

Open Journal of Microphysics



ISSN: 2162-2450



<https://www.scirp.org/journal/ojm>

Journal Editorial Board

ISSN 2162-2450 (Print) ISSN 2162-2469 (Online)

<https://www.scirp.org/journal/ojm>

Editor-in-Chief

Prof. Stefano Moretti University of Southampton, UK

Editorial Board

Prof. Salah Badawi Ahmed Doma Alexandria University, Egypt

Prof. Run-Ping Jia Shanghai Institute of Technology, China

Prof. Stanislaw Kistryn Jagiellonian University, Poland

Prof. Junhui Li Central South University, China

Prof. Yongfeng Li China University of Petroleum, China

Prof. Shijun Liao South China University of Technology, China

Prof. Fengshan Liu Institute for Chemical Process and Environmental Technology, Canada

Dr. Yu Lu Stanford University, USA

Prof. Palumbo Luigi La Sapienza University of Rome, Italy

Prof. Eugene Oks Auburn University, USA

Prof. José Antonio Oller Universidad de Murcia, Spain

Dr. Rafael Rodríguez Pérez University of Las Palmas de Gran Canaria, Spain

Dr. Weihong Qi Central South University, China

Prof. Jorge M. Seminario Texas A & M University, USA

Prof. Ping-Zhan Si China Jiliang University, China

Prof. Hisham M. Widatallah Sultan Qaboos University, Oman

Dr. Yu Zeng Duke University, USA

Table of Contents

Volume 11 Number 2

May 2021

Theory of 3F4D Universe (Beyond Standard Model of Particle Physics)

Y. V. Chavan.....9

Open Journal of Microphysics (OJM)

Journal Information

SUBSCRIPTIONS

The *Open Journal of Microphysics* (Online at Scientific Research Publishing, <https://www.scirp.org/>) is published quarterly by Scientific Research Publishing, Inc., USA.

Subscription rates:

Print: \$69 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: sub@scirp.org

SERVICES

Advertisements

Advertisement Sales Department, E-mail: service@scirp.org

Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: sub@scirp.org

COPYRIGHT

Copyright and reuse rights for the front matter of the journal:

Copyright © 2021 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

Copyright for individual papers of the journal:

Copyright © 2021 by author(s) and Scientific Research Publishing Inc.

Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: ojm@scirp.org

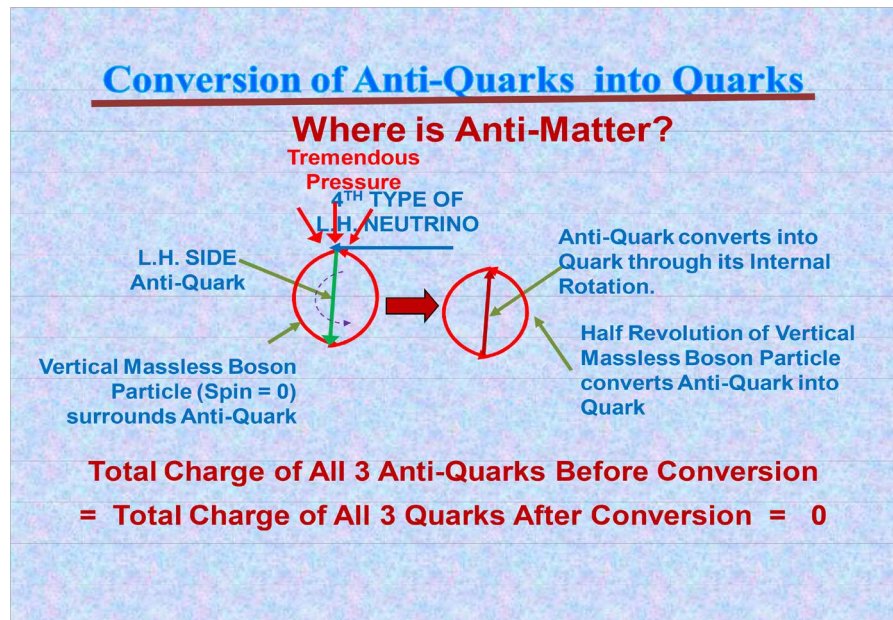


Figure 7. Conversion of anti-quarks (anti-matter) into quarks (matter).

objects like stars, planets etc.) and has direction towards baryons (atomic nucleus). Thus, gravity force should be attractive in nature. Also, as we know, Mass of materialistic objects is entirely due to mass of atomic nucleus, hence, connection of gravitons only with atomic nucleus (hadrons) *i.e.* at bottom fold clearly shows that materialistic objects gravitate because of their mass as per gravitational equation and it does not depend upon size of the object. It means gravitons never interact with mass of charged leptons (e.g. electrons) or charge less leptons (e.g. neutrinos) or massless photons, because they are at middle folds.

R.H. side contains fundamental particles as described by standard model. existence of dark matter and gravitons at L.H. side shows that these particles are beyond the scope of SM of particle physics. This is the main reason, why dark matter not radiates or interacts with other Fundamental particles. As there is no restriction to dark matter (no confinement like quarks confinement), it will spread away from atomic nucleus along with gravitons making expansion of the universe. Thus, dark matter no longer remains as quanta particle, but by connecting to each other, it acts like single entity making giant network structure like “web of spider”. These continuous lines of dark matter with gravitons form continuous space-time as shown in **Figure 8** which is essential part of Einstein’s general theory of relativity. That is, space-time is neither empty nor have quanta aspect, but these continuous lines of dark matter themselves represents continuous space-time. Mass-density of dark matter decreases with expansion *i.e.* increase in age of the universe $\{H^2 = (8\pi/3) \cdot G \cdot (\text{Mass-Density})_{DM}\}$. Compression of space-time means increase in density of dark matter. With this notion, we can convert, Einstein’s concept of Curvature of Space-time as gravity effect into increase in mass-density of dark matter (compressed dark matter) w.r.t. mass-density of flat universe. Increased mass-density of dark matter means less

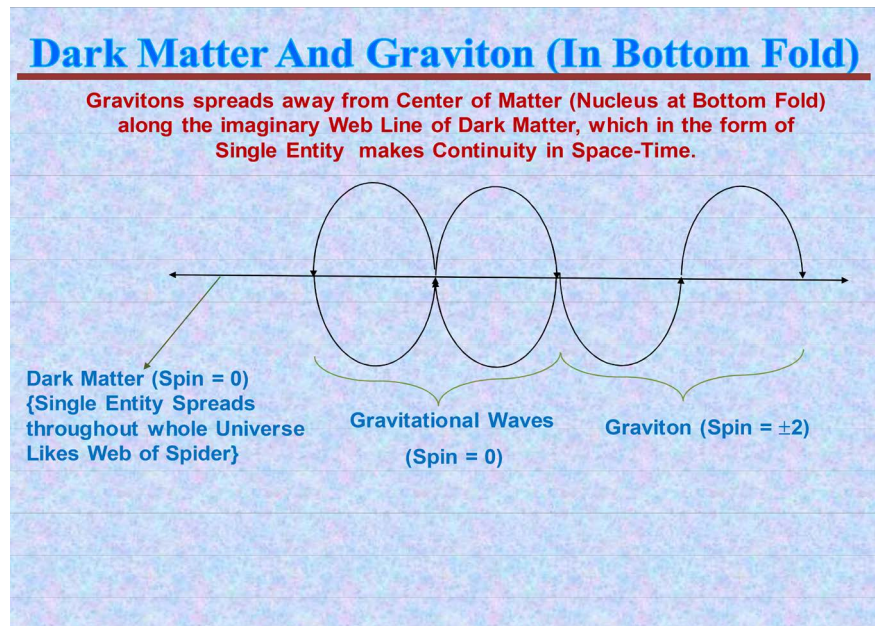


Figure 8. Dark matter (single entity like web of spider) and gravitational waves (Spin = 0).

time (*i.e.* decrease in age of the universe in that region) as compared to age of the universe of flat universe. In other words, mass-density of surrounding dark matter near to massive object is more (compressed dark matter due to gravitational pull of that massive object) as compare to mass-density of dark matter of flat universe and it is called as time dilation effect due to gravity. From, this relation between space-time and mass-density of dark matter, we have true definition of time:

“Time is neither illusion nor 4th dimension, but, it represents continuous flow of single entity, dark matter”.

Mass-density of flat universe is equal to absolute time and we all experience this absolute time at same moment everywhere, because of continuous expanding lines of single entity, dark matter. conversion of Einstein’s GR concept of gravity, as curved space-time into increase in mass-density of massive DM; adds more terms into equation of gravitational strength (g) apart from Newtonian Gravitational Strength (G^*M/R^2) to account for gravitational effect of mass of surrounding DM around that massive object. Thus, 1st Term is usual Newtonian Term ($g_1 = G^*M/R^2$), 2nd Term ($g_2 = H^{2*}R_U$) represents gravitational strength of flat universe, while 3rd Term represents gravitational strength of mass of surrounding Massive dark matter (M_{DM}) because of increase in its Mass-density [$g_3 = G^*M_{DM}/R^2 = \{(4*\text{Pi}/3)*G^* (\rho_{DM})*R\}$]. In current universe (Age = 13.8 Billion Years), Mass-density of dark matter (ρ_{DM}) is very less around 10^{-27} Kg/m³ $\{(\rho_{DM}) \propto H^2\}$; hence, $g_1 \gg (g_2 + g_3)$ and therefore, $(g_2 + g_3)$ can be neglected for gravity effect of massive objects like the Earth, the Sun etc. But, for same massive object of mass, M , (g_1) over given fixed distance R always remains constant (Value of g_1 will not change with change in age of the Universe); while

with decrease in Age of the Universe, Mass-Density of Dark Matter increases and with this Dynamic Gravity effect of Dark Matter, value of $(g_2 + g_3)$ may exceed value of g_1 . For e.g. during creation of the Universe, at quanta level *i.e.* for $M = k, R = Q \ \& \ H = c/Q$; ($g_1 = G \cdot k/Q^2 \cong 10^4 \text{ m/Sec}^2$) and ($g_2 = g_3 \cong c^2/Q = 10^{35} \text{ m/Sec}^2$) *i.e.* $\{g_1 \ll (g_2 + g_3)\}$ It means, at quanta level, during creation of the Universe, role of “G” *i.e.* Newtonian Gravitational Term (Time Independent Gravity) becomes insignificant. In other words, for Unification of Gravity with other forces, we do not have to depend upon Planck’s Scale which is based upon “G”. But, through Dynamic Gravity of Dark Matter, calculations at TeV Range (Mass = Value of k ; Boltzmann’s Constant) shows that, Gravitational Coupling Strength becomes equal to “1” *i.e.* Ratio of these additional terms $(Q^2 \cdot c \cdot k)$ to $(h \cdot c)$ has value equal to “Unity”; $\{(Q^2 \cdot c \cdot k)/(h \cdot c) = (h \cdot c)/(h \cdot c) = 1; \because Q \cdot c \cdot k = h\}$. Thus,

“Unification of Gravity at only TeV Range is Possible”.

4.2. Middle Fold [6]

4.2.1 Three Bottom Parts of Middle Lower Fold

There are 3 sub-folds of Middle Lower Fold (Refer **Figure 9**) which are above Bottom Fold where each sub-fold includes one Type of Massive Charged Leptons viz. Tau, Muon & Electron with their respective Massive Charge-Less 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 because they are Straight lines and they gain their kinetic energy

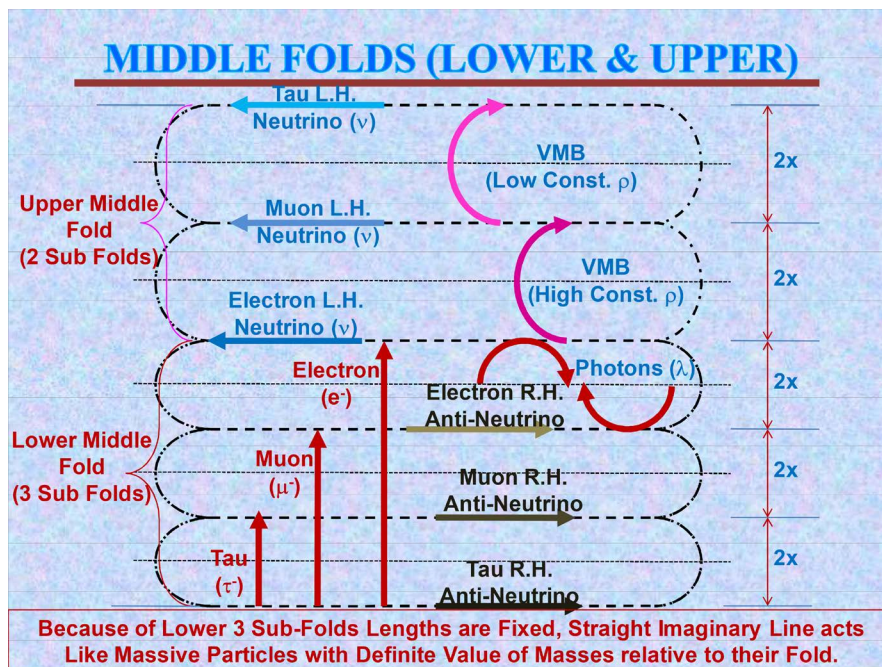


Figure 9. Middle fold.

because of Massless photons. Thus, every moving electron carries photon/ photons with it or “Electron does not have its own kinetic energy, but owns only Rest Energy” as shown in **Figure 10**. Kinetic energy or motion to these electrons is given by Massless Photons which carries only Kinetic Energy ($K.E. \propto v$). Repulsive force between like charged particle is because of repulsive force (pressure) exerted by photons connected with these charged particles and vice versa for attractive forces between them (For e.g. between positron and electron). Neutrinos are Charge Less because they travel horizontally in their respective 3-D Real Space.

Mass of Charge Leptons is fixed here, by means of their existence in their respective fold only. *i.e.*, in this theory, we can calculate Mass of Particles like electron, Muon and Tau. (God doesn't play dice at least with Mass of Charged Leptons).

Mass of Charged Leptons always remains Constant like “Peas in Pod, because of Fixed Quanta Height of Each Sub-Fold.”

Here, Fermions are defined as one String like Particle with one directional arrow (Spin = 1/2) 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 (Gluons, Photons), they are 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 4th Imaginary Dimension is responsible for Electric Field. Kinetic Energy (E) of Photons is directly proportional to Rotational Frequency (ν) of its 4-D Wave.

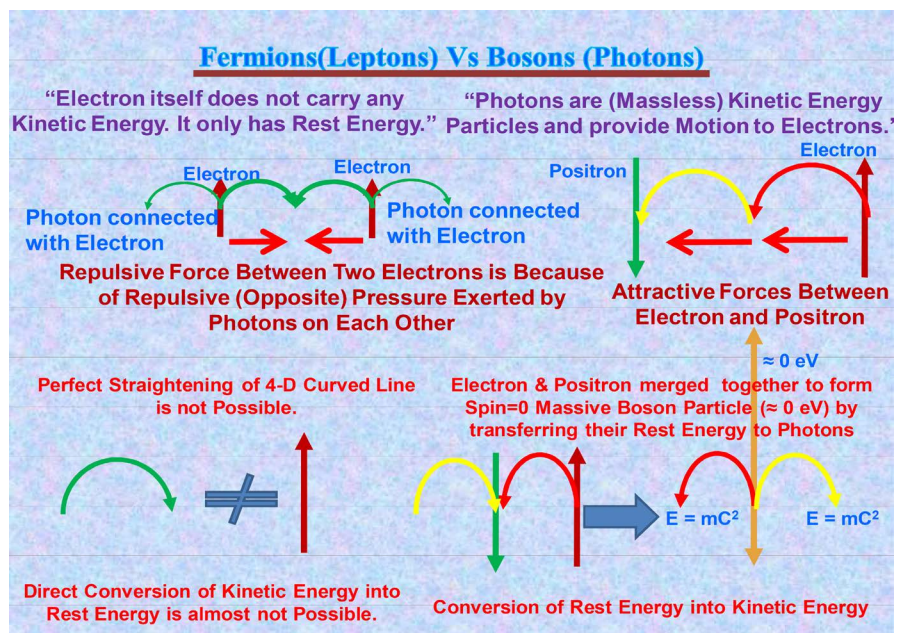


Figure 10. Horizontal massless bosons *i.e.* photons (kinetic energy) of massive charged fermions (rest energy).

- For Spin = 0 type Horizontal Massless Boson particles, they are made up of 2 Half waves of opposite spins (± 1 or ± 2) and look like Circular wave line (4-D Wave). They have either Clockwise or Anti-clockwise rotation; hence they have rotational Asymmetry (Refer **Figure 11**).

4.2.2. 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, VMB (Refer **Figure 9**). In their respective sub-fold, the energy density of all Boson particles remains same (Constant) and hence, they are called as “Equivalent to Dark Energy”. It is achieved by means of, Division of Higher Constant Energy Density VMB Particle into Multiple numbers of Lower Constant Energy Density VMB 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 VMB Particle looks similar to each other in upper sub-fold and this feature of these VMB particles is called as “Copy Cat” future (Refer to **Figure 11**). Out of these two sub-folds, lower sub-fold has higher constant energy density as compare to upper sub-fold. This is similar like Atmospheric Layers over the Surface of the Earth where, air pressure decreases with increase in altitude. There are 3 Types of “VMB” 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 = ± 1 while they multiply each other with same constant energy density in same sub-fold, when they have spin = 0.

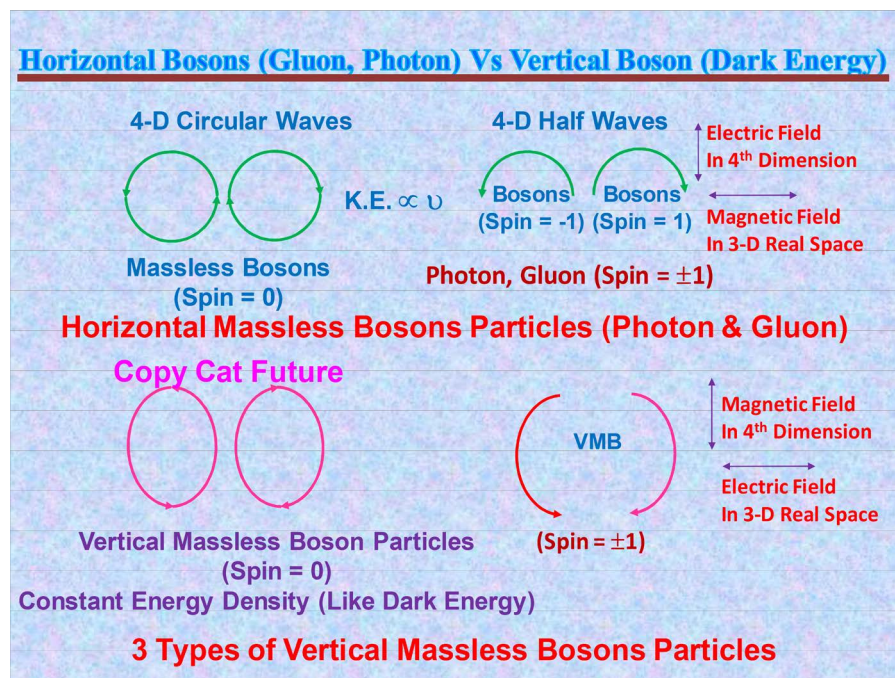


Figure 11. Horizontal massless bosons particles vs vertical massless bosons particles.

Because of random shift in their position (as per availability of vacuum at their upper or lower sub-folds), 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.

As per in **Figure 12**, Inner 3 Generations of Neutrino - Antineutrino come into existence by uplift of Massive Trident Particle from Bottom fold into Middle Folds and then by splitting of its each axis through Diagonal Separation, it gives Massiveness as well as Left Handedness properties to Neutrinos. Standard Model can't explain these properties of Neutrinos because of non-prediction of Trident particle. It means discovery of Trident particle is very necessary to prove Left handedness and Massiveness of Neutrinos.

Note that, this alternate source of energy (VMB particles) has property of Negative pressure (Constant Energy Density) and hence, they are Higher 4th Dimensional Anti-Gravity Energy. It is just above Middle Lower Fold of Electron. If it becomes possible to harness this pure form of energy, miraculous changes in aviation and many more scientific fields are expected.

4.3. Top Fold

As shown in **Figure 13**, from Bottom Fold creates Top Fold through creation of Higgs Boson particle (Spin = 0) by internal rotation of one of the Massive axis of Trident particle. Along with Higgs Boson, Higgs Field (VMB Particle at L.H. side of Bottom Fold) also transferred into Top Fold. Top of Top Fold consists 4th type of L.H. Neutrino which yet to be discovered. This Theory demands existence of 4th pair of Neutrino and Anti-neutrino; discovery of them will act as solid proof of this theory.

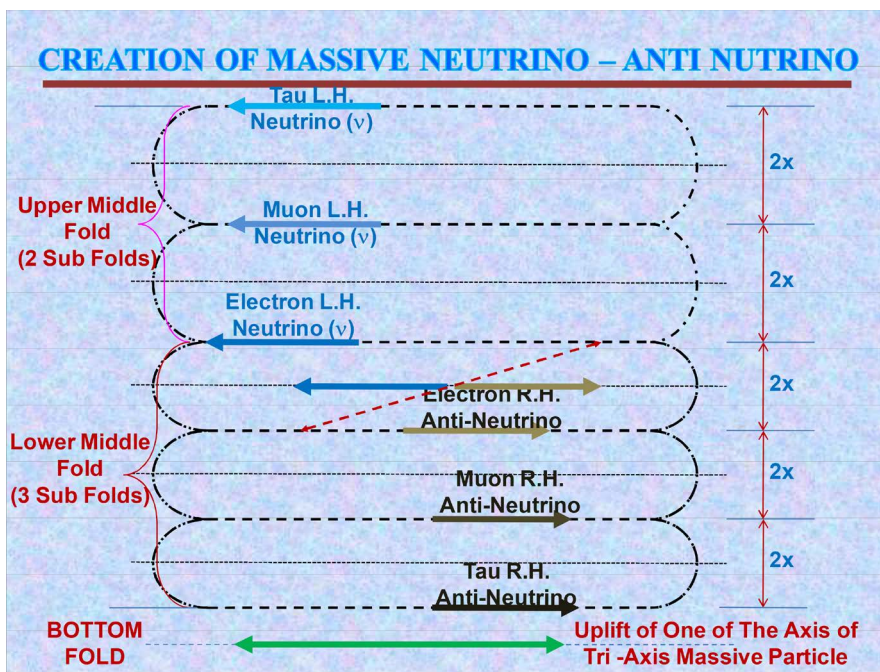


Figure 12. Creation of pair of massive neutrinos and antineutrinos.

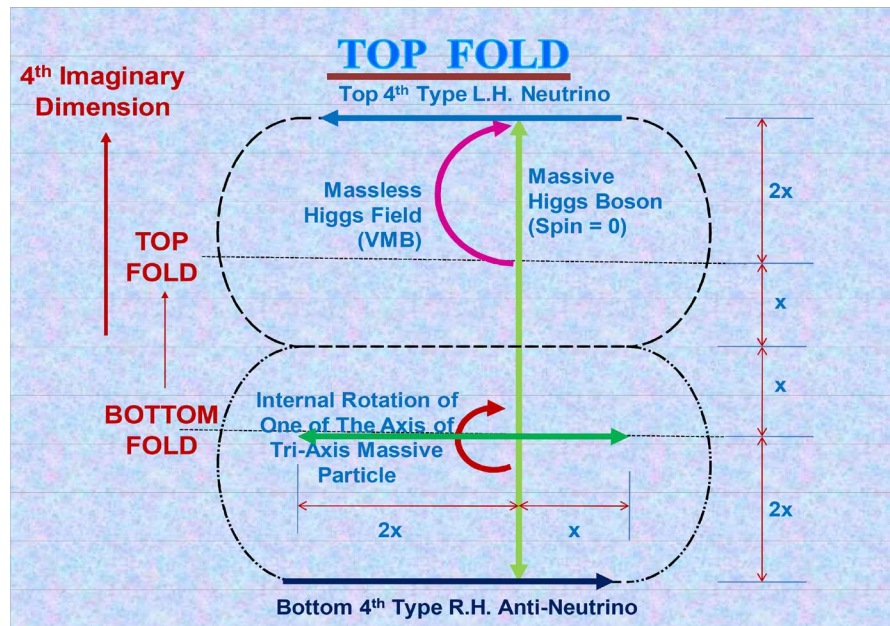


Figure 13. Creation of top fold.

4th 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 indirectly gives mass to Charged Lepton particles through creation of Middle Lower Folds.

5. Creation of Bottom Fold in 4 Dimensional Universe [6]

Rotational Symmetry of Massless Boson (Spin = 0) particle as shown in **Figure 14**, was spontaneously broken by diagonally downward shift of R.H. Massive Boson Particle (TeV).

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.* into 4 type of particles. One Pair is made of Vertical (4th Dimensional) Massive Boson particles with opposite charges ($\pm Q$) on each particle (instead of $2Q/3$) and second Pair is made up of Horizontal (3 Dimensional) Massive Boson particles. Out of 1st Pair, Charge on R.H. Upward directional particle is + Q and it is called as 4th Quark; while charge on L.H. Downward directional particle is -Q and it is called as 4th Anti-Quark. In 2nd Pair, Left Handed topmost particle is charge less (Charge = 0) Massive Boson particle and is called as 4th Top Neutrino (ν_T); while Right Handed Bottommost particle is also charge less (Charge = 0) Massive Boson particle and is called as 4th Bottom Anti-Neutrino (ν'_B). This Pair of Top Neutrino and Bottom Anti-Neutrino is 4th Pair other than 3 Pairs of Neutrino and Anti-Neutrino as per Standard Model of Particle Physics. Creation of 4th pair of Neutrinos from R.H. Massive Boson particle gives Massiveness and Left handedness properties to

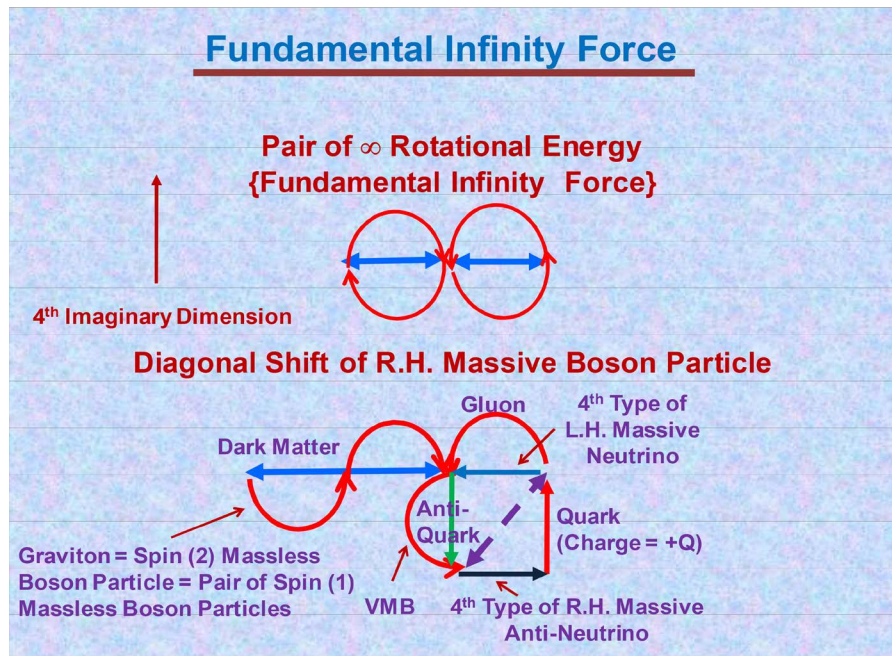


Figure 14. Infinity (∞) like rotation of massless boson (Spin = 0) particles at TeV range.

Neutrinos and Mass to Quarks.

Apart from this Quadra Massive Particle, you will see creation of Graviton (Massless Boson, Spin = 2) particle on Left hand side of Figure 14. Though 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 *i.e.* Increase in Kinetic Energy 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. 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.

Further creation of Bottom Fold in terms of Hadrons *i.e.* Pair of 3 Quarks is shown below in Figure 15. From this Figure, it is seen that, during creation of the Universe, there were equal amount of Quarks (R.H. Side) and Anti-Quarks (L.H. Side), but later on anti-quarks convert into quarks through internal rotation of L.H. VMB as discussed earlier (Refer to Figure 7).

In following Figure 16, arrangement of all Fundamental particles in their respective Folds in 4th Imaginary Dimension and true nature of all these particles are explained through “One Simple Diagram”.

Some interesting and Empirical formulas of this theory are mentioned below, which may help to find relation between Fundamental Constant and Natural Constants like Mass of Electron, Neutron etc.:

- $Mc = \text{Critical Mass of the Universe} = (H_0)^2 = \{c/(2*\pi*Q)\}^2 \approx 8.9 \times 10^{52} \text{ Kg}$

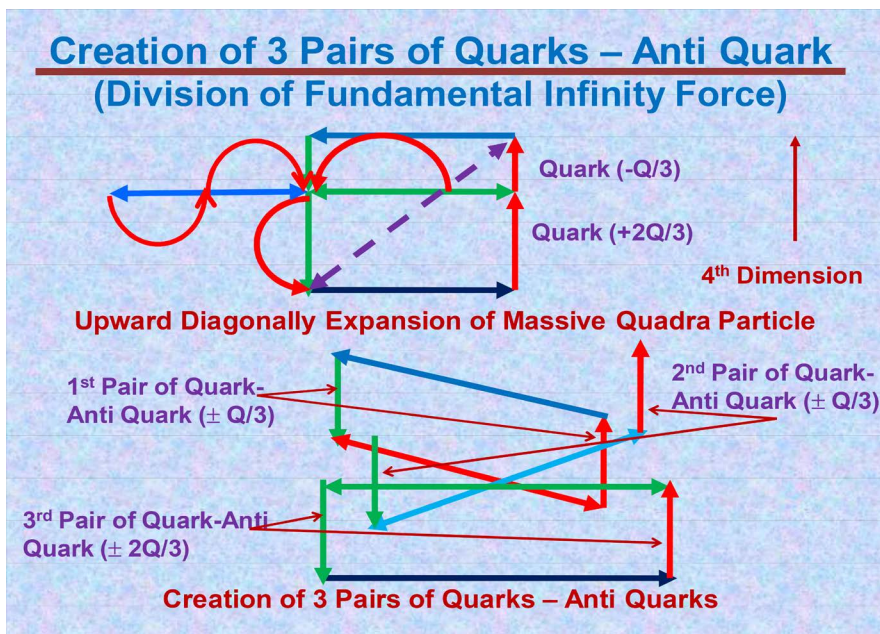


Figure 15. Creation of 3 pairs of quarks-anti quarks and trident particle in bottom fold.

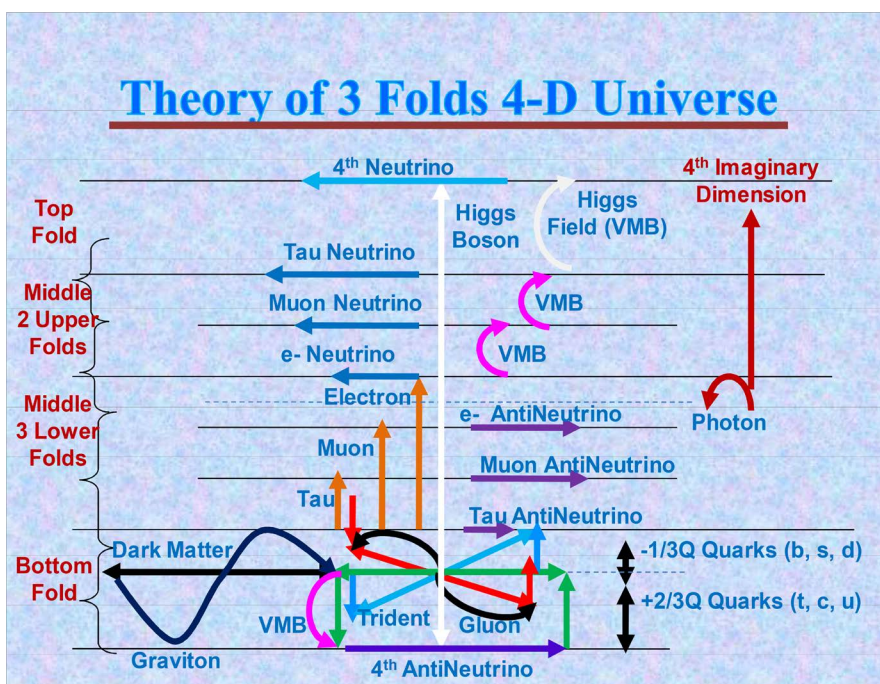


Figure 16. Arrangement of all fundamental particles in their respective folds.

- Initial Size of Universe in 3-D Space = $(R_U)_{Initial} = \{M_c \cdot 2\pi/k\}^{1/3} \cdot Q \approx 5.5 \times 10^6$ m (Closer to Radius of the Earth)
- $(4 \cdot k/\pi^2) \cong \pi \text{TeV}$
- $M_e = \text{Mass of Electron} = E_e/c^2 = \{h \cdot \nu_e\}/c^2 = \{h \cdot (2 \cdot \pi^2/Q)\}/c^2 = 9.09 \times 10^{-31}$ Kg
 $= \{(2 \cdot \pi^2 \cdot c \cdot k)/Q\} \text{ eV} \approx 0.51 \text{ MeV}; \therefore \text{Freq. of Electron, } \nu_e = (2 \cdot \pi^2)/Q$
- $\{\mu_0/(4 \cdot \pi)\} = (k \cdot \alpha)/(2 \cdot \pi \cdot Q); \alpha = \text{Fine Structure Constant} \approx 1/137$
- $M_N = \text{Mass of Neutron} = \pi \cdot h / (c^2 \cdot k) = 1.673 \times 10^{-27}$ Kg = $(\pi \cdot c) \text{ eV} \approx 941$

MeV; ∴ Frequency of Neutron, $\nu_N = \pi / k$

6. Conclusion

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, massless is directly connected with spin = 1 property of photon which is already proved in QED theory. True natures of photons and dark energy equivalent particles *i.e.* VMBs are revealed through their unique characteristics viz. Horizontal 3-D space motion for photons and vertical 4th dimensional motion for VMB. This vertical motion also gives one more property to VMB *i.e.* Constant energy density by means of copy cat future in the same sub-fold of upper middle fold. These VMB particles not only create repulsive force (Inflation) in terms of higgs field (Spin = 0) in the universe, but through vertical upward motion, they convert L.H.S. anti-quarks into quarks. Thus, they played the major role in solving the mystery of anti-matter and matter asymmetry in a very beautiful and elegant way. Also, arrangement of all particles in 3-Folds way not only simplifies particle physics theory but, also gives unification of physics and wide scope to think “beyond standard model”, within TeV range itself. The discovery of new particles predicted by this theory like 4th pair of neutrinos, trident particle, VMBs will solve lots of problems of standard model of particle physics. Finally, author concludes that with advancement in this theory, new era of science will begin for a better future of mankind.

Acknowledgements

I would like to thank my family members for their valuable supports given to me.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

References

- [1] Harald, F. (2009) *The Fundamental Constants: A Mystery of Physics*. World Scientific Publishing, Co., Singapore.
- [2] Aitchison, I.J.R. and Hey, A.J.G. (2002) *Gauge Theories in Particle Physics*. Vol. 1, CRC Press, Boca Raton.
- [3] Michele, M. (2005) *A Modern Introduction to Quantum Field Theory*. Oxford University Press, Oxford.
- [4] David, H., Robert, R. and Jearl, W. (2013) *Fundamental of Physics Extend*. 10th Edition, John Wiley & Sons, Inc., Hoboken.
- [5] Malcolm, L. (2013) *Quantum Concepts in Physics: An Alternative Approach to the Understanding of Quantum Mechanics*. Cambridge University Press, Cambridge.
- [6] Yogesh, V.C. (2018) *The Creation of the Universe (Beyond the Big Bang—Unification of Physics)*. *International Journal of Current Research*, **10**, 75820-75832.



Call for Papers

Open Journal of Microphysics

ISSN 2162-2450 (Print) ISSN 2162-2469 (Online)

<https://www.scirp.org/journal/ojm>

Editor-in-Chief

Prof. Stefano Moretti

University of Southampton, UK

Open Journal of Microphysics (OJM) is an international journal dedicated to the latest advancement of microphysics. The goal of this journal is to provide a platform for scientists and academicians all over the world to promote, share, and discuss various new issues and developments in different areas of microphysics.

All manuscripts must be prepared in English, and are subject to a rigorous and fair peer-review process. Accepted papers will immediately appear online followed by printed hard copy. The journal publishes original papers including but not limited to the following fields:

- Atomic Physics
- Electronic Physics
- Materials Physics
- Molecular Physics
- Nuclear Physics
- Particle Accelerator Physics
- Particle Cosmology
- Particle Physics
- Quantum Mechanics

We are also interested in short papers (letters) that clearly address a specific problem, and short survey or position papers that sketch the results or problems on a specific topic. Authors of selected short papers would be invited to write a regular paper on the same topic for future issues of the **OJM**.

We are also interested in: 1) Short Reports—2-5 page papers where an author can either present an idea with theoretical background but has not yet completed the research needed for a complete paper or preliminary data; 2) Book Reviews—Comments and critiques.

Website and E-Mail

<https://www.scirp.org/journal/ojm>

E-mail: ojm@scirp.org

What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



**Scientific
Research
Publishing**

Website: <https://www.scirp.org>

Subscription: sub@scirp.org

Advertisement: service@scirp.org