive Boson particle (Spin=0) was enveloped by equal amount of Massless Boson particle (Spin=0).

For this whole process (ON/ OFF Action with frequency,  $H_Q$ ), Equation (1) can be written as,

$$\begin{aligned} \{(i^{\infty}) + (-i^{\infty})\} &= \{(i^{\infty} H_Q^{\infty}) + [(i^{\infty} H_Q)(i^{\infty} H_Q)(i/H_Q)^{\infty}]\} & \text{--- } \{-i = i*i*i\} \\ &= (i^{\infty}) * [H_Q + \{(i^2 * H_Q^2)/H_Q\}] = (i^{\infty}/H_Q) * [H_Q^2 - H_Q^2] & \text{--- } \{i^2 = -1\} \\ &= (i^{\infty}) * [H_Q^2 - H_Q^2] \end{aligned} \quad (2)$$

**In Cosmology, for Flat Universe ( $\Omega=0$ ), critical density,  $\text{Kg/m}^3$  ( $\rho_c$ ) of the Universe is written as,**

$$H^2 = (8*\Pi/3)*G*\rho_c \quad (3)$$

Where,  $G$  = Gravitational Constant =  $6.67*10^{-11}$   $\text{m}^3/(\text{Kg}*\text{Sec}^2)$  &  $H$  = Inverse of Duration of the Universe. Above formula is used for our 3 Dimensional Real-Space. If we reduce it for 0-Dimensional Space, then instead of Critical Density, we have to change it as Critical Mass ( $M_c$ ) and  $G$  will also changed to  $G_0$ , Gravitational Constant for 0-Dimensional Space. Then, it can be written as,

$$H^2 = H_Q^2 = (2*\Pi*T_Q)^{-2} = G_0*M_c \quad (4)$$

By putting above value of ( $H_Q^2$ ) in equation (2), we get,

$$\{(i^{\infty}) + (-i^{\infty})\} = (i^{\infty}) * G_0 * [M_c - M_c] \quad (5)$$

$$= (i^{\infty}) * G_0 * [ \overleftarrow{M_c} + \overrightarrow{M_c} ] \quad (6)$$

As far as we know that, Mass is a Scalar Quantity (Doesn’t have direction). That means, we will get same value of Mass of any object irrespective of in which position (Direction), it is placed. It doesn’t change from place to place. Therefore, we defined it as scalar quantity. But, in my earlier paper, “Theory of 3 Folds and 5 Dimensional Universe”, I had already proved equivalence between Mass and Imaginary One Dimensional Straight (Absolute) Line, which says that Imaginary Mass is a Vector Quantity. According to this Theory, we are experiencing Mass as a Scalar Quantity, because that mass is Sum of Absolute Masses i.e. Union of 3 Imaginary Absolute Lines perpendicular to each other in 3 Dimensional Space. Eq. (5) and Eq. (6) are different equations because Critical Mass in Eq. (5) is Relative, while that ( $M_c$ ) in Eq. (6) is Absolute. Hence, Vector notation (Arrow) is shown there. Equivalence between Mass and Imaginary One Dimensional Straight (Absolute) Line will be explained later. Right now, in above Eq. (6), we can insert Energy ( $E$ ) Term also, because Energy is Massless ( $M=0$ ) and is a Scalar Quantity (Directionless). Therefore,

$$\{(i^{\infty}) + (-i^{\infty})\} = \overleftrightarrow{\{i^{\infty}\}} = \{i^{\infty}\} * G_0 * [ \overleftarrow{M_c} + E + \overrightarrow{M_c} ] \quad (7)$$

In above Eq. (7), Quantity written in bracket [ ], is a Whole Zero from Absolute Mass point of view and it is Our Universe.

Action oriented Energy ( $E$ ) or Dark Imaginary Line Segment through collapse lost Absolute Infinite One Dimensional Imaginary Line. Hence, after it fell down, it will always appear as boundary curved line instead of straight line like circumference of circle. It will always appear on surface. For e.g. in Thermodynamics, Heat, Work has Surface property. As we know, ( $-i = i*i*i$ ), which points out internal 3 dimensional imaginary space, hence energy (Massless Boson, Spin=0) particle whose origin is Absolute Negative Infinitesimal Imaginary Point ( $-i$ ), should appear in 4<sup>th</sup> Dimension at boundary of that particle. Boundary defines Condition i.e. Energy holds Relative and Conditional aspect. These All Energy particles because of ON/OFF action and due to their Surface property, got rotational motion (Either Clockwise or Anti-Clockwise) so that for all of them, their Vector Direction

of Angular Velocity should point towards downward direction in 5<sup>th</sup> Dimension. Thus, even these Energy particles have zero spin, still they have rotational motion (Either Clockwise or Anti-Clockwise) which is called as Rotational Asymmetry. While only “Absolute Infinite Imaginary One Dimensional Straight Line” will remain in 5<sup>th</sup> Dimension. Though, He is Infinite, still He is One and Continuous.

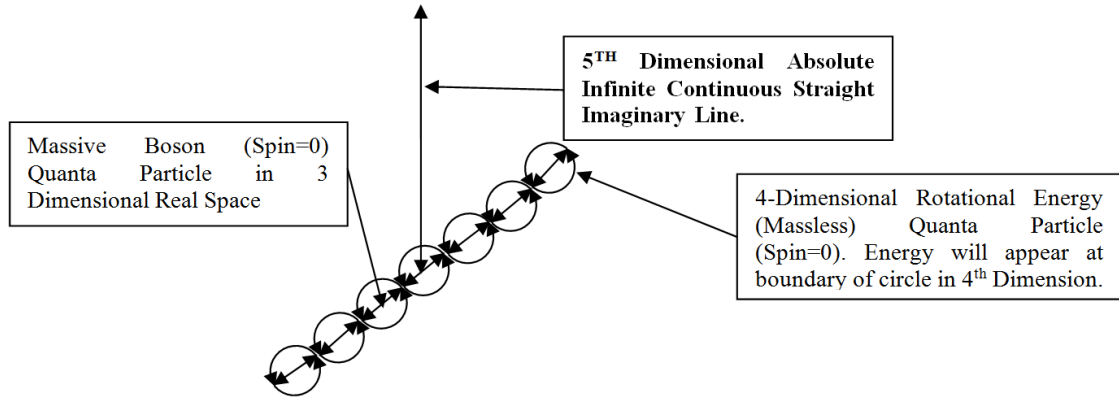


Fig. 2. Creation of 4-Dimensional Universe through Separation from 5<sup>th</sup> Dimensional Absolute Imaginary Line

In Eq. (4), if we know the value of TQ, Quanta of Time (ON / OFF Action) for Quanta of Space (Q), then we can calculate value of Critical Mass ( $M_c$ ) by rationalization of quantity  $G_0$ . For that, we have to prove equivalence between “Straight One Dimensional Imaginary Line” and “Mass” as well as to find out relation between Action (Planck’s Constant =  $h$ ) and Quanta of Space (Q), Speed of Light (c) and Maximum Mass of Massive Boson Quanta Particle.

II. Three POSTULATES AND EQUIVALENCE OF MASS WITH IMAGINARY STRAIGHT LINE

In this theory, instead of considering Grand Unification of Forces at around  $10^{18}$  GeV; it is showed that the Universe itself came into existence by “One (Unified) Fundamental Particle” at TeV Range (Not in Big Bang Rapid Inflation Way but, definitely in systematic unfolded way). The theory is based upon three postulates, viz.

1. Current Experiments limit on size of leptons and quarks up to  $10^{-19}$  m (Even at this distance, no inner structure was found for leptons and quarks).
2. “Empirical Formula” which is derived by me. It connects 4 main fundamental constants of nuclear physics as well as satisfies above first experimental aspect.

$$h = k * c * Q = m * V * \lambda = m * V * (2\pi * r) \text{ Where; } \{k/(2\pi)\} \Leftrightarrow m, c \Leftrightarrow V \text{ and } Q \Leftrightarrow r$$

$$h = \text{Planck's constant} = 6.626 * 10^{-34} \text{ J. Sec}$$

$$k = \text{Boltzmann's Constant} = 1.38 * 10^{-23} \text{ Kg} \ \& \ \{k/(2\pi)\} = \text{Maximum Mass of Particle} = 1.23 \text{ TeV}$$

$$c = \text{Speed of Light} = 2.997 * 10^8 \text{ m/Sec.}$$

$$Q = \text{Charge on Particle} = \text{Minimum Size (Radius) of Particle} = 1.602 * 10^{-19} \text{ m.}$$

The important thing about this formula is that for given experimental limit on minimum size of basic particles (which is equal to value of charge Q) and for limit on maximum speed of particle viz. speed of light, c; it gives limit on maximum mass of particle (k) in the range of TeV (What a Coincidence!). This coincidence tells us that the Universe must had started from the “One (Unified) Fundamental Particle” (Instead of one Unifying Force as in case of Grand Unification Theory) having above constants viz. h, k, c & Q in connected way. That means, if anyone wants to find the origin of each of these fundamental constants in separate way, then he has to look into the past i.e. darkness (if possible) before the creation of the Universe.

3. **Equivalence of Mass and Imaginary Line:** In String Theory, particles are defined in String Like manner (small one dimensional object) in Real Space with size equal to Planck Length around  $10^{-33}$  cm in order to avoid singularity which happens in case of point like object. However, here we have to accept 10 dimensions instead of our 4 dimensional space-time concept.

But, when I attempted to define, “One Dimensional Line”; I came to realize that, for existence of such line in Real Space, thickness of line adds at least one more dimension in Real Space. Then, this thickness, itself spoils the definition of “One Dimensional line” in Real Space. Line with Zero Thickness is meaningless from point of view of Real Space (i.e. Line doesn’t exist in Real Space). In other words, “It is impossible to draw One Dimensional Line in Real Space”.

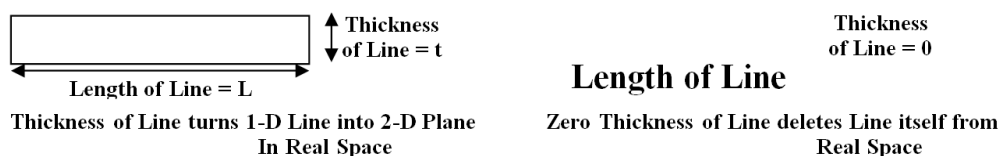


Fig. 3. Surface (Boundary or Conditional Like) Property of Real Space

While above thing doesn't happen in case of "Imaginary Space". Here, thickness of line (Imaginary Line) doesn't spoil the definition of "One Dimensional line" in Imaginary Space. This is because; one can't measure imaginary thickness in terms of fixed scale like cm or m. Now, from Physics point of view, to draw any Line, you will require some Entity i.e. Amount of Matter or Mass. Then, from above Math's point of view, Mass should never exist in Real Space because of No Existence of One Dimensional Line in Real Space. While in Imaginary Space, Mass should embed on Imaginary Line itself.

### "Mass is Equivalent to Length of Straight Imaginary Line"

Thus, from Math's and Physics, both points of view; it is easy to merge thickness of line into Imaginary Line itself. Here, zero Imaginary thickness ( $t=0$ ) will never delete the Imaginary Line {Length =  $iL$  = Amount of Matter equivalent to Length of that Line;  $i = \sqrt{-1}$ } from Imaginary Space because of existence of Mass. Keeping in Mind of above 3 postulates and Tripartite nature of particles (3 Generations or families of Fermions), in this theory, the particles of Standard Model are arranged in 3 Folds way (Bottom Fold, Middle Folds & Top Fold) from TeV to approx. 0eV in 4<sup>th</sup> Imaginary Dimension (Imaginary Line  $\equiv$  Mass) i.e. instead of point like structure, all Fermion particles act like One Dimensional Straight Imaginary Line. These particles have no thickness, hence from our 3 Dimensional Real Space, we always look them as point like or structure less particles. This equivalence is between Imaginary Mass and Imaginary Straight Line. But, in our MKS system, we are measuring Mass in terms of Kg which is not possible to measure in case of Imaginary Mass. In Eq.  $\{H_Q^2 = G_0 * M_c\}$ ; Unit of  $G_0$  connects Imaginary Mass with Real (Measurable) Mass (Note that, in above Eq., ON/OFF action, ( $H_Q$ ) represents Imaginary Time ( $2*\Pi*iT_Q$ ), hence drawn Mass ( $M_c$ ) is also in the form of Imaginary Mass. By Rationalisation of  $G_0$ , we will find relation between imaginary and real Mass. For sake of Simplicity, let us say,  $G_0 = 1$ . Then,  $\{H_Q^2 = M_c\}$ .

$$\therefore M_c = \text{Critical Mass of The Universe} = H_Q^2 = \{1/(2*\Pi*T_Q)\}^2 = \{c/(2*\Pi*Q)\}^2 = 8.8686*10^{52} \text{ Kg} \quad (8)$$

Before going ahead to know further creation of the Universe, let us get familiar with current Standard Model of Particle Physics.

### III. INTRODUCTION (The STANDARD model OF PARTICLE PHYSICS)

In the 17th century, scientists came to the conclusion that chemical elements such as hydrogen, oxygen, and copper were composed of atoms. A chemical element, hydrogen say, was thought to consist of a single type of atom. And chemical methods made it possible to determine the approximate size of such an atom:  $10^{-8}$  cm that means, one billion hydrogen atoms stacked on top of one another would reach a height of around 10 cm.

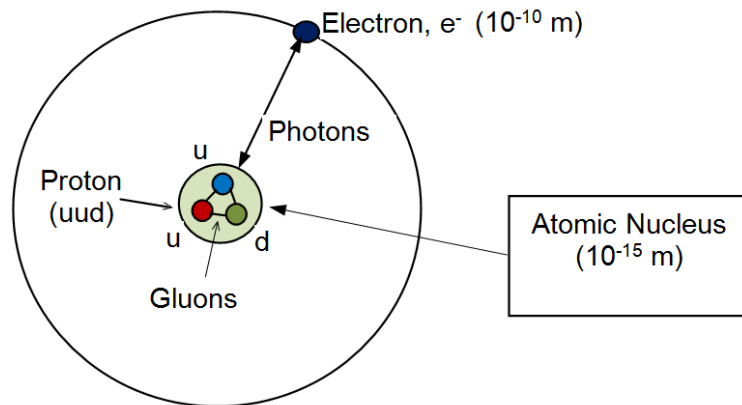


Fig. 4. Hydrogen Atom

Today we know that, normal matter is made up of quarks (which are the building blocks of the atomic nucleus), and electrons. The Standard Model describes the fundamental interactions in a simple form. The interactions are the chromo dynamic force (QCD), which acts between quarks; and the electroweak force, which acts between quarks and leptons, such as electrons. Today's Standard Model of elementary particles, which consists of the theory of the electroweak interaction plus QCD, seems to describe the whole of physics. In the Standard Model, leptons and quarks are points, singularities in space. Can such infinitely small points even have a mass? In order to introduce leptons and quarks masses, physicists invented a hypothetical field which is able to give mass to these particles. The field is called the Higgs field (Spin=0) after the theoretician Peter Higgs, who introduced this field. (But in this model, no masses can be calculated. The unknown masses are replaced by unknown parameters describing the interaction of the Higgs field with fermions.)

The Large Hadron Collider at CERN announced results consistent with the Massive Higgs particle (God Particle, Spin=0) on July 4, 2012. Could this theory prove to be a last and thereby final truth? There are a number of important questions not answered by this theory, like: Constant Mass of Particles (Fermions), Matter-Antimatter Asymmetry, Nature of Particles related to 24% Gravitating Dark Matter & around 72% Repulsive Dark Energy, Union of Einstein's Gravity Force (manifestation of the curvature of space and time; Continuous Nature of Space-Time) with Physical Forces (Particle Concept; Quanta Nature) like EMF, SNF & WNF of Standard Model, origin of 3 generations or families of Fermions viz. Quarks & Leptons etc.



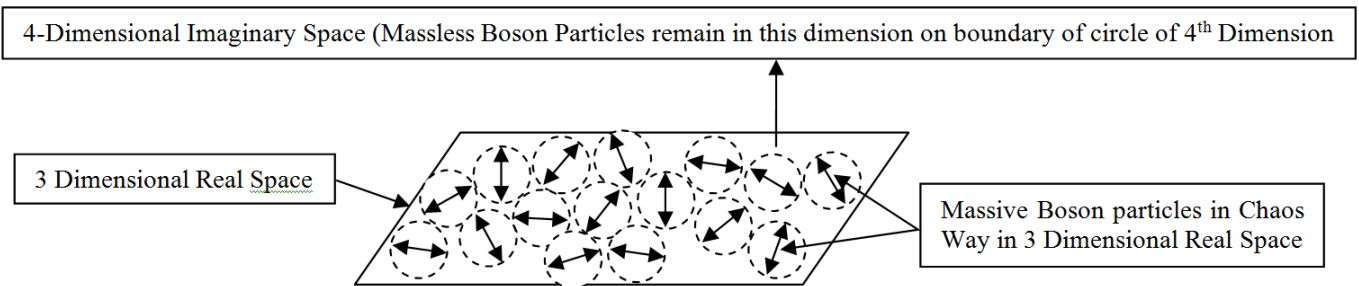
**Table 1. The Standard Model of Particle Physics**

The Standard Model			
		(Matter & Energy; $E = m \cdot c^2$ )	
Forces & Boson Particles		Fermion Particles (Spin = +/- 1/2)	
Strong Nuclear Force (SNF);	Gluon (Spin = 1); Charge = 0 Massless Particle;	3 Generations of Quarks (Always confined inside Hadrons)	
		u (Up Quark) Charge = + 2/3 Q Mass = 1-5 MeV	c (Charm Quark) Charge = + 2/3 Q Mass = 1-1.3 GeV
Electromagnetic Force (EMF)	Photon (Spin = 1); Charge = 0 Massless Particle	d (Down Quark) Charge = - 1/3 Q Mass = 3-9 MeV	t (Top Quark) Charge = + 2/3 Q Mass = 174.3 GeV
		s (Strange Quark) Charge = - 1/3 Q Mass = 70-170 MeV	b (Bottom Quark) Charge = - 1/3 Q Mass = 4-4.4 GeV
Weak Nuclear Force (WNF)	$W^+, W^-, Z$ (3 Boson Particles) (Spin =1) Mass of $W^{+/-}$ = 80 GeV; Mass of Z = 91 GeV	3 Generations of Leptons	
		$e^-$ (Electron) Charge = - Q Mass = 0.51 MeV	$\mu^-$ (Muon) Charge = - Q Mass = 105.6 MeV
Gravitational Force (GF)	Graviton (Spin = 2); Charge = 0 Massless Particle?	$\tau^-$ (Tau) Charge = - Q Mass = 1.78 GeV	
		$\nu_e$ (Electron Neutrino) Charge = 0 Massless Particle?	$\nu_\mu$ (Muon Neutrino) Charge = 0 Massless Particle?
		$\nu_\tau$ (Tau Neutrino) Charge = 0 Massless Particle?	

(For every Fermion Particle; there exists its Anti-Particle)

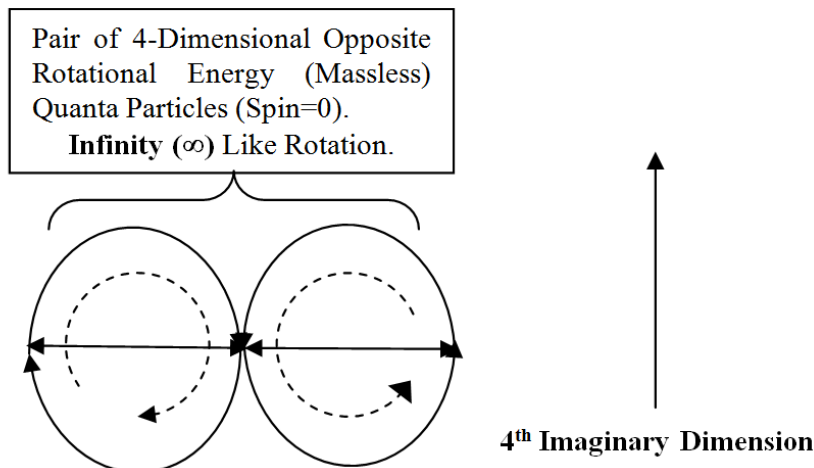
**IV. CREATION OF 4 DIMENSIONAL UNIVERSE**

In Fig. (2), though you see Massive Boson particles in straight one dimension, but, they are actually spread in 3 dimensional space in chaos way i.e. not oriented in preferred direction in 3 dimensional space as they were collapsed from 5<sup>th</sup> Dimension. May be this is the main reason for Quantum Fluctuation known as Seed of the Universe. You will see ahead that, though this chaos will have effect in 3-dimensional real space (Creation of Cluster of Galaxies), still the Universe will evolve perfectly everywhere in 3 Folds way in 4<sup>th</sup> Imaginary dimension.



**Fig. 5. Chaos of Massive Boson Particles in 3-Dimensional Real Space (Seeds of the Materialistic Visible Universe)**

It is seen that, even though Massless Boson Particles have zero Spin, still they should possess either clockwise or anticlockwise rotation i.e. Rotational Asymmetry so that Vector Direction of all of their Angular Velocity should point towards downward direction in 5<sup>th</sup> Dimension. It means all these particles should have only one type of rotation, say Anti-Clockwise rotation. Because all Massless particles have same angular directional rotation, there was restlessness (Asymmetry) everywhere. This restlessness caused to push them away from each other. It was stopped by creation of Pairs of Clockwise and Anti-Clockwise rotational particles such that both of them have zero spin as shown below.



**Fig. 6. Rotational Symmetry was achieved through Infinity (∞) Like Rotation (Spin=0)**

This rotational Symmetry was spontaneously broken by diagonally downward shift of Massive Boson Particle as shown in below Fig. (7).

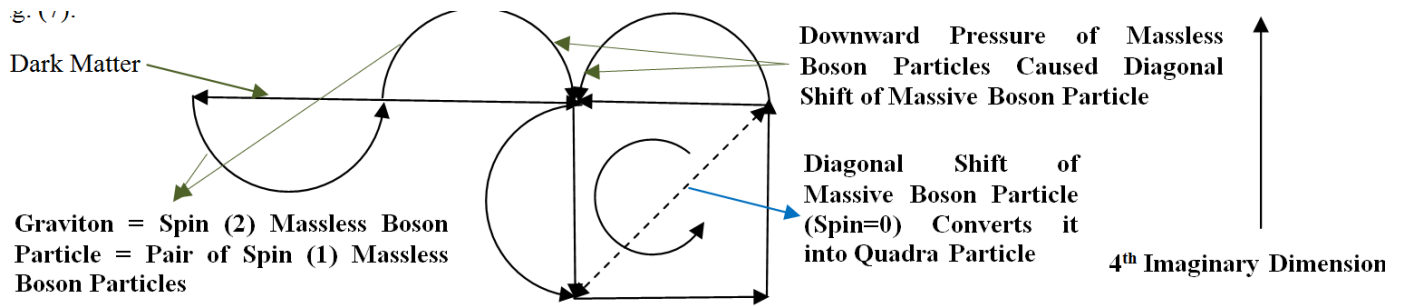


Fig. 7. Diagonal Shift of Massive Boson Particle and Its Conversion into Quadra Particle

Downward pressure of Two Massless Boson particles caused Left end of R.H. Massive Boson Particle to shift diagonally in downward direction. It is equivalent to (Anti clockwise) rotational shift. This Diagonal Massive Boson (Spin=0) particle converted into Quadra Particle i.e. Made up of 4 types of particle. One Pair is made of Vertical (4<sup>th</sup> Dimensional) Massive Boson particles with opposite charges ( $\pm 2Q$ ) on each particle (instead of  $2Q/3$ ) and second Pair is made of Horizontal (3 Dimensional) Massive Boson particles. Out of 1<sup>st</sup> Pair, Charge on R.H. Upward directional particle is  $+ 2Q$  and it is called as Quark; while charge on L.H. Downward directional particle is  $-2Q$  and it is called as Anti-Quark. In 2<sup>nd</sup> Pair, Left Handed topmost particle is charge less (Charge=0) Massive Boson particle and is called as Top Neutrino ( $\nu_T$ ); while Right Handed Bottommost particle is also charge less (Charge=0) Massive Boson particle and is called as Bottom Anti-Neutrino ( $\nu'_B$ ). This Pair of Top Neutrino and Bottom Anti-Neutrino is 4<sup>th</sup> Pair other than 3 Pairs of Neutrino and Anti-Neutrino as per Standard Model of Particle Physics which yet to be discovered. Here, it is interesting to note that, Top Neutrino also acts like “Monopole Particle” which may lead to solution for “Quantization of Charge”.

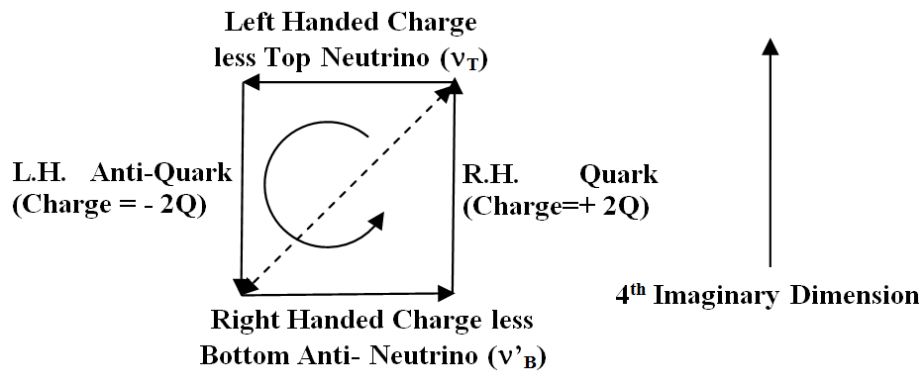


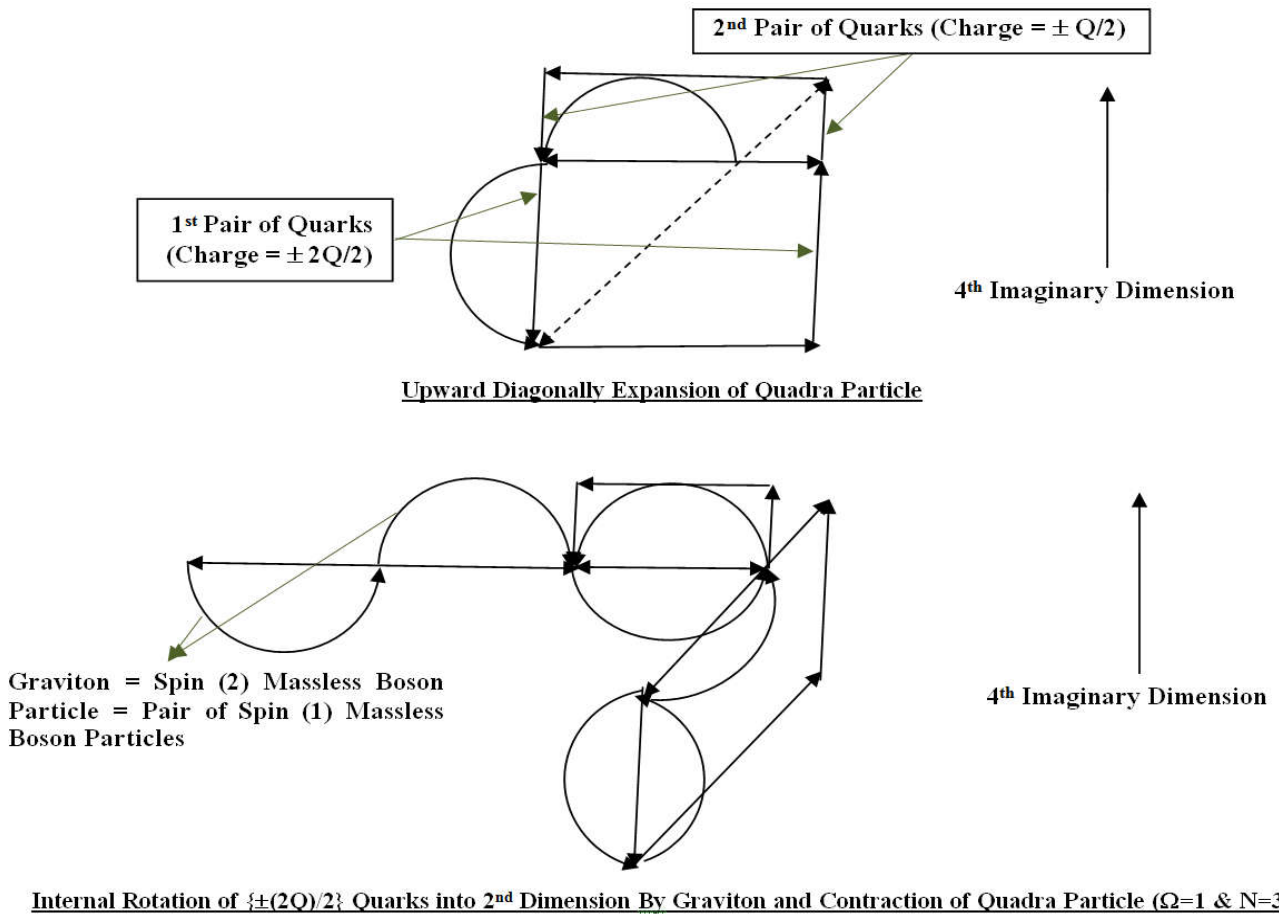
Fig. 8. Four Elements of Massive Boson Quadra Particle (Spin=0)

Apart from this Quadra Massive Particle, you will see creation of Graviton (Massless Boson, Spin = 2) particle on Left hand side of Fig. (7). Though this graviton moves forward in space with speed of light,  $c$ , but still it has direction opposite to its forward propagation velocity, that means towards Quadra Particle or Center of Quarks (which later converts into Hadrons i.e. materialistic world). This is the main reason behind attractive force of Gravity. Increase in Curvature of Space Time is equivalent to Decrease in Wavelength of Graviton. On Nuclear Level, Gravity Force acts on Matter (Quarks) from one Side i.e. Left Side only. This Graviton is guided by Massive Boson (Spin=0) Particle called as Dark Matter. From Fig. (6), it is clear that out of total mass-energy of the Universe, 25% Matter is made up of this Dark Matter only which does not emit light, but guides Gravitational Waves i.e. Gravitons. With the help of Gravitons, Dark Matter gravitates. Nature of Dark Matter is to expand in Space-Time while that of Graviton is to contract/ Compress or gravitate it. Due to gravitating/compressing nature of Gravitons, they have tendency to release/transfer their energy towards Massive Boson Quadra Particle i.e. towards Massive Materialistic Objects. Thus, it is seen that, during birth of the Universe, there was only one Fundamental Force viz. Gravity. Hence, further evolution of the Universe into Higher Dimensions (From 1 Dimension to 3 Dimensional Space for Quarks) was governed by factor “ $\Omega$ ” which is the ratio of Total Density of the Universe ( $\rho_T$ ) to Critical Density of the Universe ( $\rho_C$ ) i.e.  $\Omega = \{\rho_T / \rho_C\}$ . For (1) “ $\Omega > 1$ ”,  $k = 1$ : Collapsed Universe; (2) “ $\Omega = 1$ ”,  $k = 0$ : Flat Universe & (3) “ $\Omega < 1$ ”,  $k = -1$ : Expanded Universe where,  $k$  is Space Curvature Constant. Let us calculate value of “ $\Omega$ ” for given “N Nos. of Space-Time”.

Table 2. N → Space-Time &  $\Omega$

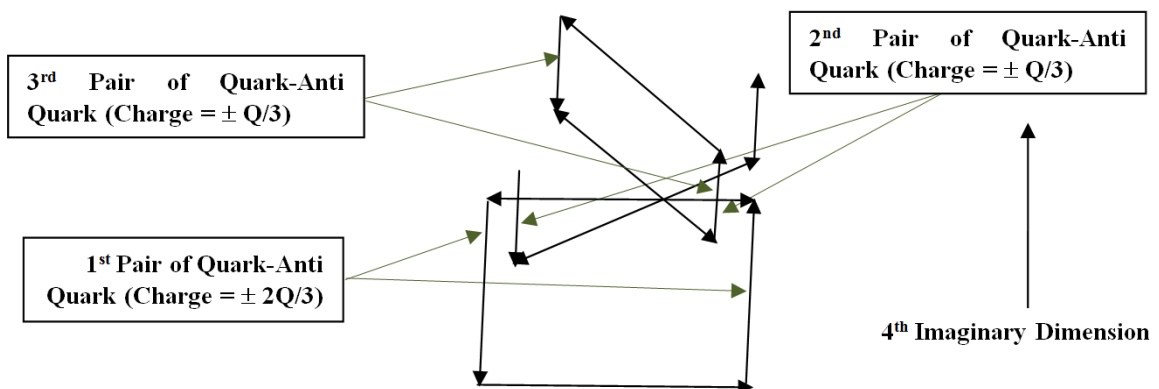
N → Space-Time	$\rho_t$ = Total Density of Each Universe	$\rho_c$ = Critical Density of Each Universe	$\Omega = (\rho_t / \rho_c)$
N=1; 0-D Space	$M_c * \{1+ (3P/\rho)\} = 2* M_c$	$M_c$	2 (Closed)
N=2; 1-D Space	$2* M_c / (\pi*\mathcal{R}_q)$	$M_c / (2*\mathcal{R}_q)$	$4/ \pi = 1.273$ (Closed)
N=3; 2-D Space	$2* M_c / \{2*\pi*(\mathcal{R}_q)^2\}$	$M_c / \{\pi*(\mathcal{R}_q)^2\}$	1 (Flat)
N=4; 3-D Space	$2* M_c / \{2\pi^2*(\mathcal{R}_q)^3\}$	$M_c / \{4*\pi*(\mathcal{R}_q)^3/3\}$	$4/(3*\pi) = 0.424$ (Open)

From above simple calculations, it is seen that the Universe will come into existence only when it is made up of minimum 3-D Space or 4-D Space-Time. Otherwise for Space less than 3 Dimensions, it will collapse. But, it can't collapse beyond its minimum Quanta of Size which is equal to value of Charge "Q" as mentioned in 2<sup>nd</sup> Postulate (II). Its journey from lower dimension at Quanta of size "Q" to next higher dimension is occurred by rotational asymmetry of Massless Boson particles. Its journey was started from 0-D Space ( $\Omega=2$ ) through To & Fro Motion & collapsed of Black Dot into " $\infty$ " Like Shape of Pair of Massless Boson Particles where Massive Boson Particles were in 1-Dimensional Space ( $\Omega=4/\Pi$ ). It was further transferred into 2<sup>nd</sup> dimension through first Expansion in terms of Quanta of Size equal to "Q" in 4<sup>th</sup> Upward Dimension; then internal rotation of Middle Massive Boson Particle (Spin=0) into 2<sup>nd</sup> Dimension by Graviton & finally again Contraction to original condition of Quadra Particle ( $\Omega=1$ ;  $N=3$ ) as shown in Figure below. Charge of 1<sup>st</sup> Pair of Quarks changed from  $(\pm 2Q)$  to  $\{(\pm 2Q)/2 = \pm Q\}$  because of creation of 2<sup>nd</sup> Pair of Quarks (above the Middle Massive Boson Particle) having value of Charge equal to  $(\pm Q/2)$ . Vertical Massless Boson Particles (On Left Side) covered both Anti-Quarks in terms of Spin=0 particles.



**Fig. 9. Creation of 2<sup>nd</sup> Dimension and 2 Pairs of Quark-Anti Quark**

In similar way, Quadra Particle again expanded. But, at this time as value of  $\Omega < 1$  ( $\Omega=0.424$ ), therefore instead of contraction again, through internal rotation, it transferred into 3<sup>rd</sup> Dimension with creation of 3 Pairs of Quark-Anti Quark. Total value of charge of 3 Quarks as well as that of 3 Anti Quarks became equal to zero (For e.g. In case of Quarks: Total value of Charge =  $\{(+2Q/3) + (-Q/3) + (-Q/3) = 0\}$ ). Vertical Massless Boson Particles (On Left Side) covered all 3 Anti-Quarks in terms of Spin=0 particles. For sake of Simplicity Massless Boson Particles are not shown in following figure.



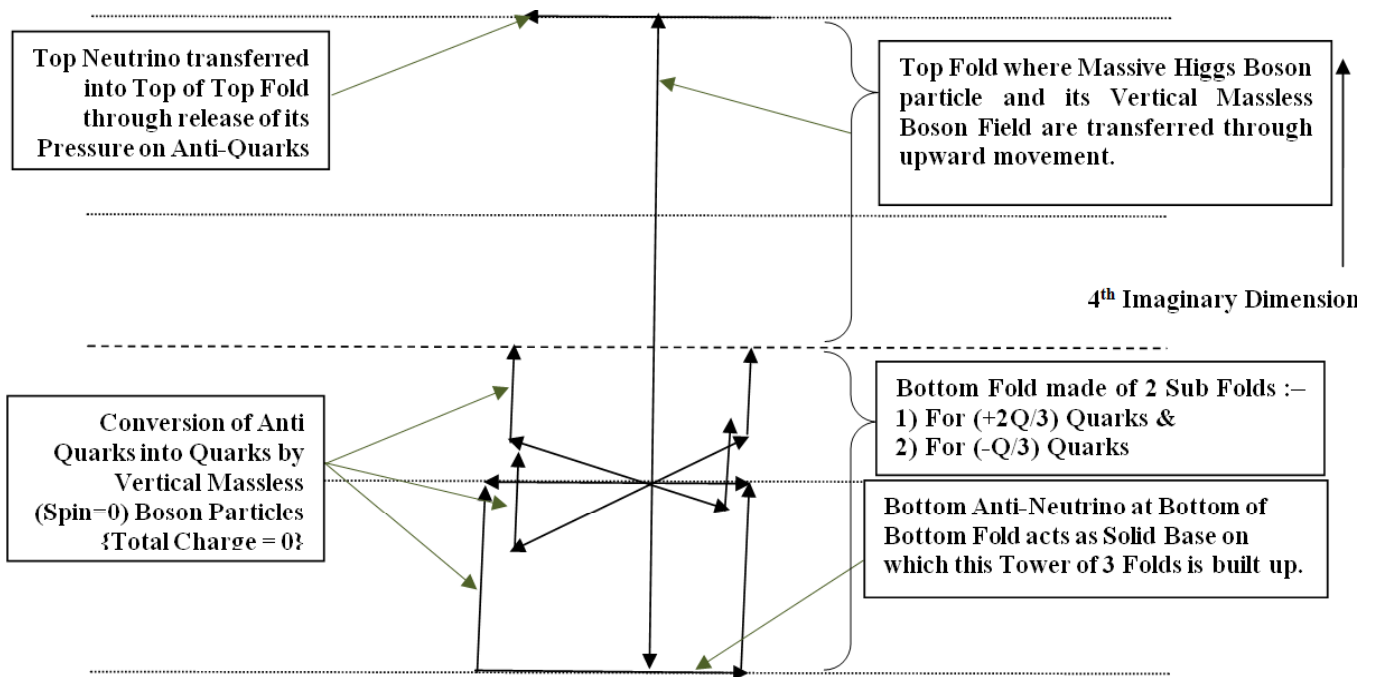
**Fig. 10. Creation of 3<sup>rd</sup> Dimension and 3 Pairs of Quark-Anti Quark**



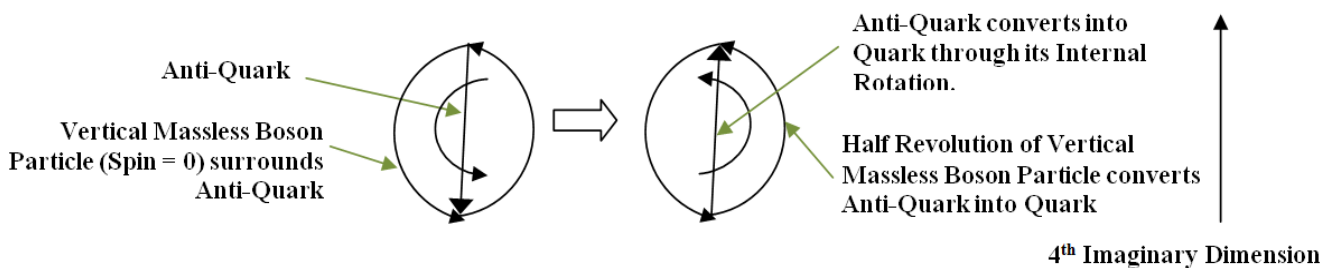
In Fig. 10, out of these 3 Pairs, 1<sup>st</sup> Pair is made up of Top (t) Quark and Top Anti Quark (t') while 2<sup>nd</sup> and 3<sup>rd</sup> pairs are same and are called as Bottom Quark (b) and Bottom Anti Quark (b'). Total Charge of Quarks as well as that of Anti-Quarks is zero. Quarks are on R.H. Side and Anti-Quarks are on L.H. Side.

**V. EXPANSION OF UNIVERSE IN 3 FOLDS WAY AND CONVERSION OF ANTI-MATTER INTO MATTER**

With  $\Omega=1$ , the Universe will expand as Flat Universe in 4<sup>th</sup> Imaginary Dimension vertically upwards with release of Mass-Energy in systematic way viz. 3 Folds way. This expansion was happened with 3 things: 1) Release of Pressure of Top Neutrino on Anti-Quark by vertical upward rotational movement of L.H. side Massless Boson (Spin=0) particles. This vertical rotational upward movement not only released pressure of top neutrino, but it simultaneously converted Anti-Quarks into Quarks through its internal rotation with no violation of charge conservation rule as total charge of all 3 anti-quarks is zero. 2) Creation of Massive Higgs Boson particle, through split and internal rotation of Massive Boson Particle (Spin=0) (which was lying above top Quarks) into 4<sup>th</sup> Imaginary Dimension. 3) Creation of Top Fold above this quark level Bottom Fold where Massive Higgs Boson and Massless Higgs Field are transferred. On top of top fold remains Top Neutrino. 4<sup>th</sup> Dimension is Imaginary Dimension and as per equivalence of Mass and Imaginary Line, vertical height of this dimension represents Mass of Particle. Thus, through vertical upward motion, Massive Higgs Boson particle creates Middle Folds and gives mass to Fermion (Lepton) particles.



**Fig. 11: Creation of Top Fold above Bottom Fold and Conversion of L.H. Anti Quarks into Quarks**



**Fig. 12. Conversion of Anti-Quarks (Anti-Matter) into Quarks (Matter)**

It is seen that, there are two types of Massless Boson Particles with same spin = 0. Horizontal Massless Boson particles travel in 3-D Real Space in terms of Spin =  $\pm 1$  particles. Particles attached with Quarks are called as “Gluons” while Particles attached with leptons are called as “Photons”. While there are also two types of Vertical Massless Boson particles and they travel in 4<sup>th</sup> Imaginary Dimension in terms of Spin =  $\pm 1$  particles either in upward or downward direction. One type of Particles which are released in upward direction after conversion of Anti-Quarks into Quarks on L.H. Side is transferred into Top (2 sub folds) of Middle Fold. While they move from one sub fold to another sub fold vertically; they interact with Neutrinos giving oscillation to Neutrinos called as “Mixing of Neutrinos”. Second type of Vertical boson particles is called as Higgs Field. They interact and travel with Massive Higgs Boson particle and moves vertically in upward direction into Top Fold along with Massive Higgs particle. Like Quarks confinement, this Massive Higgs particle is confined in Top Fold. Massive Dark Matter (Spin=0) as shown on L.H. Side in Fig. 7, expands in outer space instantaneously (inflation) as it doesn’t interact with anything, fixing maximum size of the Universe ( $R_U$ ) at its Birth itself. While Graviton (Spin=2) Massless Boson particle travels in outer space in the direction fixed by dark matter, but not instantaneously because of its gravitating nature. It gravitates with Dark Matter and creates webs of

Dark Matter. Gravitational waves travel with speed of light,  $c$  with Spin= 0 and are made up of two opposite spin Graviton particles (Spin =  $\pm 2$ ). They create curvature of Space-Time.

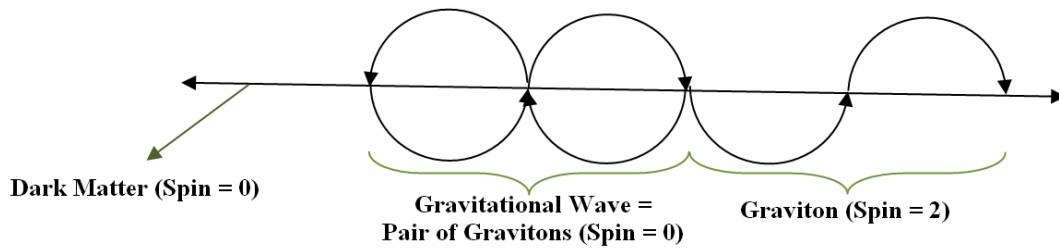


Fig. 13. Gravitational Waves (Spin= 0) made of Pair of Gravitons (Spin=  $\pm 2$ )

VI. DESCRIPTION OF 3 FOLDS UNIVERSE AND NATURE OF PARTICLES

3.1 Bottom Fold

### 3 Folds 5-D Universe

Mass of particle decreases from TeV to  $\cong 0\text{eV}$  in 4<sup>th</sup> Imaginary Dimension in Upward Direction and because of length of every fold of 3 Folds is Fixed, length of each Imaginary String Like Massive Particles defines Definite Value of that Particle Mass relative to it's Fold.

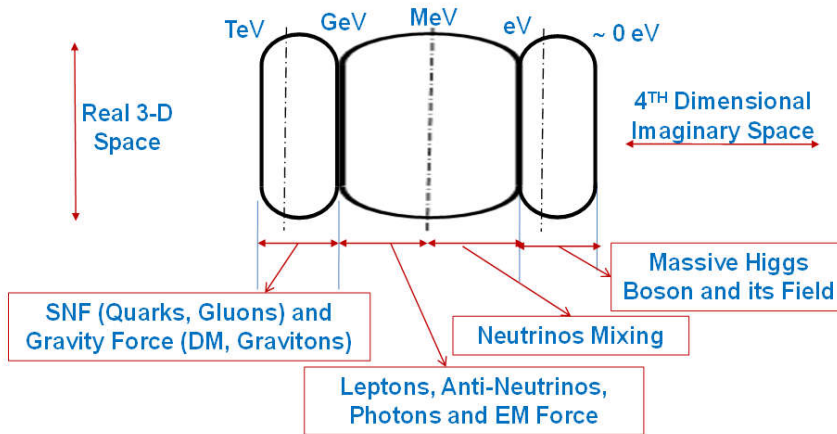
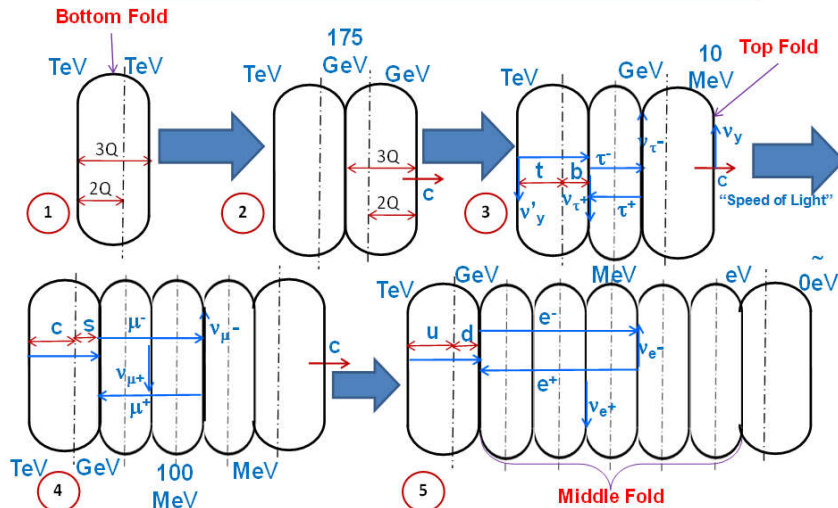


Fig. 14. Position of Particles (3 Folded Way) in 4th Dimensional Imaginary Space

### Creation of Universe in 3 Folds Way into 4<sup>th</sup> Dimension (Imaginary Space)



{Note: Actual Bottom Fold Size is 3Q; out of which top quarks shared only 2Q size i.e. 2/3<sup>rd</sup> part of Bottom Fold. Hence, Charge on top quarks is (+2/3). Same thing is applied to Bottom Quark with Minus Sign on Charge (i.e. -1/3).}

Fig. 15. Creation of Universe (3 Folds Way) in 4th Dimensional Imaginary Space

It includes particles made up of Quarks viz. Hadrons and masons; Gluons and Tri-Color Charged Particle. This Bottom Fold is again divided into two sub-folds to distinguish between (+2/3 Q Quarks) viz. Up, Charm, Top Quarks and (-1/3 Q Quarks) viz. Down, Strange, Bottom Quarks. Same (+2/3 Q) sub-fold of bottom fold is shared by top, charm & up quarks while same (-1/3 Q) sub-fold of bottom fold is shared by bottom, strange & down quarks. Here, masses of quarks are like mass parameter type and decrease in mass of next generation quark is because of expansion of the Universe into other folds above this bottom fold. Mass of Hadron or Mason is because of “Tri-Color Charged Boson Particle” made up of 3 Imaginary Lines at Middle of Bottom Fold (Spin = 0). This theory also shows that, Bottom of Bottom Fold carries “4<sup>th</sup> type of Anti-neutrino” which yet to be discovered.

### 3.2 Middle Fold

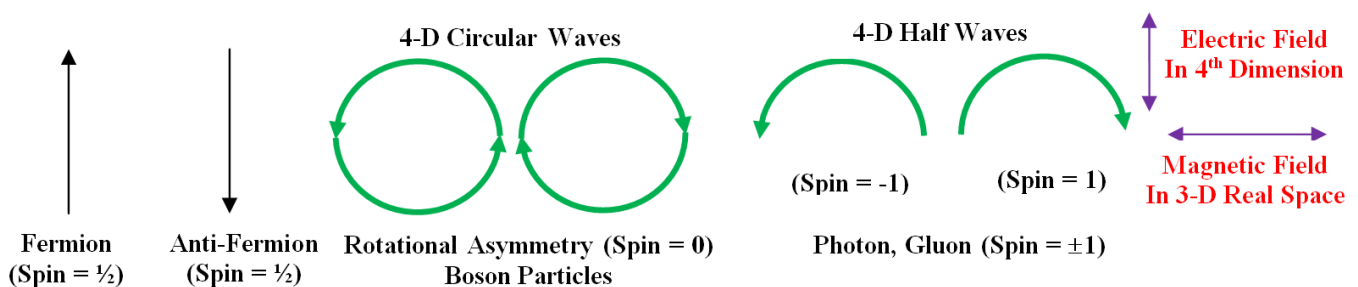
**3.2.1 Three Bottom Parts of Middle Fold:** There are 3 sub-folds of Middle Fold which are above Bottom Fold where each sub-fold includes one Type of Massive Leptons viz. Tau, Muon & Electron with their respective Massive Anti-Neutrinos (Right Handed) and Electro- Magnetic force carrying particles i.e. Photons. As Massive particles are defined by Straight Imaginary Line, it means imaginary curved lines in 3-D real space are Massless particles or energy particles like, Gluons and Photons. It also shows that, these leptons should carry only Rest Mass and they gain their kinetic energy because of photons. Thus, every moving electron carries photon with it or electron does not have its own kinetic energy, but owns only Rest Energy. In atom, electron orbits around its nucleus. But, as electron is String like particle in 4<sup>th</sup> Imaginary dimension, hence instead of orbiting in circular manner around its nucleus, its field’s orbital path should look like shape of saddle or potato chip in order to include all 3 dimensions of real space (Wave like Pattern). In general, “Moving Field of Electron should follow Wave like pattern (path) even it is a particle; which is known as Wave-Particle Duality” in Quantum Mechanics.

{When any string rotates in N<sup>th</sup> Dimension, Every point on String should include all (N-1) Dimensions. For e.g. a pencil (String) attached to compass rotates in 3<sup>rd</sup> Dimension and draws a circle on paper (this circle includes all dimensions on paper i.e. two dimensions). Similarly, if same pencil rotates in 4<sup>th</sup> Dimension, it should draw saddle shape like closed wave line to include all 3 dimensions.}

**Mass of each Fermion particle is fixed here, by means of their existence in their respective fold only. i.e, in this theory, we can calculate Mass of particles.**

In this theory, Fermions are defined as one String like Particle with one directional arrow (Spin = ½) while Bosons are made up of curved lines having rotational direction and are called as Horizontal Massless Boson Particles as they travel in 3-D Real Space.

- In case of Spin = 1 type Horizontal Massless Boson particles (Gluon, Photon), they look like Half wave line (4-D Wave) and they travel in terms of waves either Left handed or Right Handed. Propagation of wave in direction of 3-D Real Space is responsible for Magnetic Field while that in vertical 4<sup>th</sup> Imaginary Dimension is responsible for Electric Field. Kinetic Energy (E) of Photons is directly proportional to Rotational Frequency ( $\nu$ ) of its 4-D Wave. Higher Frequency means more compression of these waves ( $E \propto \nu \propto 1/r$ ).
- For Spin = 0 type Horizontal Massless Boson particles (KG Spin=0 Waves), they made of 2 Half waves of opposite spins ( $\pm 1$  or  $\pm 2$ ) and look like Circular wave line (4-D Wave). They have either Clockwise or Anti-clockwise rotation; hence they have rotational Asymmetry.



**Fig. 16. Nature of Fermion and Horizontal Massless Bosons Particles**

**3.2.2 Two Top Parts of Middle Fold:** It includes 2 sub folds for 3 Weakly Interacting Massive Neutrinos (Left Handed) and 2 types of Vertical Massless Boson Particles. In their respective sub-fold, the energy density of all Boson particles remains same (Constant) and hence, they are called as “Dark Energy”. It is achieved by means of “Division of Higher Constant Energy Density Dark Energy Particle into Multiple numbers of Lower Constant Energy Density Dark Energy Particles, when it shifts from lower sub-fold of Middle Fold to upper sub-fold in such a way that every Lower Constant Energy Density Dark Energy Particle looks similar to each other in upper sub-fold like Copy Cat.” Out of these two sub-folds, lower sub-fold has higher constant energy density as compare to upper sub-fold. There are 3 Types of “Dark Energy” particles (2 from Top parts of Middle Fold and 1 from Top Fold) such that “Constant Energy Density” of these particles decreases as they shift from lower part of Middle Fold to Top Fold. Shift in their position occurs with step by step unfolding of expanding Universe. These particles move (shift) from one sub-fold to other sub-fold, when they have spin =  $\pm 1$  while they multiply each other with same constant energy density in same sub-fold, when they have spin = 0. Because of random shift in their position (as per availability of vacuum at their upper or lower sub-

fold), neutrinos along with them also oscillates from one fold to other sub-fold i.e. change in type of neutrinos occurs; called as Neutrino Oscillations.

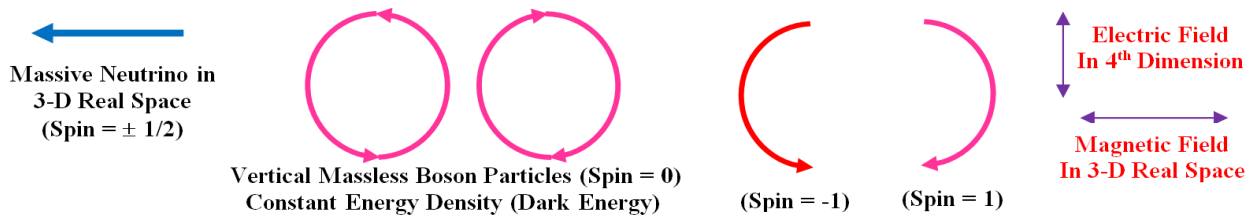


Fig. 17. Nature of Neutrinos and Vertical Massless Bosons Particles

3.3 Top Fold

It includes “4<sup>th</sup> type of Neutrino” ( $\nu_Y$ ) at Topmost part of this Top Fold, which yet to be discover. As said above, it also holds Very Less Constant Energy Density (Very Less Resistance) Soft particles viz. Dark Energy (Spin = 0) as well as Absolute Inner Light known as Massive Higgs Boson (Spin=0). Massive Higgs Boson particle is confined in top fold like quarks confinement. Through upward movement in 4<sup>th</sup> Imaginary dimension, Massive Higgs Boson creates 3 Folds (Hierarchy Levels) and is main particle behind Different Masses of 3 Leptons (Tau, Muon and Electron) by keeping them in 3 Different sub-folds of Bottom part of Middle Fold. While its upward movement in 4<sup>th</sup> Imaginary Dimension releases its Mass (From  $\approx 124\text{GeV}$  to  $\approx 0\text{eV}$ ) into Dark Matter through its connection with Tri-Color Charged Boson Particle at Middle of Bottom Fold.

VII. PERCENTAGE DISTRIBUTION OF MATTER AND ENERGY IN THE UNIVERSE

From Fig. 6, it is seen that earlier there were only four particles; 2 Massive and 2 Massless Boson particles with spin =0 on each particle. That means, every particle was carrying around 25 % Mass-Energy in the Universe. But, as shown in Fig. 7, with creation of Gravitons and dark Matter (Outer Space or Global Particles) and Quarks and Gluons (Inner Space or Localized Particles), this distribution was changed because of their different properties. Graviton through its Gravitating Nature (Direction towards localized particles or ordinary matter or quarks) released almost all of its energy into Higgs Field at Bottom Fold. This Higgs Field was released in Inflationary way (Repulsive force in terms of Constant Energy Density particles) in Top Fold ( $\approx 25\%$ ) along with creation of Massive Higgs Boson particles. As well as with conversion of Anti-Quarks into Quarks, Vertical Massless Boson Particles also moved in Upper Middle Fold, carrying their  $\approx 25\%$  in Middle Fold. Thus, all these 3 Types of Dark Energy particles (Higgs Field in Top Fold and 2 Types of Vertical Massless Boson Particles in Upper 2 Middle Folds) are together made up of  $\approx 50\%$ . While nature of Massive Dark Matter is to expand in Outer Space and with its connection with Massive Tri Colored Charge Particle at Middle of Bottom Fold, it carried away all released Mass of Quarks as well as that of Massive Higgs Boson Particle into outer space instantaneously. Thus, almost  $\approx 50\%$  of Mass is released into Outer Space in terms of Dark Matter. From current experiments and observations, we know that total % contribution of photons, gluons and matter (quarks, leptons, Hadrons – proton, neutron, neutrinos, anti-neutrinos) is very less (approx. 0.2- 0.4 %). While that of Gravitating Dark Matter is around 25 %. So, around 25 % of Dark Matter is still of Non-Gravitating Nature. This is because gravitational waves from gravitons which are attached to ordinary matter take time for their propagation in outer space with maximum speed equal to speed of light,  $c$  as compared to instantaneous expansion of 50% Dark matter. “Negligible Qty  $\approx 0.2\%$  of Ordinary Matter (Proton, Neutron & Electrons),  $\approx 25\%$  Gravitating Dark Matter,  $\approx 25\%$  Non-Gravitating Dark Matter and  $\approx 50\%$  includes all 3 Types of Dark Energy particles (Higgs Field in Top Fold and 2 Types of Vertical Massless Boson Particles in Upper 2 Middle Folds).

Creation of “All 3-Folds” and “Particles”

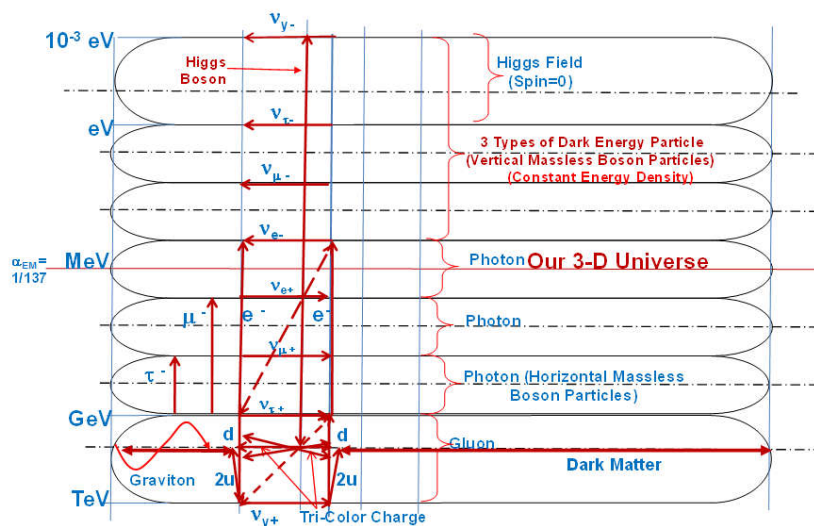


Fig. 18. Gluon, Photon, Ordinary Matter (Fermions), Graviton, Dark Matter, and 3 Types of Dark Energy

### VIII. GRAVITATIONAL CONSTANT AND GRAVITATIONAL COUPLING STRENGTH AT TeV

We have seen that creation of the Universe began from 0-D Space to current 3-D Real Space. Hence,  $G_0 =$  Gravitational Parameter at 0-D Space was also changed to current gravitational constant  $G = 6.67 \times 10^{-11} \text{ m}^3/(\text{Kg}.\text{Sec}^2)$ . Changes in Gravitational Parameter can be calculated in similar manner like changes in value of  $\Omega$ . Let us calculate same for  $G_3 =$  Gravitational parameter in 3-D Real Space when whole Universe was at TeV Level. Because at this level, whole Critical Mass ( $M_c$ ) of the Universe had direct relation with Maximum Quanta of Mass ( $k/\Pi$ ) which is  $\approx \text{TeV}$ .

**Table 3. N  $\rightarrow$  Space-Time &  $G_N$  (Gravitational Parameter)**

N $\rightarrow$ Space-Time	Equation	Gravitational Parameter (G)
N=1; 0-D Space	$(H/2\pi) = G_0 * M_c$	$G_0 = 1$
N=2; 1-D Space	$(H/2\pi) = G_1 * M_c / \mathfrak{R}_q$	$G_1 = \mathfrak{R}_q = (Q)$
N=3; 2-D Space	$(H/2\pi) = G_2 * M_c / (\mathfrak{R}_q)$	$G_2 = (\mathfrak{R}_q) = (Q)$
N=4; 3-D Space (Expansion of Universe)	$H = 2 * G_3 * M_c / (Q)$ $= 4 * \pi * G_2 * (k/\pi) / (Q)$	$G_3 = 2 * \pi * (Q) * \{M_c/(k/\pi)\} * Q$

For  $G = \text{Constant} = 6.67 \times 10^{-11} \text{ m}^3/(\text{Kg}.\text{Sec}^2)$

$$= 2 * \Pi^2 * (Q)^2 * (\mathfrak{R}_U)_{\text{Max}}$$

$$\therefore (\mathfrak{R}_U)_{\text{Max}} = 1.3163 * 10^{26} \text{ m}$$

$$\& \rho_{\text{Critical}} = \{M_c / [(4 * \Pi / 3) * R^3]\} = 9.283 * 10^{-27} \text{ Kg/m}^3$$

From above Table 3, it is seen that, Gravitational Parameter ( $G_3$ ) in 3-D Space was very high  $\{\approx 10^{21} \text{ m}^3/(\text{Kg}.\text{Sec}^2)\}$  at TeV Level because of  $\{M_c = \text{Critical mass of the Universe} \propto (k/\Pi = \text{Mass of Particle at TeV})\}$ . But, with instantaneous expansion of Dark Matter,  $G_3$  was changed into Gravitational Constant ( $G = 6.67 \times 10^{-11} \text{ m}^3/(\text{Kg}.\text{Sec}^2)$ ) for maximum size of the Universe  $(\mathfrak{R}_U)_{\text{MAX}}$ . Above formula shows that, "G" has relation with maximum Size of the Universe known as Mach's Principle (Local physical laws are determined by the large-scale structure of the universe). This principle solves Flatness/Horizon problem.

Let us calculate Gravitational Coupling Strength ( $\alpha_G$ ) for Gravitational Parameter ( $G_3$ ) instead of Gravitational Constant G.

Gravitational Coupling Strength ( $\alpha_G$ ) =  $G_3 / (\hbar * c) = \{G_0 * 2\Pi^2 * Q^2 * \{M_c / (k/\Pi)\} * Q\} / (\hbar c)$

$$= \{1 * 4\Pi^4 * Q^3 * M_c\} / (\hbar c k)$$

$$\text{--- } \{\because G_0 = 1 \& \hbar = h/(2\Pi)\}$$

$$= \{\Pi^2 * c^2 * Q\} / (Qc^2 k^2) \text{ --- } (\because h = Q * c * k \& 4\Pi^2 * Q^2 * M_c = c^2)$$

$$\therefore (\alpha_G) = \{(k/\Pi) \text{ Kg}\}^{-2} = (2.466 \text{ TeV})^{-2}$$

(9)

Unification of All Forces within "TeV" Range is possible.

Some interesting and Empirical formulas of this theory:

$$\text{➤ Initial Size of Universe in 3-D Space} = (R_U)_{\text{Initial}} = \{M_c * (\pi/k)\}^{1/3} * Q \approx 4.375 * 10^6 \text{ m}$$

$$\text{➤ } (4 * k / \pi^2) \cong \pi \text{ TeV}$$

$$\text{➤ } M_e = \text{Mass of Electron} = 2 * \pi^2 * h / (c^2 * Q) = 9.09 * 10^{-31} \text{ Kg}; \because \text{Frequency of Electron, } \nu_e = (2 * \pi^2) / Q$$

$$\text{➤ } \{\mu_0 / (4 * \pi)\} = (k * \alpha) / (2 * \pi * Q); \alpha = \text{Fine Structure Constant} \approx 1/137$$

$$\text{➤ } M_N = \text{Mass of Neutron} = \pi * h / (c^2 * k) = 1.673 * 10^{-27} \text{ Kg} = (\pi * c) \text{ eV} \approx 941 \text{ MeV}; \because \text{Frequency of Neutron, } \nu_N = \pi / k$$

### IX. RESULTS AND DISCUSSION

In this Theory, "Imaginary Straight Line" is proved as equivalent to "Mass of particle", while any curved Imaginary line shows Massless equal to Spin 1 property of Boson particles viz. Gluons and Photons. Thus, here Massless is directly connected with Spin=1 property of photon which is already proved in QED theory. True nature of Photons and Dark Energy is revealed through their unique characteristics viz. Horizontal 3-D Space motion for photons and Vertical 4<sup>th</sup> Dimensional Motion for Dark Energy. This Vertical motion also gives one more property to Dark Energy i.e. Constant Energy Density by means of Copy Cat Future in same sub-fold of Upper Middle Fold. This Dark Energy particles not only create Repulsive Force (Inflation) in terms of Higgs Field (Spin=0) in the Universe, but through vertical Upward Motion, they release excessive pressure given by Top Most Neutrino on L.H.S. Anti-Quarks and convert them into Quarks. Thus, they played major role in solving mystery of Anti-matter and Matter Asymmetry in very elegant way. Also, arrangement of all particles in 3-Folds way not only simplifies particle physics theory but, also gives wide scope to think "Beyond Theory of Standard Model" but, within TeV range itself. Finally Author concludes that, with advancement in this Theory, new era of Science will begin for better future of mankind.

**X. Acknowledgment:** I would like to thank my family members for their valuable supports given to me.

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