Calculation of Everything

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Keywords: Change of universe, Dark matter, Four fundamental forces, Quantum space, Theory of Everything

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Abstract In this study, the masses of various particles in physics and the processes of cosmic changes were precisely calculated. Given six variables (three generation neutrino masses, photon mass, gluon mass, and electromagnetic force), everything is calculated. The core is to understand the characteristics of quantum space. Particles have no proper mass. Logarithmically compressed three generation quantum space imparts mass to the particle. The calculated values are such as follows: electron neutrino 0.1533 eV, weak force 1.011E-6, gravitational force 5.906E-39, up quark 2.250 MeV, charm quark 1275.1 MeV, down quark 4.766 MeV, strange quark 95.28 MeV, H boson 125.02 GeV, cosmological constant 1.1056E-52 /m^2, dark energy : dark matter : ordinary matter = 69.5% : 25.8% : 4.7%.

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Quantum Space and Origin of Mass

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Keywords: H boson, Higgs particle, Quantum space, W boson, Z boson

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Abstract Applying logarithmic parabolic equation to the mass of W boson and Z boson, Higgs mass is very simply calculated as 124.98 GeV or 125.02 GeV. This means that Higgs particle has no relation with the origin of mass. Elementary particles have oscillating mass, and combined particles have static mass. The compressive strength of three generation quantum spaces makes the three generation particles and gives it a quantum mass. Since quantum space has a logarithmic property, the total mass of particles must be calculated as the logarithmic value.

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1. Introduction

W boson and Z boson are the elementary particles that mediate weak interaction, and Higgs boson is the elementary particle that explains the origin of mass. The aim of this study is to prove that Higgs Boson has no relation with the origin of mass, and to newly suggest an origin of mass.

2. Measurement of Higgs mass

2.1 ATLAS 2012

The Higgs mass measured in 2012 at CERN's ATLAS is shown in Fig. 1. The Higgs mass in left area is about 123.5 GeV, the Higgs mass in right area is about 126.5 GeV, and the average value is about 125 GeV. In the figure, the Higgs boson in the left area collapsed into two W bosons and two Z bosons, and the Higgs boson in the right area collapsed into a pair of photons.

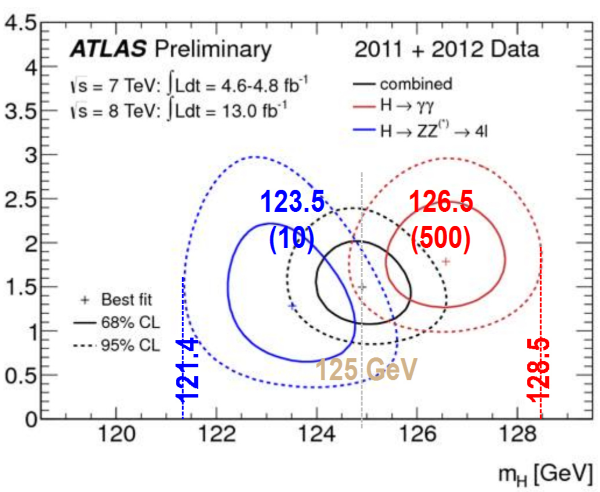


Fig. 1 Higgs mass of ATLAS 2012 at CERN.

Table 1 Higgs mass measured at CERN.

[GeV]	ATLAS	CMS	Combine
Run 1	125.38	125.07	125.09
Run 2	124.86	125.46	-
Combine	124.97	125.38	-

(A1C1 125.09 + A2 124.86) / 2 = 124.98
(A1A2 124.97 + C1 125.07) / 2 = 125.02
(C1 125.07 + C2 125.46) / 2 = 125.27

2.2 CMS 2014

The Higgs mass measured in 2014 at CERN's CMS is shown in Fig. 2. The mass is 125.02 GeV. In Fig. 2, unlike Fig. 1, the left side collapsed into a pair of photons, and the right side collapsed into two W and two Z boson. According to the interpretation of this study, it is judged that the left side and right side of Fig. 2 are reversed.

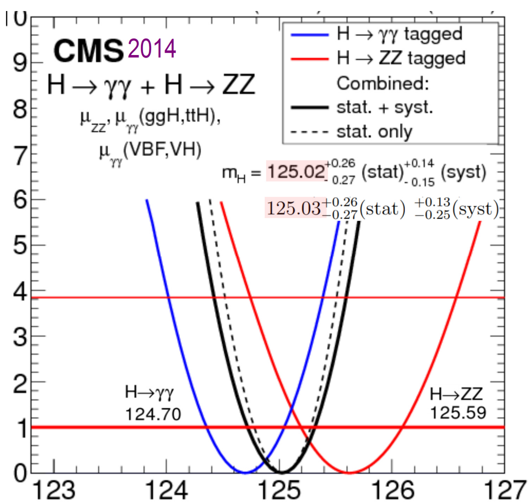


Fig. 2 Higgs mass of CMS 2014 at CERN.

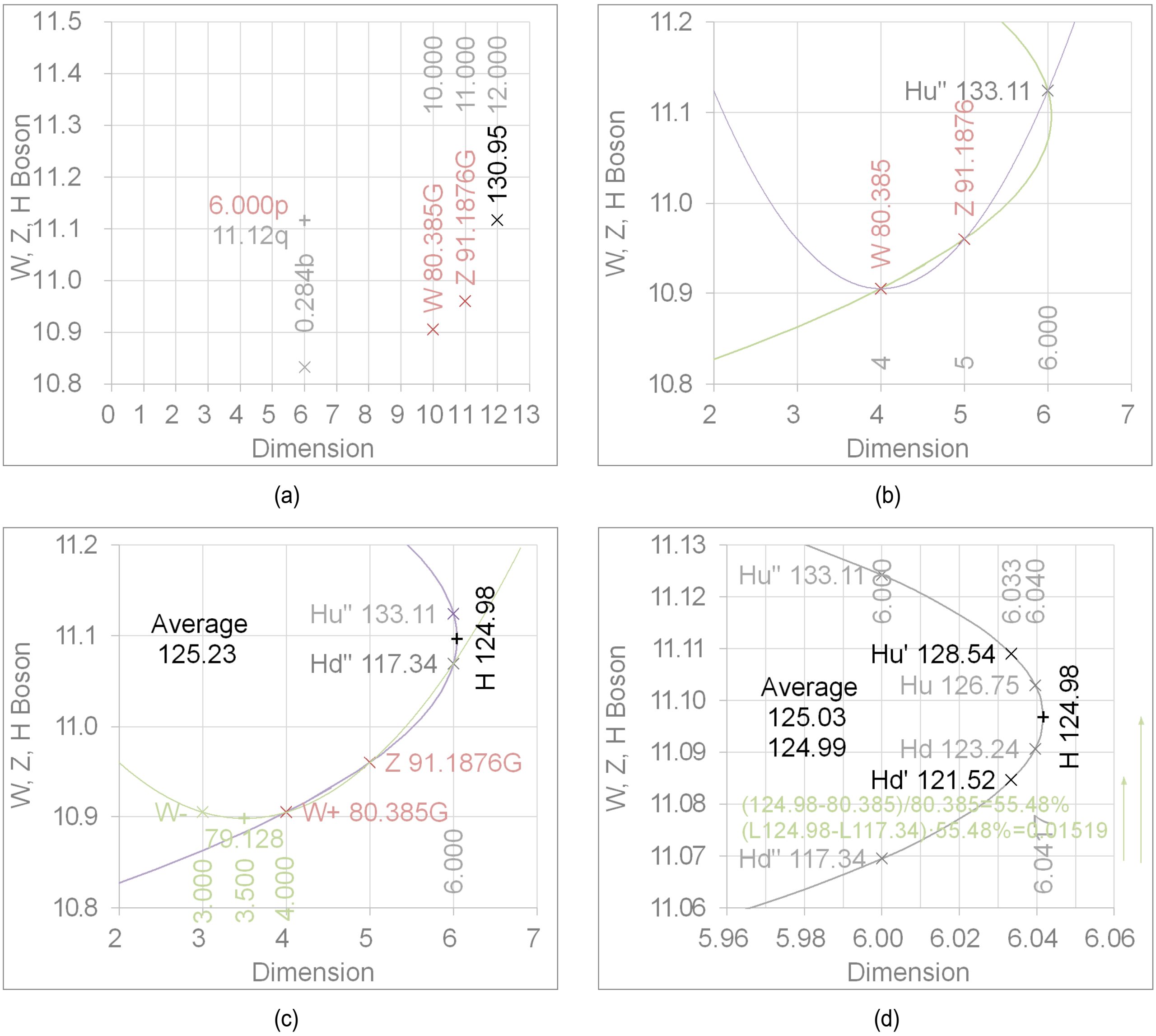


Fig. 3 Calculation of H boson mass at 6D.

2.3 Run 1 & Run 2

The H boson masses of Run 1 and Run 2 measured in ATLAS and CMS are presented in Table 1. The combined value of ATLAS Run 1 and ATLAS Run 2 is 124.97 GeV, and the combined value of ATLAS Run 1 and CMS Run 1 is 125.09 GeV. These two masses are the current standard mass value for H boson.

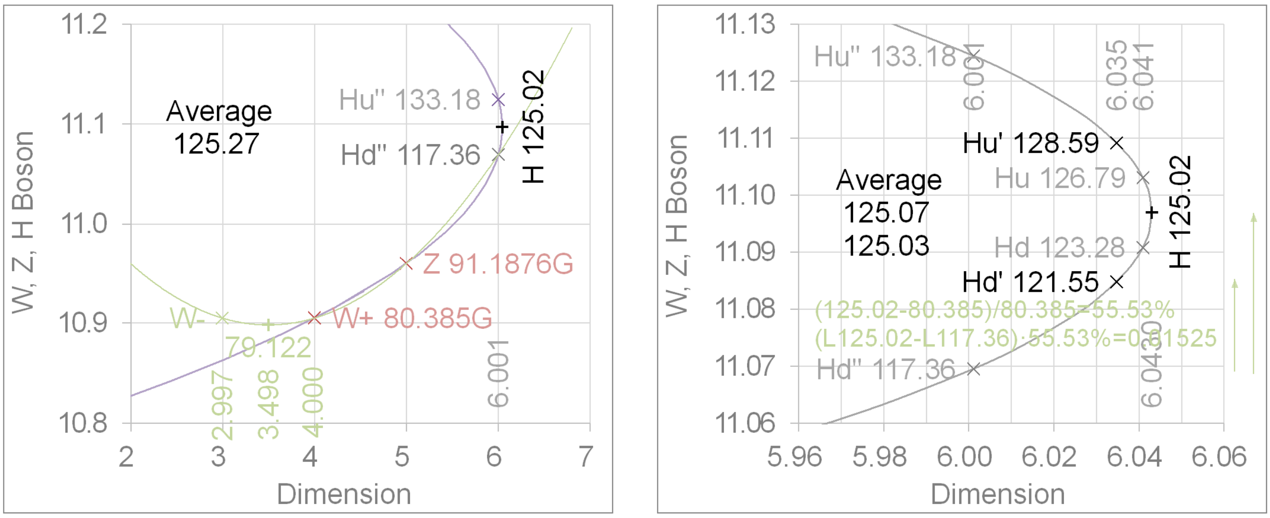
3. Calculation of H boson at 6D

3.1 Logarithmic elliptic equation

The masses of W boson and Z boson were precisely measured as 80.385 GeV and 91.1876 GeV. Assuming that the mass of W boson is 10D, the mass of Z boson is 11D, the center of ellipse is 6D, and the vertex of ellipse is 0D, the logarithmic ellipse is drawn as Fig. 3(a). From this, the mass of vertex 12D is calculated as 130.96 GeV. Since Higgs mass is about 125 GeV, the logarithmic elliptic equation in (a) does not fit the calculation of Higgs mass.

3.2 Logarithmic parabolic equation

When W boson is 4D vertex and Z boson is 5D, logarithmic parabola is drawn as (b), and the value of 6D is calculated as 133.11 GeV. Applying the inverse parabola of (c) to the values, the vertex is calculated as 124.98 GeV. This value can be said to be the same as 124.97 GeV of 'ATLAS Combine' in Table 1, and the average of 'Combine Run 1' and 'ATLAS Run 2' is 124.98 GeV. In the diagram of standard model, W boson is 80.39 GeV and Z boson is 91.19 GeV. Applying these values, H boson is calculated as 124.97 GeV.



(a) (b)

Fig. 4 Calculation of H boson mass at 6.00108D.

3.3 Down & Up H boson

The enlarged figure of the 124.98 GeV area in (c) is (d). If the logarithmic value 0.01519 that is calculated at the bottom of (d) is added to Hd'' and subtracted from Hu'', Hd' 121.52 GeV and Hu' 128.54 GeV are calculated. Here, the meanings of the formula and the dimension exceeding 6D cannot be explained yet. Hd' 121.52 GeV is similar to the left end value in Fig. 1, and Hu' 128.54 GeV is almost equal to the right end value in Fig. 1. The logarithmic averages from Hd', Hu' and H are Hd 123.24 GeV and Hu 126.75 GeV.

4. Calculation of H boson at 6.00108D

4.1 Dimension of our space

Author asserts that our space consists of three linear dimensions: horizontal, vertical, and height, and three quantum dimensions: 4D, 5D, and 6D. Here, the correct answer is 6.00108D, not 6D. The value is determined from the mass calculations of electron, muon and tau, and the calculation process will be described in detail in the following paper.

4.2 Logarithmic parabolic equation

The values applying 6.00108D are shown in Fig. 4(a), and the H boson mass is calculated as 125.02 GeV. It is exactly equal with the value of CMS 2014 in Fig. 2 and the average of 'ATLAS Combine' and 'CMS Run 1' in Table 1.

4.3 Down & Up H boson

The enlarged figure of the 125.02 GeV area in (a) is (b). The calculation process is equal with Fig. 3(d). The average of 123.28 and 126.79 coincides with 125.03 GeV in Fig. 2. The average of 121.55 and 128.59 coincides with CMS Run 1 125.07 GeV in Table 1. The average of 117.36 and 133.18 coincides with the average 125.27 GeV of CMS Run 1 and CMS Run 2 in Table 1.

4.4 W+ & W- boson

W boson in (a) is located on left 3D and right 4D of vertex. It is similar to W+ boson and W- boson. With the same logic, Z boson is located on left 2D and right 5D of vertex, but there is no 2D in our universe. The H boson is also the same.

4.5 Gauge theory

The correlation between W boson, Z boson and H boson in (a) is similar to the gauge theory.

5. Quantum space

5.1 Space = Empty + Brane + Gap

Space is GongGan in Korean. Gong means empty, and Gan means gap. Author judges that our space consists of HeoGong and MakGan in Korean. Heo means empty, Gong means empty again, Mak means that there are branes that we cannot understand, and Gan means that there are gaps between them. As shown in Fig. 5, the XYZ direction is empty and empty again, and the vertical direction consists of up down branes and the gap.

5.2 Shape of quantum space

The simple shape of the predicted quantum space is shown in Fig. 5. However, the actual shape will be more complex than Fig. 5. Something has quantized the linear space into the logarithmic space such as spring of Fig. 5. For this reason, the mass of particle must be calculated as logarithmic value. The something will be revealed in cosmology. In

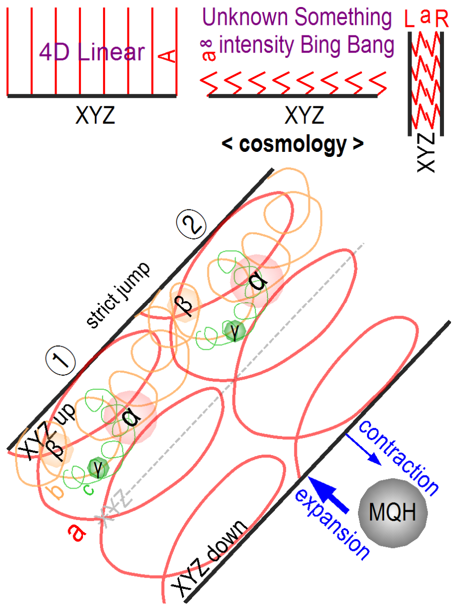


Fig. 5 Shape of quantum space.

the figure, XYZ extends in a straight line, and abc space of vertical dimension is less than atomic thickness.

5.3 Open particle

Particles collide outside the brane. Because of this, a line falls off from the brane. When the line curls, it turns into an open particle. All particles are open particles such as Fig. 6.

5.4 Strict integer multiples

In Fig. 5, a means 4D, b means 5D, c means 6D quantum space, and α means 4D, β means 5D, γ means 6D particle. Space a has weak intensity, space b has medium intensity, and space c has strong intensity. Because of this, α has weak mass, β has medium mass, and γ has strong mass. As can be seen from the figure, the quantum space abc has the characteristic of strict integer multiple. This causes that particle moves as jump.

5.5 Observer effect

When a line is located on abc quantum space, it turns into an open particle, and when the open particle is located on XYZ space, it turns into a wave line. When an external influence exerts on the wave line, it hides into quantum space and turns into a particle.

5.6 Oscillation

When α particle is located on space a, it has weak standard mass, when it is located on space b, it has intermediate oscillation mass similar to β particle, and when it is located on space c, it has strong oscillation mass similar to γ particle. β particle and γ particle are also the same situation. This is the cause of neutrino oscillation phenomenon. All particles in the standard model of particle physics are divided into standard particle and oscillating particles.

5.7 Spin

XYZ space in Fig. 5 is divided into XYZup and XYZdown. A universal magnetic force flows from left to right along the surface of branes. As the result, the particle located on XYZup has clockwise spin, and the particle located on XYZdown has counterclockwise spin.

5.8 Superposition

In the same XYZ space, only two α particles can be located on space a, many β particles can be located on space b, and innumerable γ particles can be located on space c.

5.9 Origin of mass

Particles do not have proper mass. The strength of quantum space where the particle is located determines its mass. Elementary particles have oscillating mass, and combined particles have static mass.

5.10 Three generation of standard model

The reason that particles exist as three generation is that quantum space is three generation. The three generation quantum spaces give properties to particle.

5.11 Basic particle and Combination particle

Three generation of neutrinos (electron, muon, tau) that make the shape of particle and three generation of gravinos (graviton, photon, gluon) that occur the force of particle are the elementary particles of all things. All other particles are combined particles composed of above six particles.

The masses of three generation elementary particles are determined by logarithmic elliptic equation, and the masses of three generation force particles are determined by logarithmic parabolic equation. Therefore, the three generation of boson are similar to force particles.

5.12 Gravity

Weak, electromagnetic, and strong force act at the inside of quantum space in Fig. 5. Gravity is the force that acts toward 4D empty space which is outside of quantum space.

5.13 Absolute Something

Final question is what made our universe so perfectly beautiful. Absolute something, not absolute someone, created our strict universal space as shown in Fig. 5. Author calls it Mommy Quantum Hole (MQH). Universe can be made only by MQH. Therefore, all multi-universes are very beautiful such as our universe.

6. Composition of quarks

6.1 Shape of quarks

The shapes of up, charm, top, down, strange, and bottom Quarks are shown in Fig. 6. Where, α, β, γ are 4D, 5D, 6D particles, n is standard neutrino, N is oscillating neutrino, s is standard anti-neutrino, g is standard gravino, t is standard anti-gravino, f is fermion located on 4D5D6D, and b is boson located on 10D11D12D. Three generation neutrinos are electron, muon, tau, and three generation gravinos are graviton, photon, gluon. Therefore, α_n, β_n, γ_n are standard neutrinos, α_N, β_N, γ_N are oscillating neutrinos, α_s, β_s, γ_s are standard anti-neutrinos, α_g, β_g, γ_g are standard gravinos, and α_t, β_t, γ_t are standard anti-gravinos.

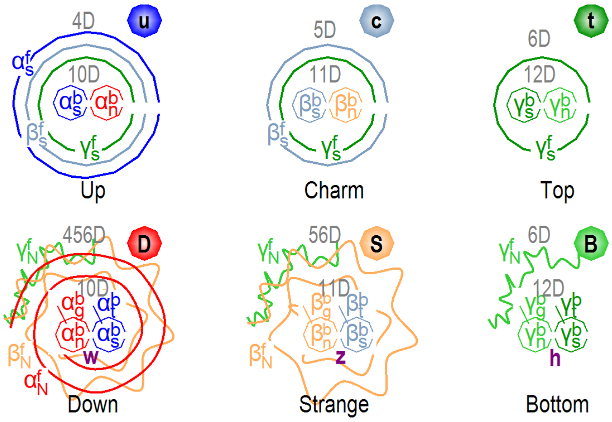


Fig. 6 Shape of quarks.

6.2 Particle and anti-particle

As can be seen in Fig. 6, down, strange, bottom are particles, and up, charm, top are anti-particles. The difference is standard and oscillation. The shape of electron is similar to down quark. Therefore, if one electron is added to one proton which is composed of two up quarks and one down quark, the number of particles and anti-particles becomes the same. This means that the number of particles and anti-particles is the same in whole universe. Author judges that there is a simulation universe which is the exact opposite of the character of our universe. The whole universe means including the simulation universe.

6.3 w z h bosons

Quark is a combined particle which is composed of shell fermion and inside boson. There is a w boson of 10D in down quark. When down quark is collided, α_N shell is peeled off and it turns into strange quark. At that time, the w boson in it changes to z boson of 11D. When the strange quark is collided, β_N is peeled off and it turned into bottom quark. At that time, the z boson in it changes to h boson of 12D.

6.4 Oscillation of H Z W bosons

When the bottom quark is broken, it is divided into 6D tau neutrino γ_N and 12D boson h. The boson h immediately moves into the quantum space of 6D, and its mass changes to H boson. The mass change also follows the logarithmic parabolic equation. This is Higgs particle. The H boson located on 6D space of Fig. 5 moves into 5D space due to the oscillation phenomenon. This is Z boson. It also moves into 4D space. This is W boson. That is, W Z H are all the same particles. The mass of three generation boson is determined by the quantum space where the particle is located. This phenomenon is the below area of the vertex on the inverse parabola of Fig. 4, and it is the left area of Fig. 1.

6.5 Collapse of H boson

If the collision energy is stronger, the h boson in Fig. 6 is broken. This phenomenon is the above area of the vertex on the inverse parabola of Fig. 4, and it is the right area of Fig. 1. The h Boson is composed of tau neutrino γ_n, gluon γ_g, tau anti-neutrino γ_s, and anti-gluon γ_t. The boson gluon and boson anti-gluon on 6D space move into 5D space. It is boson photon and boson anti-photon. They move into 4D space. It is boson graviton and boson anti-graviton. Here, the measurement of photon is easy, and the others are difficult to measure. The same phenomenon occurs at up, charm, and top quarks with boson neutrinos of the inside.

6.6 Dark energy

From the outside of our universe, three generation dark forces are affecting our universe. Dark energy is judged to be the sum of three generation dark forces. They affect graviton, photon, and gluon. Therefore, it is assumed that W, Z, and H bosons are affected by the dark forces. Also, gravity force, weak force, electromagnetic force, and strong force are all affected by the three generation dark forces.

7. Conclusions

The mass of H boson is simply calculated by applying the logarithmic parabolic equation to W and Z boson masses. This means that Higgs boson has nothing to do with the origin of mass. The compressive strength of three generation quantum space gives the mass of three generation particles. W boson, Z boson, and H boson are the same particles, and the masses of three generation bosons are determined by the quantum space where the particle is located.

Quantum space is compressed logarithmically. Therefore, the mass of combined particle must be calculated as logarithmic value. Here, in case of bonded particle such as hydrogen, the mass is the simple sum of the composed masses.

It is suggested that the mass values measured in ATLAS and CMS should be reinterpreted as logarithmic values. The correct mass of H boson is 125.02 GeV. Reinterpreting the observational data after knowing the correct answer will reveal many new facts.

Logarithmic Elliptic Equation and Change of Universe

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Keywords: Change of universe, Cosmology, Origin of life, Quantum space, Simulation universe

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Abstract Logarithmic elliptic equation is very similar to the characteristics of superstring theory. Space is quantized by the logarithmic elliptic equation. Three generation quantum spaces make three generation particles and give them their characteristics such as mass and oscillation phenomenon. The whole universe is composed of a straight 6-dimensional space, and six generation quantum hole families quantize the dimensions one by one. This is the origin reason of the change of universe. The theory of everything is integrated by logarithmic elliptic and parabolic equations.

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1. Introduction

The standard model of particle physics explains that all things are composed of 17 elementary particles. Author asserts that all things are composed of three generation neutrinos: electron, muon, tau, and three generation gravinos: graviton, photon, gluon. These are fundamental particles.

In previous study(1), it was proved that the mass of H boson is easily calculated from logarithmic parabolic equation applying W and Z boson masses. The masses of six fundamental particles change according to logarithmic elliptic equation. The solution of logarithmic elliptic equation is calculated as two cases of standard value and oscillating value.

The purpose of this study is to describe the characteristics of logarithmic elliptic equation and the change of universe.

2. Logarithmic elliptic equation

2.1 Equation

The elliptic equation is as follows:

$$\frac{(x-p)^2}{a^2} + \frac{(y-q)^2}{b^2} = 1 \tag{1}$$

Where, p is the dimension of the space where a particle is located, and q is the logarithmic mass of the particle.

2.2 Five kinds of solution

To calculate Eq. (1), four constants p, q, a, and b must be given. Three masses are given from three generation particles measured by experiment. Therefore, one unknown

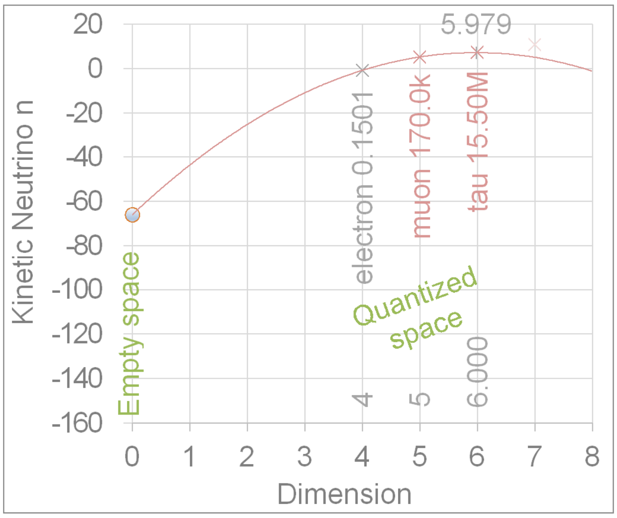

Fig. 1 Logarithmic parabola

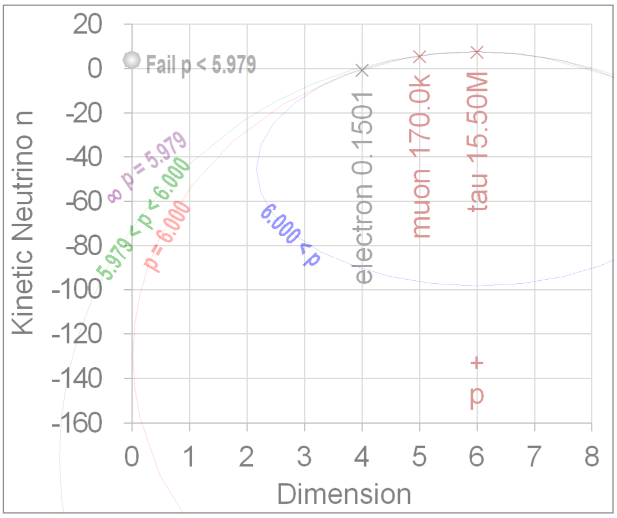

Fig. 2 Logarithmic ellipse

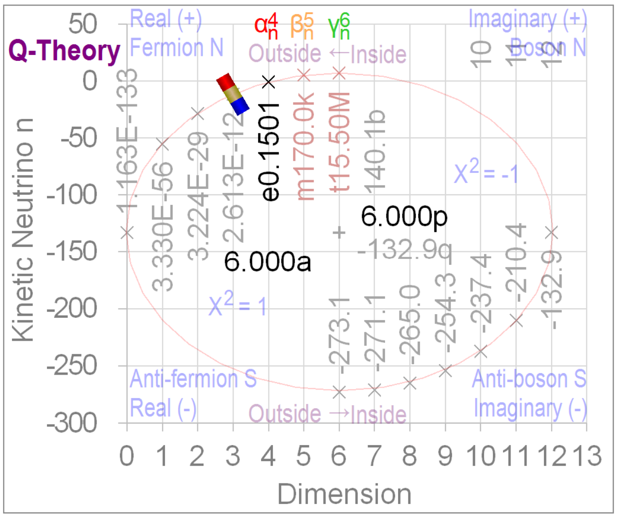

Fig. 3 Super gauge symmetry

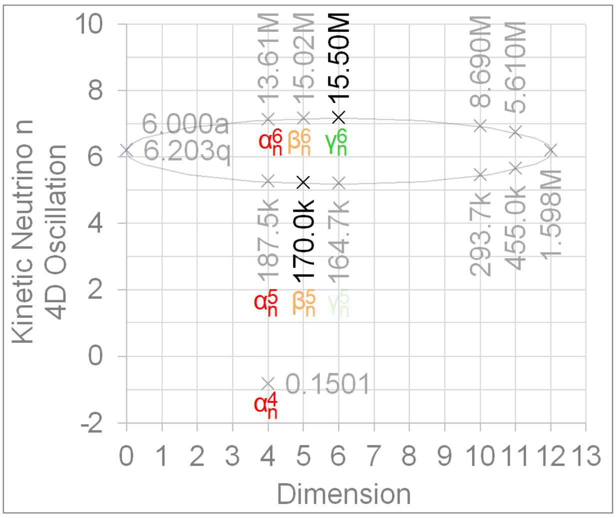

Fig. 4 Oscillation phenomenon

value must be assumed. And there is also a rotating elliptic equation. Therefore, there are five cases of solutions.

① Knowing p, the equation is calculated.
② Knowing a, the equation is calculated.
③ Knowing q, the equation is calculated.
④ Knowing b, the equation is calculated.
⑤ There is the elliptic equation rotated by θ angle.

2.3 Infinite number of solutions

The masses of three generation particles are given, but one constant is required to solve Eq. (1). Because of this, an infinite number of solutions are occurred from Eq. (1).

2.4 Incomputable, Infinite, Rapid convergence

1st generation particle is located on 4th dimension, 2nd generation particle is located on 5th dimension, 3rd generation particle is located on 6th dimension, and each mass is given by experiment. Therefore, the logarithmic parabolic equation in Fig. (1) is drawn. The parabola in Fig. 1 is an infinitely size ellipse. Raising the point on 0th dimension up, the elliptic equation in Fig. (2) become incomputable. Lowering the point on 0th dimension down, the infinitely size ellipse reduces rapidly, and the solution converges very quickly. That is, if the center dimension of ellipse is less than the vertex dimension of parabola, the ellipse is not calculated.

2.5 Infinite dimension

If the center dimension of ellipse is larger than the vertex dimension of parabolic, the ellipse is calculated. Also, the ellipse is calculated up to infinite dimension.

2.6 Super gauge symmetry

In Fig. 3, the left of ellipse is fermion universe, and the right is boson universe. The upper is matter universe, and the lower is anti-matter universe. The left and right are super-symmetry, and the upper and lower are gauge symmetry.

2.7 Three generation particles

In Fig. 1, the masses of muon neutrino and tau neutrino were measured with minimum values of 170 keV and 15.5 MeV. It has only been confirmed that the mass of electron neutrino is less than 1.1 eV from experiment. Substituting those values to the parabola in Fig. 1, the vertex is calculated as 6.107D. The expected mass of electron neutrino is 0.1501 eV. In this case, the vertex is 5.979D. It is proved that a 4th generation particle does not exist due to the trend of the parabola. If 4th generation particle is present, the trend in Fig. 1 becomes strange. From this, it is understood that our space consists of six dimensions.

2.8 Zero dimension

The parabola in Fig. 1 has negative dimensions. It is incomprehensible. As shown in Fig. 2, the left vertex of ellipse should be formed at some dimension. Zero dimension is the most reasonable answer, and It means that everything which we understand disappears.

2.9 Linear dim. + Quantum dim. = 6 dimensions

What existed cannot disappear. It turned into something else incomprehensible. The horizontal axis of charts means linear dimensions. In the chart, 3D means that there are three linear dimensions and three quantum dimensions, 0D means that all changed to quantum dimensions, and 6D means that all changed to linear dimensions.

2.10 Oscillation phenomenon

Three masses are given from three generation particles,

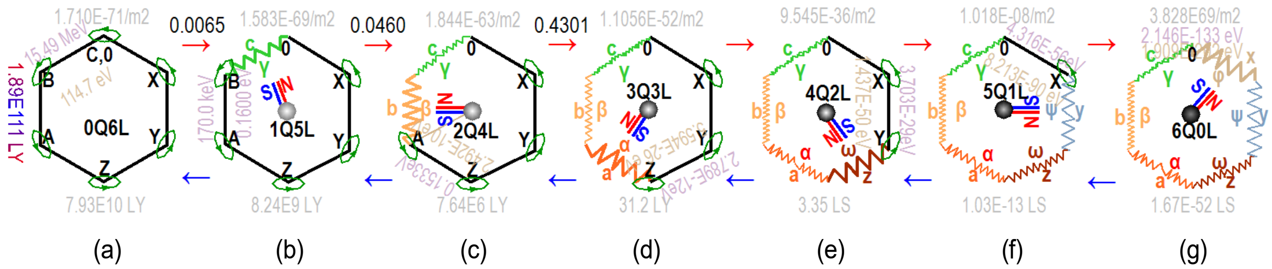

Fig. 5 Change of whole universe

and vertex 0D and center 6D were determined. Four constants are needed to calculate Eq. (1), but five constants were given. Due to this, the mass of neutrino is calculated to three types. This is neutrino oscillation phenomenon. In Fig. 1, when the muon and tau neutrinos are 170 keV and 15.5 MeV, the mass of electron neutrino is calculated as 0.1501 eV, 187.5 keV, and 13.61 MeV as shown in Fig. 4. The standard mass of electron neutrino is 4D 0.1501 eV. However, it jumps to 5D and changes to something such as muon mass, and it jumps to 6D and changes to something such as tau mass. The same oscillation phenomenon occurs at muon neutrino and tau neutrino. As described in previous study[1], the reason is due to the characteristics of quantum space. The feature of quantum space gives particle mass.

2.11 Superstring theory

Logarithmic elliptic equation is very similar to the feature of superstring theory. Three generation neutrinos and three generation gravinos are integrated by logarithmic elliptic equation. Therefore, the extra dimension of space is three.

2.12 Q-theory

The shape of ellipse in Fig. 3 is same with Q. Author calls this Q-theory.

3. Change of universe

3.1 Fermion universe, Boson universe

In the ellipse of Fig. 3, the upper left is fermion universe, the lower left is anti-fermion universe, the lower right is anti-boson universe, and the upper right is boson universe. The fermions in the upper left make our particles, and the anti-bosons in the lower right are hidden in our quarks.

3.2 Six-dimensional origin universe

The whole universe is composed of six dimensions as shown in Fig. 5. This is our origin universe.

3.3 Position of our universe

Our universe is composed of three linear dimensions and three quantum dimensions. In Fig. 5, the serpentine line means quantum space, and the straight line means our space. Therefore, our universe is located on the third dimension of upper left in Fig. 3. This is Fig. 5(d).

3.4 Real, Imaginary, Negative, Positive

In the ellipse of Fig. 3, based on our universe, the left is real universe, the right is imaginary universe, the upper is positive universe, and the lower is negative universe. Based on the upper left of Fig. 3, light goes straight forward, and when matter speed increases, the mass also increases. At other universes, phenomena that we cannot imagine occur.

3.5 Dimensional multiverse

Our universe is composed of three dimensions. There are 4D, 5D, 6D universes outside our universe, and 2D, 1D, 0D universes inside our universe.

3.6 Mommy Quantum Hole

It is judged that the inside of a supermassive black hole in the center of a 3D galaxy is a 2D universe. If this is true, our 3D universe is located in the hole of a 4D galaxy center. Author calls the hole 'mommy quantum hole'. From this, mommy quantum hole cosmology (MQHC) is born.

3.7 Three generation quantum hole

If above explanation is true, a 6D great-grand mommy quantum hole makes a 5D universe, a 5D grand mommy quantum hole makes a 4D universe, and a 4D mommy quantum hole makes a 3D universe. Three generation quantum holes exist outside our universe, and they make three generation particles. Supermassive black hole is child quantum hole, and there are many grandchild quantum holes in it, and there are so many great-grandchild quantum holes in it.

3.8 Dark energy, Dark matter

The three generation quantum holes that exist outside our universe affect our universe. Its influence is dark energy. Supermassive black hole is fourth generation quantum hole and affects galaxy. Its influence is dark matter. Dark energy affects four forces of physics, and dark matter quantizes the entire galactic space a little.

3.9 Direction of change

Our universe is dominated by gravity. The larger gravity, the more space is curved, and space is quantized under infinite gravity such as supermassive black hole. Therefore, the change direction of whole universe is counterclockwise in Fig. 3 The rotating direction of quantum holes determines the direction of change of universe. The direction of rotation changes at (a) and (g) in Fig. 3.

3.10 Absolute time space

Absolute time is absolutely the same at everything in Fig. 3 and Fig. 5. Because of this, absolute time disappears from all physic mathematic formulas. Therefore, the existence of absolute time cannot be proved by mathematical formula. The space of our universe is 4D sphere located on the surface of 4D quantum hole. Therefore, the absolute center of our space is the center of the 4D quantum hole. However, we can never observe the 4D quantum hole.

3.11 Quantum hole, Luantum hole

Quantum hole compresses everything into particles, and luantum hole expands everything into lines. The upper left of Fig. 3 and the upper arrow of Fig. 5 are fermion quantum hole, the lower left of Fig. 3 and the lower arrow of Fig. 5 are fermion luantum hole, the lower right of Fig. 3 and the lower reverse arrow of Fig. 5 are boson quantum hole, and the upper right of Fig. 3 and the upper reverse arrow of Fig. 5 are boson luantum hole. Fermion quantum hole is outside our universe, and boson quantum hole is inside our quarks.

3.12 Black hole, White hole

Black holes and white holes are also divided into fermions and bosons. Black hole is a concept of quantum hole, and white hole is a concept of luantum hole. The direction of upper arrow in Fig. 5(d) is the world of black holes, and the direction of lower arrow is the world of white holes. The change of our universe is in the direction of upper arrow. Therefore, white holes do not exist in our origin universe including our universe. When black hole bursts once more, it turns into a supermassive black hole.

3.13 Quasar

It is known that supermassive black hole exists in quasar, and quasar strongly absorb surrounding matters. It is a quasar that has fallen from 4D universe to our 3D universe, and it makes 4D particles into 3D particles with extremely strong anti-gravity. The difference of quantum hole and luantum hole is that the rotating direction of space is opposite to each other, and the difference of gravity and anti-gravity is that the bending direction of space is opposite to each other.

3.14 Super origin universe

There are an unknown number of 6D origin universes, and the upper level is a super origin universe which has no dimension. This means that we do not know why or how the super origin universe was born. There is a 5D origin universe in the super origin universe. This leads to the eternal competition of power between the origin universes. Due to this, the change of super origin universe proceeds forever.

3.15 Origin brane, Origin energy

All things start from single origin brane and single origin energy. The lines in Fig. 5 are the origin brane, and the rotation is the origin energy. The reason for their existence must be asked to the super origin universe. The origin brane is composed of neutrino n, gravino g, anti-gravino t, and anti-neutrino s. These are changed into three generation fundamental particles by three generation quantum holes.

3.16 Pair production, Pair annihilation

The brane is composed of line n·g and anti-line t·s. Due to this, particles are always created and disappear as pair. The line n·g·t·s is neutral, so it is very difficult to observe. The line n·g turns into an electron that is oscillating N·G by our quantum space. Anti-line t·s disappears at our quantum space.

3.17 Magnetic monopole problem

The location of our universe is 3D at the top left in Fig. 3. In 4D, 5D, and 6D, the neutral brane is quantized into the monopole particles of n·g and t·s. Its force is electric force, and it must exist as monopolar particles. The remaining three dimensions still exist as straight neutral brane. Its force is magnetic, and it must exist as dipole line.

3.18 The law of increasing entropy

In magnet, there are N pole where magnetic force spreads and S pole where magnetic force gathers. Our universe is surrounded by the space of N pole. Due to this, only particles whose outer-most shell is N pole can stably exist in our space. The characteristics of N particles try to spread and disorder. This is the reason of the law of increasing entropy.

3.19 Constant velocity expansion of space

In Fig. 5, our 3D universe (d) grows by continuously absorbing the 4D universe (c). As the result, our space expands. It is judged that universe expands with constant velocity. Dark energy affects not the expansion of space but affect four force of physics.

3.20 Beginning of universe, End of universe

The beginning of super origin universe is incomprehensible. However, it changes steadily forever. In Fig. 5, before the birth of our universe is (c), the space A of straight line has changed to quantum space a due to the Big Bang, and the present of our universe is (d). The end of our universe is that everything turns into (e). That is, our universe is eaten by supermassive black holes in the center of galaxies.

4. Simulation universe

4.1 Big Bang, Birth of space

At a paper, the front side is red N, and the back side is blue S. The front side was folded once by Big Bang, and a space with N on both the left and right sides was created. The space is spread out in straight line between the folded inner faces.

4.2 Cosmological constant problem

Planck constant l_P is 1.61624E-35 m, and the cosmological constant Λ is 1.1056E-52/m^2. The cosmological constant problem is Eq. (2).

$$l_P^2 \cdot \Lambda = 10^{-121.54} \quad (2)$$

$$\nu_0 \,/\, \nu_3 = 1.163 \cdot 10^{-133} \,/\, 2.613 \cdot 10^{-12} = 10^{-121.35} \quad (3)$$

$$l_{PN}^2 \cdot \Lambda_M = \nu_N \,/\, \nu_M \quad (4)$$

$$l_{P3}^2 \cdot \Lambda_3 = \nu_3 \,/\, \nu_3 = 1 \quad (5)$$

$$l_{P3} = 1 \,/\, \sqrt{\Lambda_3} = 9.5104 \cdot 10^{25} m \quad (6)$$

$$l_{T3} = l_{P3}/(2.998E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24) = 10.05 \cdot 10^9 LY \quad (7)$$

In Fig. 1, Eq. (3) is calculated by dividing the neutrino mass of 0D and the neutrino mass of 3D. The value is very similar to the result of Eq. (2). To accurately calculate Eq. (3), quark masses and dark energy must be added. According to the author's calculation, the range of the value is from 121.53 to 121.55. This calculation will be detailed in future studies. Therefore, Eq. (2) is the correct answer. However, the interpretation at physics is wrong.

The relation of Eq. (4) is established at Planck length of N-D and cosmological constant of M-D. When both N and M are 3, the value is 1 at Eq. (5). Therefore, 3D Planck length and 3D Planck time are calculated by Eq. (6) and Eq.(7).

4.3 Birth of anti-space 3.72 billion years ago

Planck length and time mean the length and time that cannot be interpreted in physics. Our universe was born about 13.77 billion years ago. The difference of 13.77 and 10.05 is 3.72 billion years ago. At that time, A certain phenomenon that physics cannot interpret has occurred cosmically.

The straight space by Big Bang folded once toward the front red side of paper. 3.72 billion years ago, the space was once again folded toward the back blue side of paper. The blue space is anti-space that cannot be interpreted by physics. Anti-particles can be stably located in the anti-space.

4.4 Origin of life

Earth's first life was discovered as a fossil 3.5 billion years ago. Biology believes that the first life on Earth was born between 3.8 and 4.2 billion years ago. However, fossils of life before 3.5 billion years have not yet been discovered.

First life has been born cosmically after 3.7 billion years ago. This means that there were only stones in our universe before 3.7 billion years ago.

4.5 Quantum entanglement of life

The shell of neutron is the anti-neutral brane of s·t·g·n, and the outer-most shell is the anti-neutrino s of blue color. Because of this, free neutron easily collapses by our space of red color. The anti-neutral brane collapses into s·t and g·n, the g·n oscillates in our space and changes into a life electron G·N, and the s·t moves into the anti-space and changes into a life anti-electron S·T. They are connected to each other. This is a quantum entanglement of life.

4.6 Simulation universe

Our space is the material universe of electrons, and anti-space is an information universe of anti-electrons. The anti-electrons perform life activities in anti-space, and the life activities are information simulations. My dream is one of simulations of life activities by anti-electron information particles. The life activity of simulation is same with a game. Dream is the first attempt at the game, so many dreams end negatively. When we pass all my dream games, we can awaken the truth of our universe. How can I pass the games of my dream? This is the starting point for religion, philosophy, and ethics. The material of gold is important in our universe. However, the information of love is important in the simulation universe.

4.7 Similar parallel universe

Planck time of our universe is 10.05 billion light years. When time become 20.10 billion light years, the brane of universe folds again to a direction that we cannot understand, and a new space is born. That space is a similar parallel universe. As the result, even if our universe expands, the brane that supports our universe remains very strong.

4.8 Integration of science and religion

If the above explanation is true, science and religion are united. The first ranking in the simulation universe is religious simulation. However, the ranking of science simulation is gradually rising. God teaches religious simulation. This is because when God teaches science to an information body who cannot understand science, the information body becomes self-dividing. Modern humans have begun to understand science. Therefore, the god begins to teach science simulation little by little.

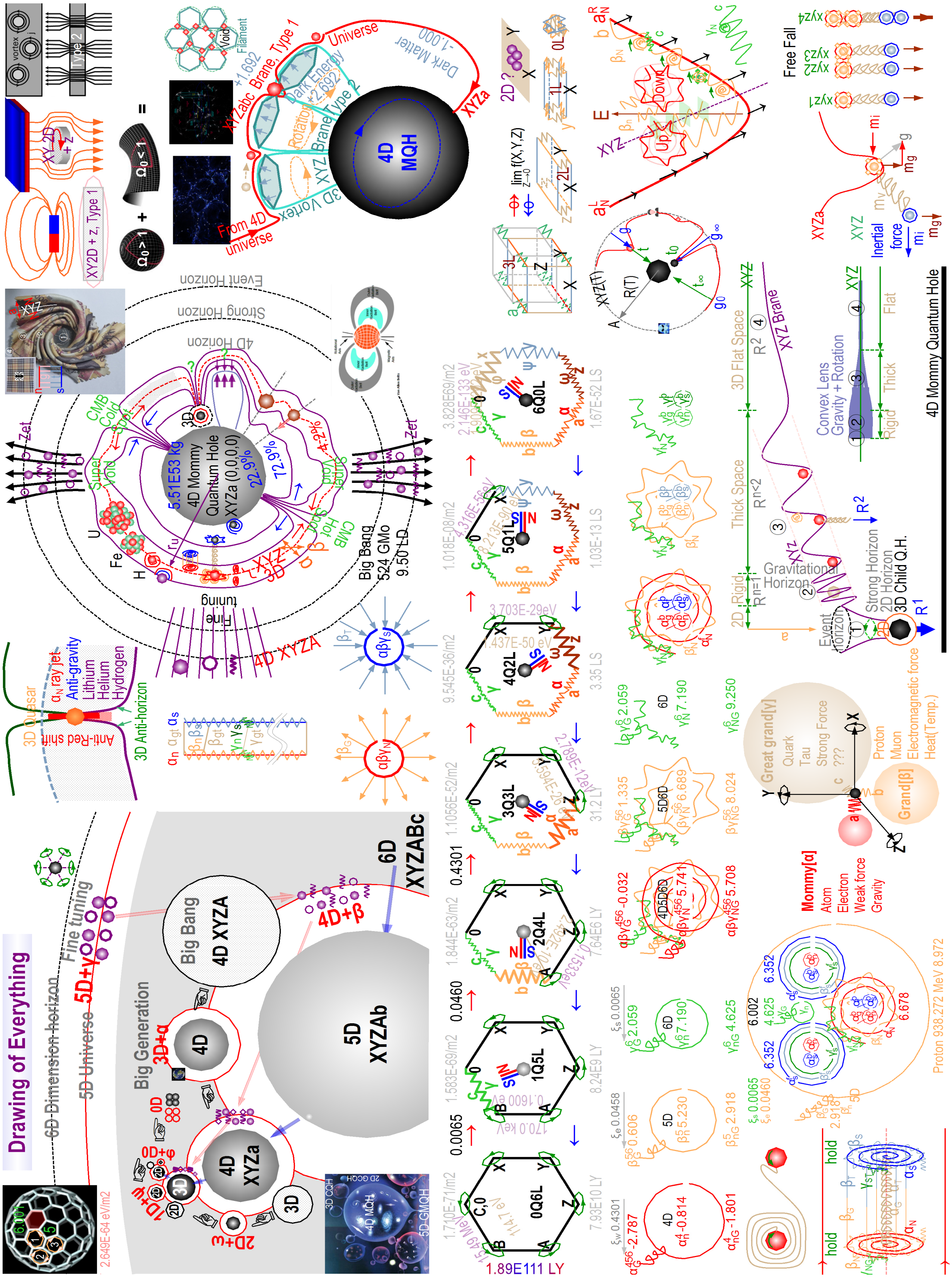

Fig. 6 Drawing of Everything

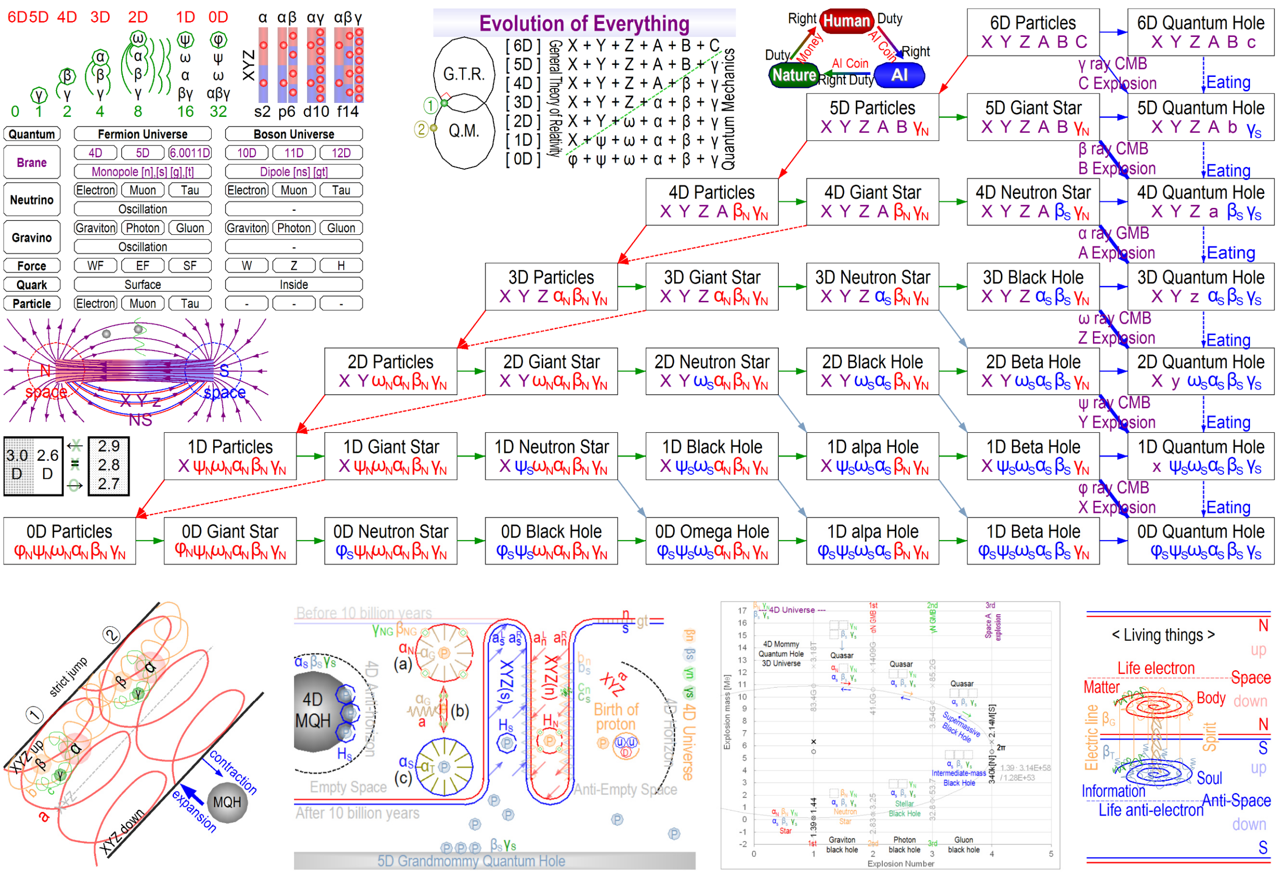

Fig. 7 Evolution of Everything

5. Law of everything

5.1 Theory of everything

Gravity, weak force, electromagnetic force, and strong force are integrated by logarithmic parabolic equation. The forces are particles which are composed of three generation standard neutrinos and three generation oscillating gravinos. Therefore, force also has mass. Weak force, electromagnetic force, and strong force are the forces acting on quantum space, and gravity is the force acting toward empty space. Here, weak force causes gravity. Three generation dark forces generated by three generation quantum holes are influencing to the four major forces of physics.

5.2 Calculation of everything

When a one has calculated all the truths of universe, the one becomes the calculation of everything. Author judges that the one is logarithmic elliptic equation.

5.3 Drawing of everything

When the truth of universe is not revealed, the language of physics is mathematics. However, when it is revealed, the language of physics is drawing. The shape of everything is drawn in Fig. 6 and Fig. 7.

6. Conclusions

Logarithmic elliptic equation has the characteristic of super symmetry and gauge symmetry. The fundamental particles of everything are three generation neutrinos: electron, muon, tau, and three generation gravinos: graviton, photon, gluon. Neutrinos and gravinos are integrated by logarithmic elliptic equation. Therefore, the extra dimension of space is three. This is the reason why particles have three generations.

Three generation quantum holes which exist outside our universe created our universe, and three generation child quantum holes also exist inside of supermassive black hole. Since the quantum holes dominate everything, all things are inevitably beautiful. This is the Calculation of Everything.

From the cosmological constant problem, it is proved that our simulation universe occurred 3.72 billion years ago. If this is true, science, religion, philosophy, and ethics are all united into one scholarship. This is the Thought of Everything.

The sum of above two is the Theory of Everything. If this turns out to be true, the Law of Everything is born.

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Calculation of Space Dimension

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Keywords: Dimension of space, Electron, Muon, Q-theory, Tau

Abstract Electron, muon, and tau are the combined particles composed of three generation neutrinos and three generation gravinos. The neutrinos make the shape of particles, and the gravinos make the force of particles. Muon is the particle that the outer shell of electron is peeled off, and tau is the particle that the outer shell of muon is peeled off. In previous study, logarithmic elliptic equation was suggested, and it was called as Q-theory. Applying this to electron, muon, and tau, the dimension of space is calculated as 6.00108.

1. Introduction

In previous studies, the mass of H boson was calculated very easily from the logarithmic parabolic equation relationship of W boson and Z boson(1), and the characteristics of logarithmic elliptic equation and the principle of cosmological change were described(2).

The purpose of this study is to calculate the dimension of space from electron, muon, and tau.

2. Shape of electron, muon, tau

2.1 Kinetic state, Steady state

In Fig. 1, our universe is divided into kinetic state on the left and steady state on the right. The kinetic state is applied when analyzing the expansion of universe, and the steady state is applied when analyzing the mass of particles.

2.2 Neutrino, Gravino

Three generation of neutrinos (electron, muon, and tau) make the shapes of particles, and three generation of gravinos (graviton, photon, and gluon) make the forces of particles. Here, gravino is a new word created by author.

2.3 Shape of neutrino

In Fig. 1(a), α, β, and γ mean each 1st, 2nd, and 3rd generation particle, subscript n means neutrino, and superscript 4, 5, and 6 mean each 4th, 5th, and 6th dimension. Small letter means standard mass, and capital letter means oscillating mass. Therefore, α_n^4, β_n^5, and γ_n^6 are standard neutrinos for electron on 4D, muon on 5D, and tau on 6D.

The neutrinos are open particles as shown in (a). Due to this, when they encounter a certain special circumstance, they spread as wave lines.

2.4 Shape of gravino

In Fig. 1(a), subscript g means gravino. Therefore, α_g^4, β_g^5, and γ_g^6 are standard gravinos for graviton on 4D, photon on 5D, and gluon on 6D.

Gravino spreads radially around the neutrino. α_g^4 spreads inward, β_g^5 spreads outward, and γ_g^6 spreads toward their vertical direction. Here, in the expression of the picture, the radial lines were expressed as a single line.

2.5 Shape of four major forces

The shapes of four major forces are shown in Fig. 1(b). Weak force is the force of graviton oscillating in 4D, 5D, and 6D, the electromagnetic force is the force of photon oscillating in 5D and 6D, and the strong force is the force of gluon oscillating in only 6D. Weak, electromagnetic, and strong forces are the force acting on quantum space, and gravity is the force acting toward the empty space of 4D. The four major forces will be described in detail in future study.

2.6 Sphere universe

In previous study(1), our universe is a sphere, and it is suggested that the Planck length of our universe is 9.5104E25 m from the measured cosmological constant. Applying the numerical values in the kinetic state of Fig. 1, the value is calculated as 5.896E25 m. The radius of hydrogen is about 5.29E-11 m, and the ratio of the two values is 8.98E-37. The magnitude of electromagnetic force is 1/137, the magnitude of gravity is 5.90E-39, and the ratio of the two values is 8.09E-37. The 8.98E-37 and 8.09E-37 are very similar. Here, hydrogen is in steady state, and Planck length and forces are in kinetic state. The correct answer is when the above two states match each other.

From above, it can be seen that hydrogen and universe

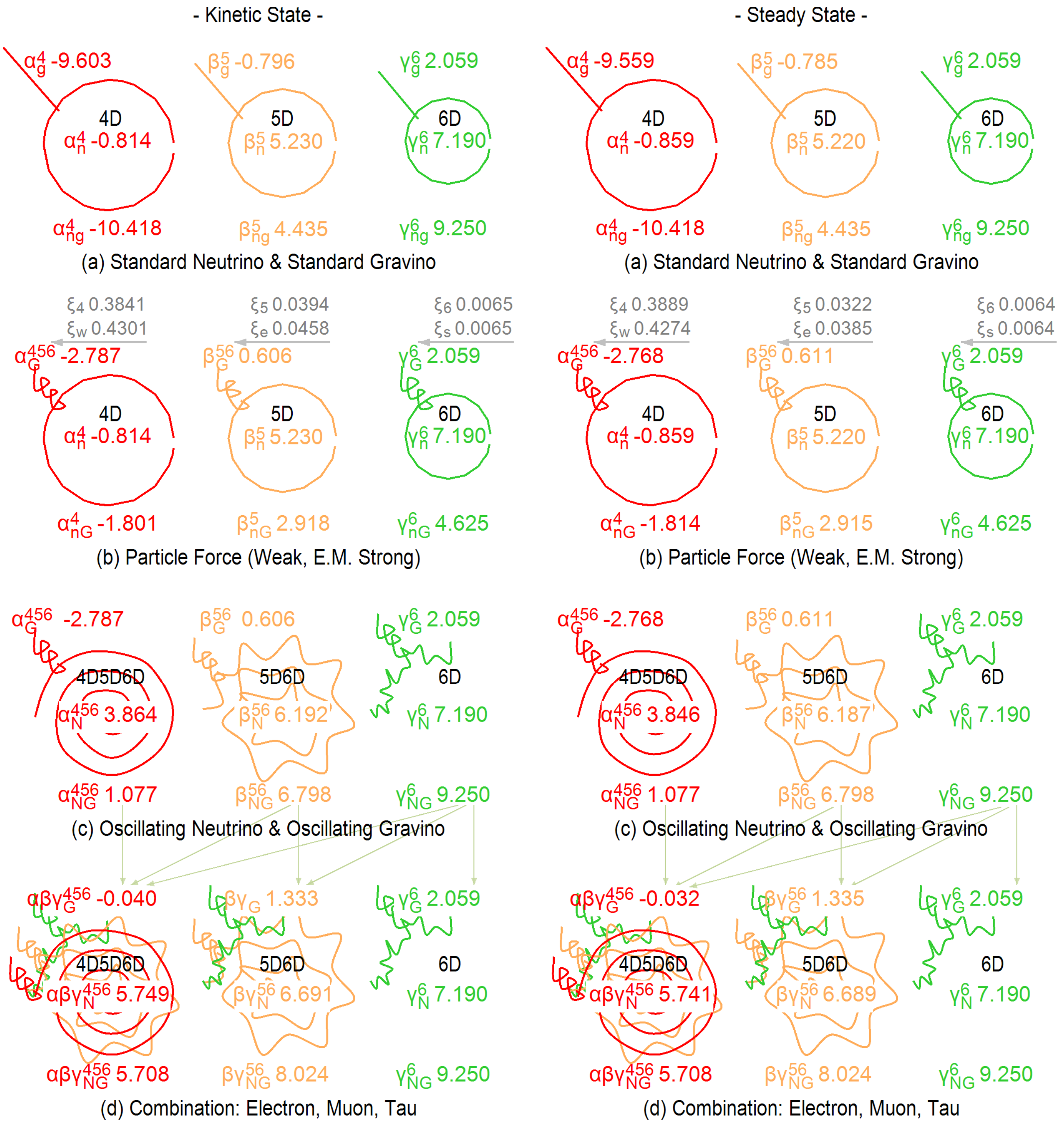

Fig. 1 The shapes of various particles

are the same characteristics. Hydrogen is a spherical quantum particle composed of proton and shell electron. Such as this, our universe is also a spherical quantum particle composed of a certain nucleus and shell space. Author calls the nucleus as a mommy quantum hole(2). If there is no nucleus of universe, the universe is extremely unstable. If there is a nucleus of universe, the universe is extremely stable. This is the cosmological constant problem(2). All multiple universes are extremely stable because of the nucleus.

2.7 Mass of photon

In (b), photon β_G^{56} is attached to muon neutrino and induces electromagnetic force in quantum space. Sun light is the photon β_g^0 independently located in our empty space 0D. Quantum space imparts mass to particle(1). Therefore, the photon β_G^{56} located in 5D6D has a mass, but the light β_g^0 located in our empty space has no mass.

However, our universe is a very large spherical quantum particle. That is, it means that the XYZ coordinates of our

Table 1 Calculation of space dimension. It is judged that kinetic dimension and steady dimension are the same.

Term	Figure	Electron	Muon	Tau	Unit	Symbol		
Lepton	Mass	510.999k	105.658M	1.77686G	eV	$\mathrm{AB}\Gamma_{NG}^{456}$	$\mathrm{B}\Gamma_{NG}^{56}$	Γ_{NG}^{6}
Combination	Fig. 1(d)	5.708	8.024	9.250	log	$\alpha\beta\gamma_{NG}^{456}$	$\beta\gamma_{NG}^{56}$	γ_{NG}^{6}
Oscillation	Fig. 1(c)	1.077	6.798	9.250	log	α_{NG}^{456}	β_{NG}^{56}	γ_{NG}^{6}
	Mass	11.9523	6.28282M	1.77686G	eV	A_{NG}^{456}	B_{NG}^{56}	Γ_{NG}^{6}
Oscillating	Fig. 3, 4, 5	9.111	9.108	9.250	log	α_{na}^{6}	β_{na}^{6}	γ_{na}^{6}
	Fig. 3, 4	4.539	4.435	-	log	α_{na}^{5}	β_{na}^{5}	-
	Fig. 3	-10.418	-	-	log	α_{na}^{4}	-	-
Quantum	Space	4D	5D	6.00108D	Dim.			
Standard	Fig. 1(a)	-10.418	4.435	9.250	log	α_{na}^{4}	β_{na}^{5}	γ_{na}^{6}
Fig. 1(a)	Neutrino + Gravino	3.82E-11	27.20k	1.777G	eV	A_{na}^{4}	B_{na}^{5}	Γ_{na}^{6}

$\alpha\beta\gamma_{NG}^{456} = (\alpha_{NG}^{456} + \beta_{NG}^{56} + \gamma_{NG}^{6})/3$ $\quad \beta\gamma_{NG}^{56} = (\beta_{NG}^{56} + \gamma_{NG}^{6})/2$ $\quad \gamma_{NG}^{6} = \gamma_{NG}^{6}/1$

$\alpha_{NG}^{456} = (\alpha_{ng}^{4} + \alpha_{ng}^{5} + \alpha_{ng}^{6})/3$ $\quad \beta_{NG}^{56} = (\alpha_{ng}^{5} + \alpha_{ng}^{6} + \beta_{ng}^{5} + \beta_{ng}^{6})/4$ $\quad \gamma_{NG}^{6} = (\gamma_{ng}^{4} + \gamma_{ng}^{5} + \gamma_{ng}^{6})/3$

universe have been quantized into a sphere. Because of this, the light β_g^0 has a very small mass of the order above.

2.8 Oscillation phenomena

As shown in Fig. 1(c), neutrinos also oscillate dimensionally. Therefore, the drawing of (c) is the oscillating combined particle of neutrino and gravino particles.

2.9 Combined particles

In Fig. 1(d), electron $\alpha\beta\gamma_{NG}^{456}$ is the combination of oscillating α, β, and γ particles, muon is the combination of oscillating β and γ particles, and tau is the oscillating γ particle. That is, in a particle accelerator experimental device, when an electron collides, the α shell peels off and becomes a muon, and when the muon collides, the β shell peels and becomes a tau.

3. Mass calculation for electron, muon, tau

3.1 Measured mass

In Fig. 1(d), the measured masses of electron 510.999 keV, muon 105.658 MeV, tau 1.77686 GeV are shown in Table 1. Quantum space is compressed logarithmically. Therefore, each logarithmic value is electron $\alpha\beta\gamma_{NG}^{456}$ 5.708, muon $\beta\gamma_{NG}^{56}$ 8.024, tau γ_{NG}^{6} 9.250.

3.2 Oscillating particle masses

The masses of Fig. 1(c) are calculated by Equation 1) in Table 1. α_{NG}^{456}, β_{NG}^{56}, and γ_{NG}^{6} are 1.007, 6.798, and 9.250.

3.3 Standard particle masses

The mass of (a) proceeds from (c), and it is calculated from Table 1 Equation 2).

Step 1) γ_{ng}^{4}, γ_{ng}^{5}, and γ_{ng}^{6} is all equal 9.250.

Step 2) Assume α_{ng}^{4} and β_{ng}^{5} such as -10.418 and 4.435.

Step 3) Find the dimension of tau with logarithmic ellipse equation such as Fig. 2. Where, α_{ng}^{4} is located on 4D, β_{ng}^{5} is located on 5D, 0D is left vertex, and γ_{ng}^{6} is upper vertex. From this, the vertex of γ_{ng}^{6} is calculated as 6.00108D.

Step 4) Find the α_{ng} oscillating values. Where, β_{ng}^{5} is 4.435, γ_{ng}^{6} is 9.250, 0D is left vertex, and 6.00108D is upper vertex. Calculating above, the solutions of Fig. 2 and Fig. 3 are calculated at the same time. That is, there are three values of α_{ng}^{4} -10.418, α_{ng}^{5} 4.539, and α_{ng}^{6} 9.111. All is correct answers. Therefore, the value of α_{NG}^{456} is the average 1.077 of above three values. This value should be equal to Fig. 1(c). If it is wrong, go to Step 2).

Step 5) Find the β_{ng} oscillating values. Where, α_{ng}^{4} is -10.418, γ_{ng}^{6} is 9.250, 0D is left vertex, and 6.00108D is upper vertex. Calculating above, the solutions of Fig. 2 and Fig. 4 are calculated at the same time. Here, take the four values on β_{ng}^{5} 4.435, β_{ng}^{6} 9.216, β_{ng}^{5} 4.435 and β_{ng}^{6} 9.250 in Fig. 3 and Fig. 4. Therefore, the value of β_{NG}^{56} is the average 6.798 of above four values. This value should be equal to Fig. 1(c). If it is wrong, go to Step 2).

Step 6) Find the γ_{ng} oscillating values. Where, α_{ng}^{4} is -10.418, β_{ng}^{5} is 4.435, 0D is left vertex, and 6.00108D is upper vertex. Calculating above, the solutions of Fig. 2 and Fig. 5 are calculated at the same time. Here, take the three values on γ_{ng}^{6} of Fig. 3, γ_{ng}^{6} of Fig. 4, and γ_{ng}^{6} of Fig. 5. Since they are all the same value 9.250, this does not need to be calculated.

3.4 6.00108 dimension of space

The correct answer of above calculation is 6.00108D. Why is it 6.00108, not exact 6? In previous study(2), it was described that there are a lot of 6D universes and one 5D universe in super origin universe. It is judged that the 6D of our universe has been transformed very finely due to the influence of the 5D universe.

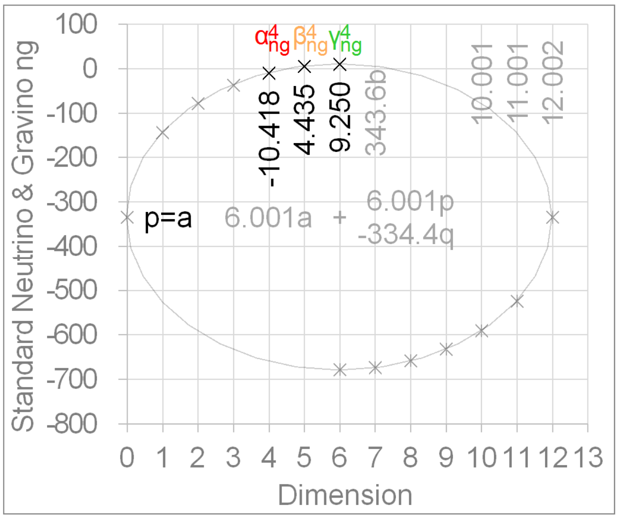

Fig. 2 Standard mass of neutrino and gravino

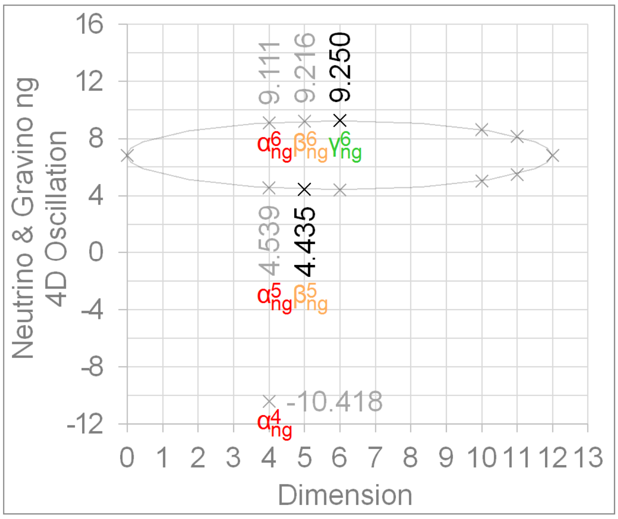

Fig. 3 Oscillating mass of neutrino and gravino at 4D

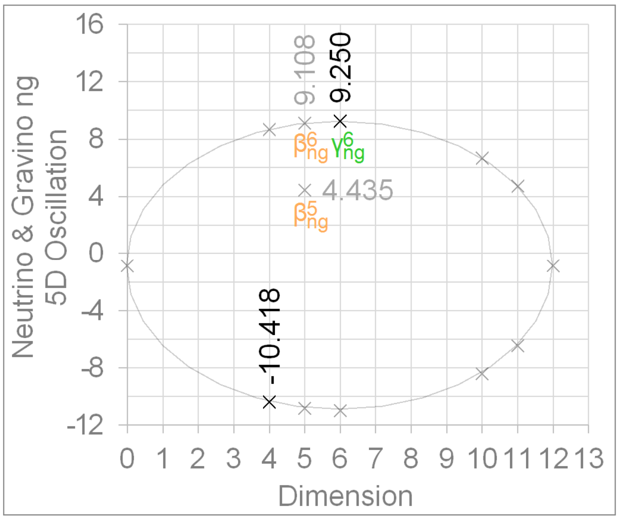

Fig. 4 Oscillating mass of neutrino and gravino at 5D

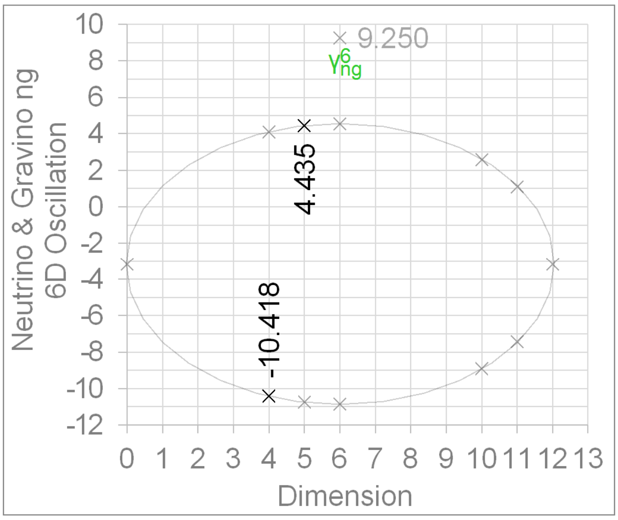

Fig. 5 Oscillating mass of neutrino and gravino at 6D

In previous study(1), H boson was calculated as 124.98 GeV at 6D and 125.02 GeV at 6.00108D. According to this calculation, 125.02 GeV is the correct answer.

Currently, the cosmological constant Λ was measured as 1.1056E-52. According to author's calculation, Applying 6D, the Λ is calculated as 80.3% ~ 82.7% based on the measurement, and applying 6.00108D, Λ is calculated as 98.4% ~ 101.3% based on the measurement. 6.00108D is confirmed to be the correct answer. The calculation of Λ will be described in detail in a future paper.

3.5 Shape of quantum space

In previous study(1), the shape of quantum space was simply suggested. The shape of quantum space that satisfies Fig. 2 ~ 5 can be proposed by a mathematician.

4. Conclusions

Electron, muon, and tau are the combined particles of three generation neutrinos and gravinos. Applying the logarithmic elliptic equation to them, the dimension of space is calculated as 6.00108.

Four major forces and dark energy must be interpreted as a kinetic state, particles must be interpreted as a steady state, and cosmological changes must be interpreted as the combination of above two. The kinetic dimension and the steady dimension may be different each other. However, they are judged to be the same.

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Calculation of Neutrino and Gravino Masses

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Keywords: Gluon, Graviton, Neutrino, Oscillation, Photon

Abstract Gravino is a word coined by author and means graviton, photon, and gluon. The fundamental particles of everything are three generations of neutrinos and gravinos, and logarithmic elliptic equation is established at them. Everything is divided into kinetic state and steady state. In kinetic state, when each neutrino mass of muon and tau is 170.00 keV and 15.494 MeV, the mass of electron neutrino was calculated as 0.1533 eV, and the mass of graviton, photon, and gluon were calculated as 2.492E-10 eV, 0.1600 eV, and 114.7 eV. In steady state, the masses of electron, muon, and tau neutrinos were calculated as 0.1383 eV, 165.77 keV, and 15.495 MeV, and the masses of graviton, photon, and gluon were calculated as 2.762E-10 eV, 0.1641 eV, and 114.7 eV.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson[1], the characteristics of logarithmic elliptic equation and the principle of cosmological change were described[2], and from the masses of electron, muon, and tau, the dimension of our space was calculated as 6.00108.

The analysis of our universe is divided into kinetic state and steady state. The kinetic state is applied to four fundamental forces, the steady state is applied to particles, and the combined state is applied to the change of our universe.

The purpose of this study is to calculate the masses of three generation neutrinos (electron, muon, and tau) and three generation gravinos (graviton, photon, and gluon) by applying logarithmic elliptic equation.

2. Analysis of kinetic state

2.1 Measured mass of muon and tau neutrinos

The minimum masses of muon and tau neutrinos were measured as 170 keV and 15.5 MeV. These are kinetic state.

According to author's overall calculation, the relation between muon mass m_m and tau mass m_t in Eq. (1) is calculated from the unification of four fundamental forces. When the mass of muon neutrino is 170.00 keV, the mass of tau neutrino is calculated as 15.494 MeV. This means that if the muon mass is known, the tau mass is calculated correctly. Therefore, 5 significant digits of the muon neutrino mass are required for accurate calculation. The 3 digit number has a slight error from the gravity value of 5.906E-39.

$$m_t[MeV] = 0.091132 \cdot m_m[keV] + 0.00154 \tag{1}$$

2.2 Standard masses of neutrinos

In previous study[2], the characteristics of logarithmic elliptic equation were described in detail. Given four constants, elliptic equation is calculated. In Fig. 1(a), the muon neutrino mass is 170.00 keV on 5D, the tau neutrino mass is 15.494 MeV on 6.00108D, the left vertex is 0D, and the top vertex is 6.00108D. From these four constants, the neutrino masses are calculated as shown in Fig. 1(a).

As the result of calculation, the mass of electron neutrino is 0.1533 eV on 4D. Here, the meanings of numbers and letters shown in Fig. 1(a) were described in previous study[2].

2.3 Oscillating masses of neutrinos

From the above calculation, Fig. 1(b) is also correct answer. That is, there are two answers, and this is the neutrino oscillation phenomenon[3]. This is a characteristics of quantum space, and neutrino jumps between the dimensions of quantum space. The standard masses of neutrinos are electron α_n^4 0.1533 eV, muon β_n^5 170.0 keV, and tau γ_n^6 15.49 MeV, and the others are oscillating masses.

In (a), selecting the 0.1533 eV on 4D and 15.49 MeV on 6.00108D, (c) also is correct answer. In (a), selecting the 0.1533 eV on 4D and 170.0 keV on 5D, (d) also is correct answer. That is, all values in Fig. 1 are correct answers.

2.4 Standard masses of gravinos

In previous study[3], the logarithmic sum mass of neutrino and gravino was calculated as follows:

$$\alpha_{ng}^4 = \alpha_n^4 + \alpha_g^4 = -10.418 \tag{2}$$

$$\beta_{ng}^5 = \beta_n^5 + \beta_g^5 = 4.435 \tag{3}$$

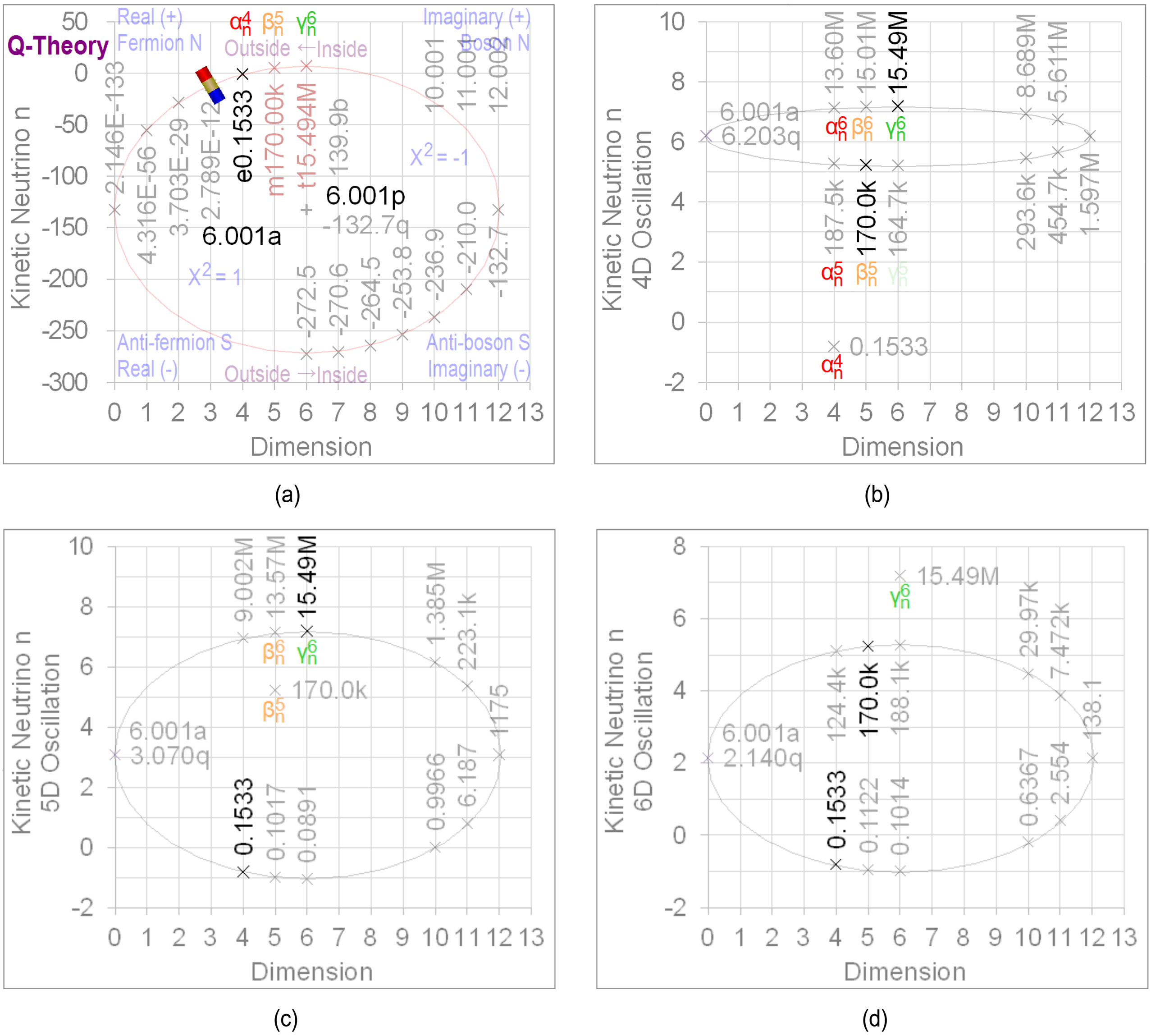

Fig. 1 The masses of neutrinos in kinetic state

$$\gamma_{ng}^{6} = \gamma_{n}^{6} + \gamma_{g}^{6} = 9.250 \quad (4)$$

From these, the standard masses of gravinos are calculated as graviton α_g^4 2.492E-10 eV, photon β_g^5 0.1600 eV, and gluon γ_g^6 114.7 eV. The results are shown in Fig. 2(a).

2.5 Oscillating masses of gravinos

By the same logic such as Fig. 1(b-d), the gravino oscillation phenomena in Fig. 2(b-d) are calculated.

3. Analysis of steady state

3.1 Priority mass of muon and tau neutrinos

The measured neutrinos are in kinetic state going straight at almost the speed of light. However, the neutrinos that make up particles such as quarks are in steady state. The masses of the two types are different. The steady state neutrino mass is calculated from top and bottom quarks. The calculation process will be described in detail in future study. As the result of the calculation, the muon and tau neutrino masses were calculated as 165.77 keV and 15.495 MeV.

3.2 Standard masses of neutrinos

Given four constants, elliptic equation is calculated. In Fig. 3(a), the muon neutrino mass is 165.77 keV on 5D, the tau neutrino mass is 15.495 MeV on 6.00108D, the left vertex is 0D, and the top vertex is 6.00108D. From these four constants, the neutrino masses are calculated as shown in Fig. 3(a). As the result of calculation, the mass of electron neutrino is 0.1383 eV on 4D.

(a) (b) (c) (d)

Fig. 2 The masses of gravinos in kinetic state

3.3 Oscillating masses of neutrinos

The calculation and analysis are same as in Fig. 1. Neutrino oscillation masses in (b-d) are calculated by Fig. 3(a).

3.4 Standard masses of gravinos

If the masses in Fig. 3(a) are applied to Eqs. (2-4), the standard gravino masses in Fig. 4(a) are calculated.

3.5 Oscillating masses of gravinos

By the same logic such as Fig. 3, the gravino oscillation phenomena in Fig. 4(b-d) are calculated.

4. Combination of kinetic and steady states

4.1 Electron, muon, and tau

Electron, muon, and tau are particles[3] in steady state. The Eqs. (2-4) are for calculating steady state mass, and the results are shown in Fig. (4). The Fig. (2) in kinetic state was also calculated from Eqs. (2-4), and it is strange. However, as the result of author's overall calculation, this is also correct.

4.2 Combination of kinetic and steady

The sum of kinetic state and steady state may be determined to be a constant such as following equation:

$$\text{Kinetic} \cdot 1 / \xi + \text{Steady} \cdot (\xi - 1) / \xi = \text{Constant} \qquad (5)$$

Where, ξ is dark energy calculated by kinetic state, and the value is $10^{0.4301}$ (=2.692) by author's calculation. Since the quantum space is compressed logarithmically, the exponent of 0.4301 is important. Therefore, at electron, muon, and

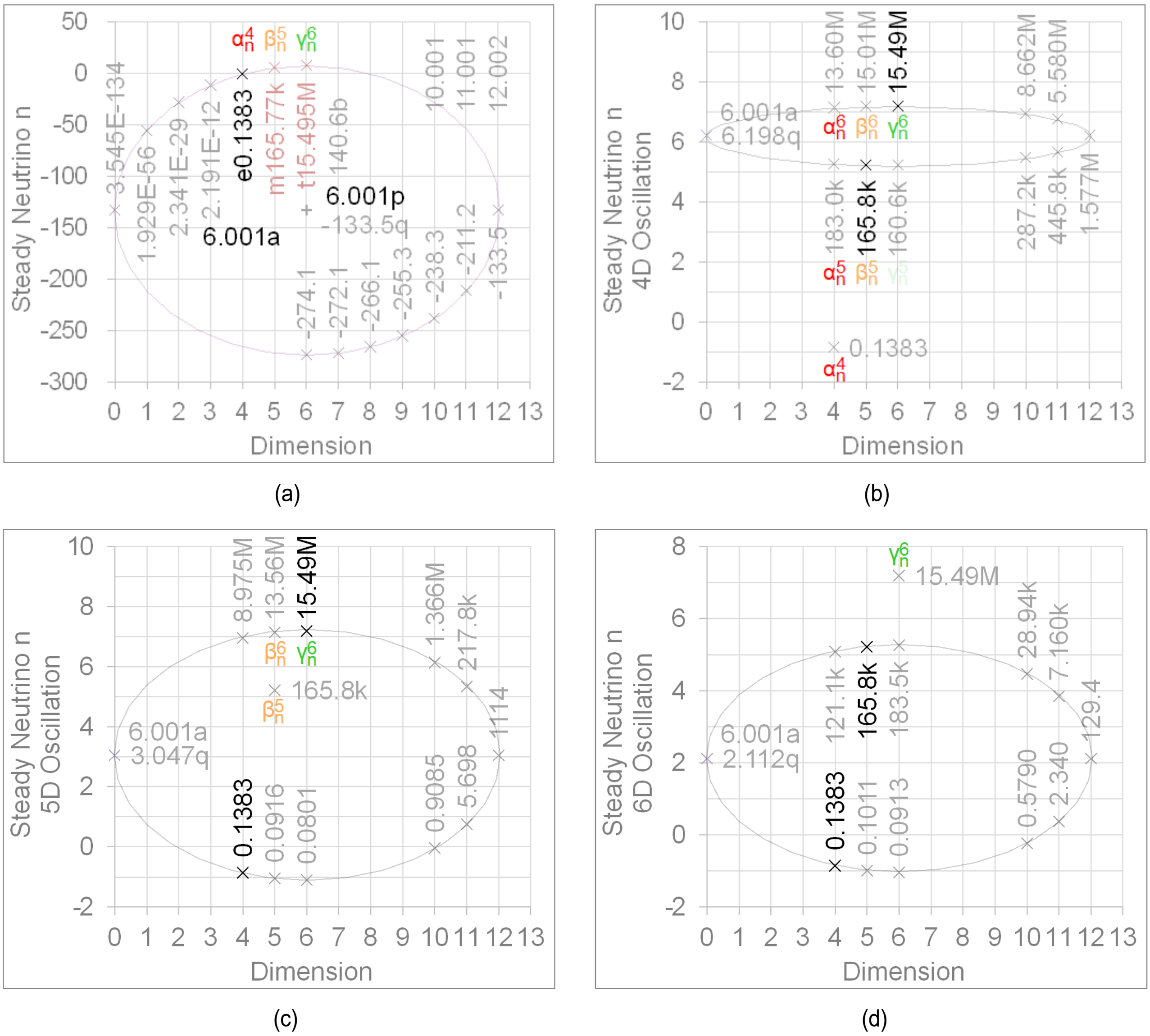

Fig. 3 The masses of neutrinos in steady state

tau[3], when the perfect kinetic neutrino values in Fig. 1(a) are substituted to Eqs. (2-4), the perfect kinetic gravino values in Fig. 2(a) are calculated, and when the perfect steady neutrino values in Fig. 3(a) are substituted to Eqs. (2-4), the perfect steady gravino values in Fig. 4(a) are calculated.

4.3 Four fundamental forces for kinetic state

Four fundamental forces are in kinetic state. The exponent 0 means that there is no quantization. Since the value of ξ is 1, the analysis target becomes the kinetic state moving as the speed of light by Eq. (5).

4.4 Force speed = Light speed = Expansion speed

Four fundamental forces are in the kinetic state, and the speed of forces is equal with the light speed. Also, the force is caused by gravino. Electron, muon, and tau have gravino. Therefore, when they react with four fundamental forces, their gravino has the speed of light. Our universe space is also expanding at the speed of light toward a 4D direction.

4.5 Particles for steady state

The exponent ∞ means that there is a perfect quantization. Since the value of ξ is ∞, the analysis target becomes the steady state in the fixed quantum space by Eq. (5). When there is no reaction with force, all particles are in steady state.

4.6 Universe change for the combined state

Our universe expands at a very fast speed, so it has kinetic state. In addition, in previous study[3], our universe was calculated as a quantum particle like hydrogen in steady state.

Fig. 4 The masses of gravinos in steady state

That is, the state of our universe is the combination of kinetic state and steady state. When analyzing universal change, the combined state of Eq. (5) must be applied, and the value of ξ calculated by author is 2.692.

4.7 Dark energy, Dark matter, Ordinary matter

The ξ 2.692 is the ratio of dark energy and total matter. Therefore, the ratio is calculated as 72.9% : 27.1%. The ratio of dark matter and ordinary matter is known as 84.5% : 15.5%. Therefore, the ratio of dark energy, dark matter, and ordinary matter is 72.9% : 22.9% : 4.2%.

5. Conclusions

Applying the masses of muon neutrino 170.00 keV and tau neutrino 15.494 MeV to logarithmic elliptic equation, the mass of electron neutrino is calculated as 0.1533 eV. The accuracy of this value will be proven by experiment in the distant future.

The standard masses and oscillating masses of three generation neutrinos and three generation gravinos were calculated. The masses of all particles were calculated as the logarithmic combination of the neutrinos and gravinos.

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Calculation of Up Charm Top Quark Masses

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Keywords: Boson, Charm quark, Fermion, Top quark, Up quark,

Abstract Up, charm, and top quarks are the combination particles composed of the shell fermion of three generation anti-neutrinos and the inside boson of a pair of anti-neutrinos. When up quark collides violently, the most external electron anti-neutrino is peeled off and it is turned into charm quark. When the charm quark collides violently, the most external muon anti-neutrino is peeled off and it is turned into top quark. When the top quark collides violently, the most external tau anti-neutrino is peeled off, and a pair of anti-neutrino boson pops out. As the result of applying logarithmic elliptic equation to them, the masses of up and charm quarks were calculated as 2.250 MeV and 1275.1 MeV.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), and the standard masses and oscillating masses of three generation neutrinos and gravinos are calculated(4).

The purpose of this study is to calculate the mass of up quark by applying logarithmic elliptic equation.

2. Shape of up, charm, and top quarks

2.1 Shape of anti-quarks

The shapes of up, charm, and top quarks are drawn in Fig. 1. Where, α, β, and γ mean each 1st, 2nd, and 3rd generation fundamental particles, subscript n and s mean neutrino and anti-neutrino, and superscript f and b mean fermion and boson. Therefore, α_s^f, β_s^f, and γ_s^f are the standard fermion anti-neutrinos for electron on 4D, muon on 5D, and tau on 6D. α_{sn}^b, β_{sn}^b, and γ_{sn}^b are a pair of standard boson anti-neutrino on 10D, on 11D, and on 12D.

When up quark $\alpha\beta\gamma_s^f\alpha_{sn}^b$ collides violently, the α_s^f is peeled off and it is turned into charm quark $\beta\gamma_s^f\beta_{sn}^b$. When the charm quark collides violently, the β_s^f is peeled off and it is turned into top quark $\gamma_s^f\gamma_{sn}^b$. When the top quark collides violently, the γ_s^f is peeled off, and a pair of anti-neutrino boson γ_{sn}^b pops out. Here, α_{sn}^b located on 10D, β_{sn}^b located on 11D, and γ_{sn}^b located on 12D are all exactly same particle. Quantum space imparts the mass to particle(1), and because the quantum dimension of the most external shell is changed to 4D, 5D, and 6D, that of the boson anti-neutrinos also is naturally changed to 10D, 11D, and 12D.

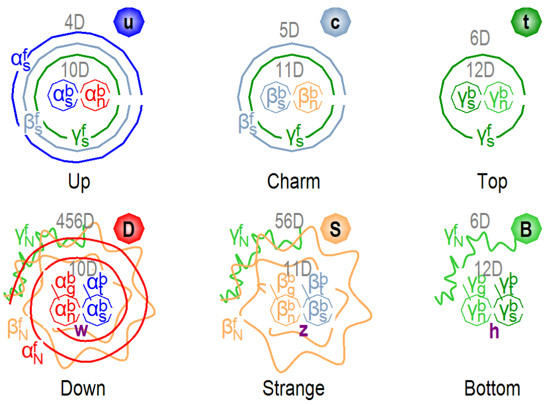

Fig. 1 Shape of quarks.

The γ_{sn}^b located on 12D jumps into our quantum space 6D, and it changes a very strange fermion anti-neutrino pair. And then it jumps to 5D and 4D by oscillation phenomenon(3,4). And then it disappears in our empty XYZ space.

2.2 Shape of quarks

Up, charm, and top quarks are composed with anti-neutrons. Therefore, they are anti-quarks. Down, strange, and bottom quarks are composed with neutrons. Therefore, they are normal quarks. The masses calculation for down, strange, and bottom quarks will be performed in future study.

3. Calculation for up quark mass

3.1 Masses of neutrinos

In previous study(4), from muon mass 170.00 keV and tau mass 15.494 MeV, the electron neutrino mass was calculated as 0.1533 eV. These values are presented in the kinetic state of Table 1 and Fig. 2.

Table 1 Calculation of up, charm, and top quark masses

Term	Reference	Kinetic State			Steady State			Unit	Symbol		
Dimension		4D	5D	6.001D	4D	5D	6.001D	-			
n Neutrino	Fig. 2, 3	0.1533	170.00k	15.494M	0.1383	165.77k	15.495M	eV	α_n^f	β_n^f	γ_n^f
s Neutrino		0.9633	1068.1k	97.35M	0.8690	1041.6k	97.36M	eV	$s = n \cdot 2\pi$		
		-0.016	6.029	7.988	-0.061	6.018	7.988	log	α_s^f	β_s^f	γ_s^f
Shell Fermion		4.667	7.008	7.988	4.648	7.003	7.988	log	$\alpha\beta\gamma_s^f$	$\beta\gamma_s^f$	γ_s^f
		46.44k	10.20M	97.35M	44.50k	10.07M	97.36M	eV			
Dimension		10.001D	11.001D	12.002D	10.001D	11.001D	12.002D	-			
n Neutrino	Fig. 4, 5	0.9966	6.187	1175	0.9085	5.698	1114	eV	m_{n5}^{10}	m_{n5}^{11}	m_{n5}^{12}
ns Neutrino		52.95	131.9	1818	50.56	126.6	1771	eV	m_{ns5}^{10}	m_{ns5}^{11}	m_{ns5}^{12}
Inside Boson		1.724	2.120	3.260	1.704	2.103	3.248	log	α_{ns5}^{10}	β_{ns5}^{11}	γ_{ns5}^{12}
Quarks		Up	Charm	Top	Up	Charm	Top				
Shell + Inside		6.391	9.129	11.248	6.352	9.106	11.236	log	q_u	q_c	q_t
		2.459M	1345.5M	177.00G	2.250M	1275.1M	172.38G	eV	m_u	m_c	m_t

1) $\alpha\beta\gamma_s^f = (\alpha_s^f + \beta_s^f + \gamma_s^f)/3$ $\beta\gamma_s^f = (\beta_s^f + \gamma_s^f)/2$ $\gamma_s^f = \gamma_s^f/1$

2) $m_{ns5}^{10} = (1+2\pi)^2 \cdot (m_{n5}^{10})^{1/2}$ $m_{ns5}^{11} = (1+2\pi)^2 \cdot (m_{n5}^{11})^{1/2}$ $m_{ns5}^{12} = (1+2\pi)^2 \cdot (m_{n5}^{12})^{1/2}$

The masses of three generation neutrinos for steady state are calculated inversely from the masses of quarks. Frist, the masses of muon and tau neutrinos are assumed as 165.77 keV and 15.495 MeV. In previous study(4), the mass of electron neutrino for the values was calculated as 0.1383 eV from logarithmic elliptic equation. These values are presented in the steady state of Table 1 and Fig. 3.

3.2 Masses of anti-neutrinos

The mass of anti-neutrino is 2π times heavier than the mass of neutrino. This is the same with the relationship between Planck's constant and Dirac's constant. The calculated logarithmic values are presented in the table 1.

3.3 Masses of shell fermion

The logarithmic mass of shell fermion is calculated by equation 1) in Table 1. From this, the mass is calculated.

3.4 Masses of inside boson

In previous study, the oscillating masses of neutrinos were calculated. The fermion and boson are super-gauge symmetry(2). Therefore, the values of 10.001D, 11.001D, and 12.002D at the below right of the logarithmic elliptic equation in Fig. 4 and 5(4) are adopted as the value of the inside boson.

Here, it is not yet clear why the “5D Oscillation” values should be adopted. When analyzing down, strange, and bottom quarks, the 5D characteristic also occur.

The internal boson is composed of s·n, and its mass is calculated as shown in equation 2) in Table 1. In previous study(2), Boson was described as a world of imaginary numbers. Such as this, equation 2) is also difficult to understand. The calculation results are presented in Table 1.

3.5 Masses of quarks for Kinetic state

Physics estimates that the mass of up quark is 2.2 ~ 2.3 MeV, the mass of charm quark is 1270 ~ 1280 MeV, and the mass of top quark is 172.38 GeV or 172.76 GeV.

The mass of quark is the logarithmic sum of the shell fermion and the inside boson. From this, the masses of quarks are calculated. In the kinetic state, the masses of up, charm, and top quark were calculated as 2.459 MeV, 1345.5 MeV, and 177.00 GeV. These values some differ with physics.

3.6 Masses of quarks for steady state

In physics, the mass of top quark is 172.38 GeV or 172.76 GeV. As a result of the overall calculation, 172.38 GeV is judged to be a more reasonable value. In physics, the cosmological constant is 1.1056E-52 /m2. When muon and tau neutrino masses are 165.77 keV and 15.495 MeV, the top quark mass and cosmological constant are calculated from trial & error method. The method of calculating the cosmic constant will be described in detail in a future study.

From the equations of Table 1, the masses of up and charm quark are calculated as 2.250 MeV and 1275.1 MeV. These values exactly match the physics values.

3.7 Sensitivity analysis

Substituting 172.76 GeV as the mass of top quark in Table 1, the masses of up quark and charm quark are calculated

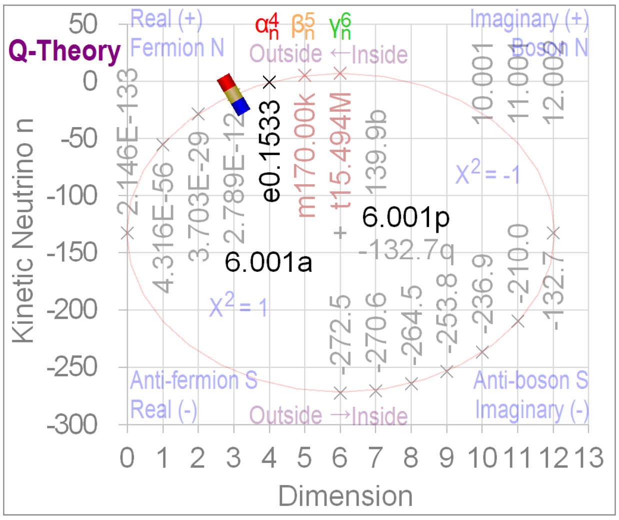

Fig. 2 Standard neutrino masses for Kinetic State[4]

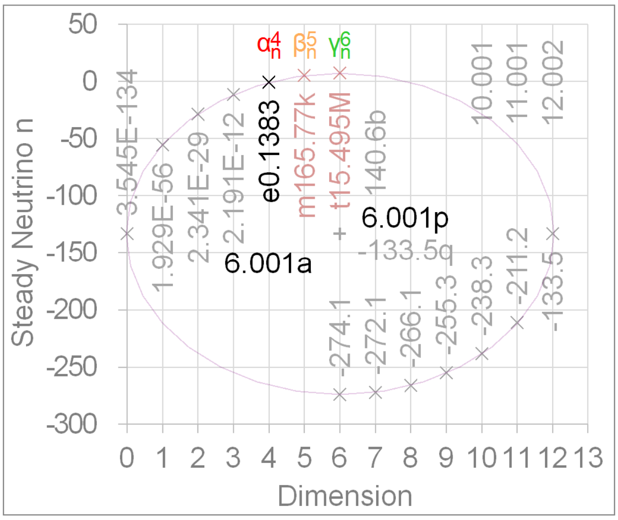

Fig. 3 Standard neutrino masses for Steady State[4]

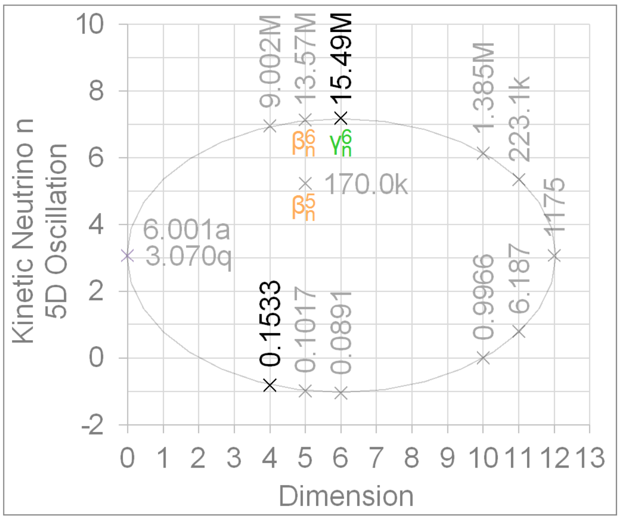

Fig. 4 5D oscillating neutrino masses for Kinetic State[4]

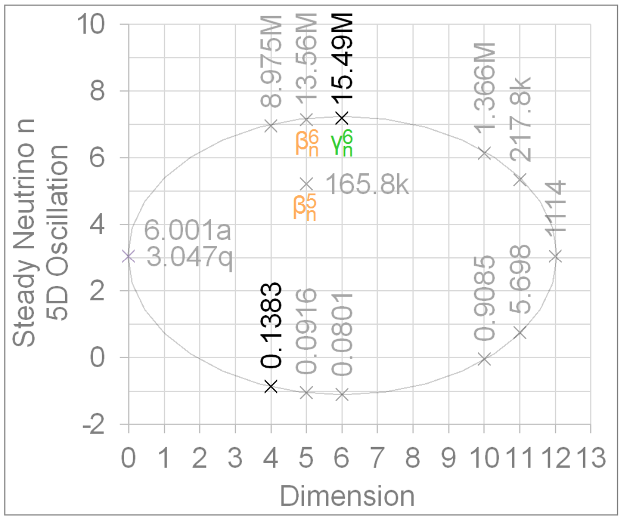

Fig. 5 5D oscillating neutrino masses for Steady State[4]

as 2.255 MeV and 1277.9 MeV. Substituting 6.000D and 12.000D in Table 1, they are calculated as 2.304 MeV and 1291.7 MeV. Since the above values are similar to those of physics, it is not yet to determine which is a correct value. After everything is calculated, reasonable values will be determined from the cross-comparison.

When top quark mass is 172.38 GeV, the masses of neutrinos are calculated as 0.1383 eV, 165.77 keV, and 15.495 MeV in Fig. 3. When that is 172.72 GeV, those are calculated as 0.1385 eV, 166.02 keV, and 15.518 MeV. The mass of tau neutrino in Fig. 2 is 15.494 MeV. Top quark mass of 172.38 GeV is considered more reasonable.

4. Conclusions

The masses of up, charm, and top quarks applying kinetic state are calculated as 2.459 MeV, 1345.5 MeV, and 177.00 GeV. These values have a bit error from the measured quark masses. Therefore, it can be understood that quarks should be analyzed as steady state. When top quark mass is given as 172.38 GeV, charm quark mass was calculated as 1275.1 MeV from calculation of cosmological constant, and up quark mass was calculated as 2.250 MeV from logarithmic elliptic equation. The calculation of cosmological constant will be described in detail in a future study.

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Unification of Four Fundamental Forces

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Keywords: Electromagnetic force, Four fundamental forces, Gravitational force, Strong force, Weak force

Abstract Force is a particle composed of standard neutrino (electron, muon, tau) and oscillating gravino (graviton, photon, gluon). Force is kinetic state and has mass. From the outside of our universe, three generation dark forces that we cannot understand are affecting weak force, electromagnetic force, and strong force. The sum of three generation dark forces is the dark energy. The four fundamental forces are unified by logarithmic parabolic equation. From this, the weak force is calculated as 1.011E-6 and the gravitational force as 5.906E-39.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), the standard masses and oscillating masses of three generation neutrinos and gravinos are calculated(4), and the masses of up and charm quark were calculated (5).

The purpose of this study is to unify the four fundamental forces by logarithmic parabolic equation.

2. Shape of four fundamental forces

2.1 Three generation quantum spaces

There are three generation quantum spaces, and they make three generation particles and give them properties(1). Quantum space is compressed logarithmically. Therefore, all mass calculations must be proceeded logarithmically.

2.2 Three generation neutrinos and gravinos

All things are composed of three generation neutrinos (electron, muon, tau) and three generation gravinos (graviton, photon, gluon). Here, gravino is a word coined by author. Three generation neutrinos make the shape of particle, and three generation gravinos make the force of particle.

2.3 Standard and Oscillation

When electron neutrino is located on 4D space, it has a standard mass. It jumps from 4D space, it moves into 5D or 6D space, and its mass is changed very greatly. This is the neutrino oscillation phenomenon. The above phenomenon occurs at all of neutrinos and gravinos(4).

2.4 Shape in kinetic state

The shapes of weak force particle, electromagnetic force particle, and strong force particle are shown in Fig. 1. Where, α, β, and γ mean each 1st, 2nd, and 3rd generation fundamental particles, subscript n and G mean standard neutrino and oscillating gravino, and superscript 4, 5, and 6 mean the 4D, 5D, and 6D of quantum spaces.

α_n^4, β_n^5, and γ_n^6 are each standard electron neutrino on 4D, standard muon neutrino on 5D, and standard tau neutrino on 6D. α_G^{456}, β_G^{56}, and γ_G^6 are each oscillating graviton on 4D5D6D, oscillating photon on 5D6D, and oscillating

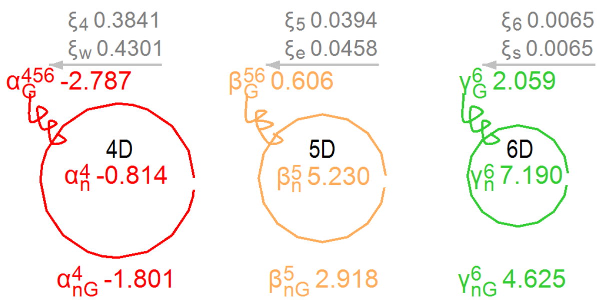

Fig. 1 Shape of particle forces in kinetic state

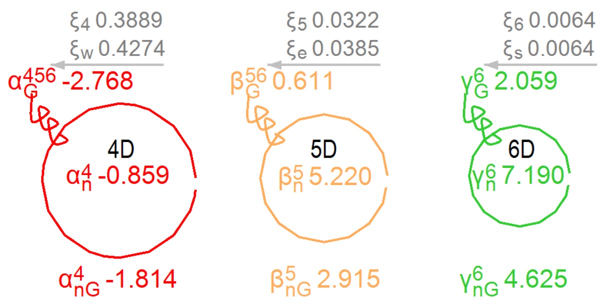

Fig. 2 Shape of particle forces in steady state

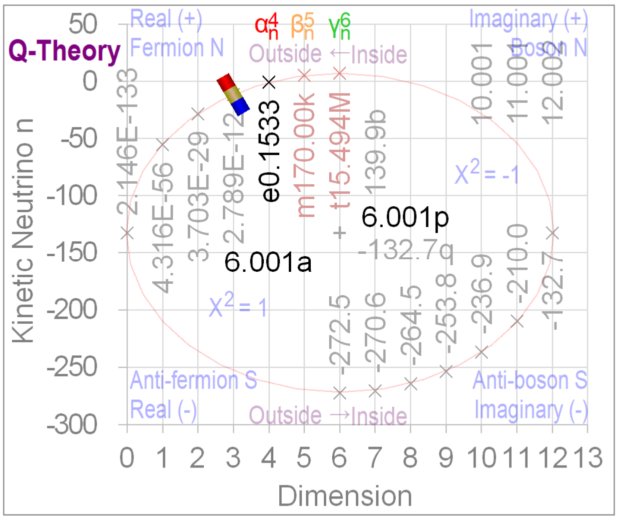

Fig. 3 Standard neutrino masses for kinetic state

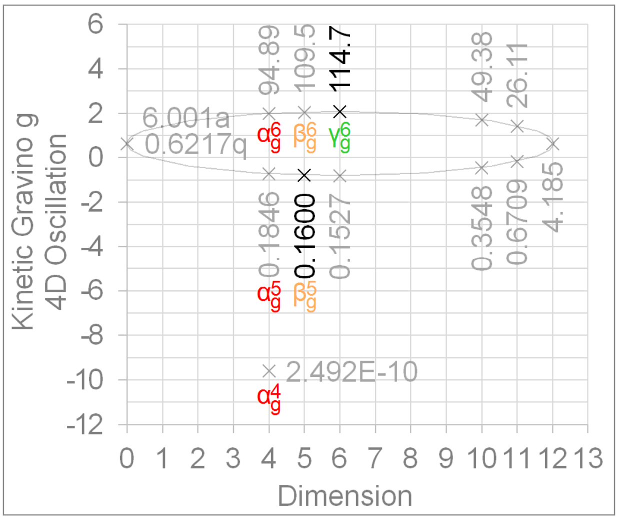

Fig. 4 4D oscillating gravino masses for kinetic state

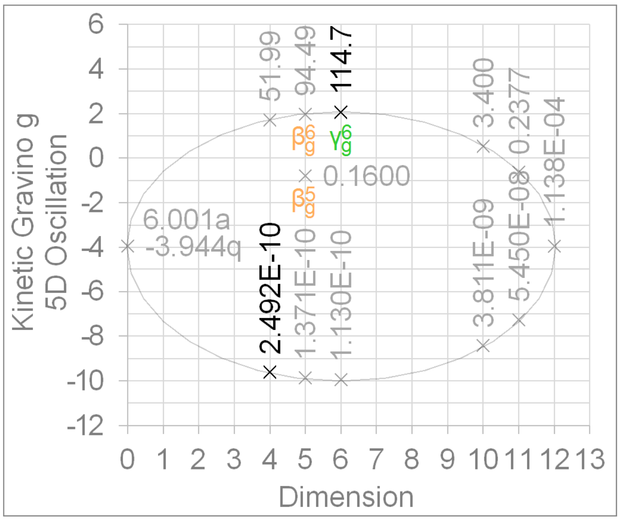

Fig. 5 5D oscillating gravino masses for kinetic state

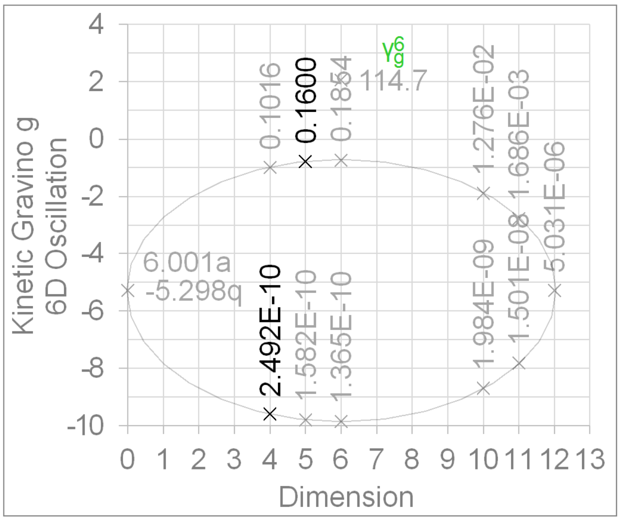

Fig. 6 6D oscillating gravino masses for kinetic state

gluon on 6D. Therefore, α_{nG}^4, β_{nG}^5, and γ_{nG}^6 are each weak force particle on 4D, electromagnetic force particle on 5D, and strong force particle on 6D.

2.5 Shape in steady state

Everything is divided into kinetic state and steady state[3,4] such as Fig. 1 and Fig. 2. Force particles always react with other particles, so force is always in kinetic state.

If the force particle is perfectly isolated, it may be a steady state. However, since three generation of dark forces act toward our universe from the outside of our universe, the four fundamental force particles is always in kinetic state.

2.6 Shape in combined state

Force particle may be composed of the combination of kinetic state and steady state. However, as the result of author's overall calculation, force particle is in kinetic state.

3. Weak Force

3.1 Standard neutrino masses

In previous study[4], the masses of three generation neutrinos and gravinos were calculated. The standard masses of three generation neutrinos are shown in Fig. 3. The muon neutrino mass 170.00 keV and the tau neutrino mass 15.494 MeV. The electron neutrino mass 0.1533 eV is the value calculated by author. These values are presented in Table 1.

3.2 Oscillating gravino masses

The oscillating masses of three generation gravinos are shown in Fig. 4-6. All must be calculated as logarithmic mass. The values calculated from Equation 1) in Table 1 are presented in Table 1. The oscillation phenomenon is described in detail in previous study[4].

Table 1 Analysis of four fundamental forces.

Term	Sub.	Kinetic State			Steady State			Unit	Symbol		
Neutrino	Fig. 3	Electron	Muon	Tau	Electron	Muon	Tau				
	Standard	0.1533	170.00k	15.494M	0.1383	165.77k	15.495M	eV			
		-0.814	5.230	7.190	-0.859	5.220	7.190	log	α_n^4	β_n^4	γ_n^4
Gravino	Fig. 4-6	Graviton	Photon	Gluon	Graviton	Photon	Gluon				
1)	Oscillating	-2.787	0.606	2.059	-2.768	0.611	2.059	log	α_G^{456}	β_G^{56}	γ_G^6
Force		Weak	E.M.	Strong	Weak	E.M.	Strong				
(n + G) / 2	Particle	-1.801	2.918	4.625	-1.814	2.915	4.625	log	α_{nG}^4	β_{nG}^4	γ_{nG}^4
		0.01583	828.1	42.15k	0.01536	823.0	42.15k	eV	m_w	m_e	m_s
		-6.425	-1.707	0.000	-6.438	-1.709	0.000	log			
	Physical	*1.011E-6*	1/137.036	1	*0.9749E-6*	*1/137.036*	*1*	eV			
	$\xi_w = 0.4301$	*-5.995*	-2.137	0.000	*-6.011*	*-2.137*	*0.000*	log			
			Gravity 5.906E-39			Gravity 3.405E-39					

1) $\alpha_G^{456} = (Fig4\ \alpha_g^4 + \alpha_g^5 + \alpha_g^6)/3$ $\beta_G^{56} = (Fig4\ \beta_g^5 + \beta_g^6 + Fig5\ \beta_g^5 + \beta_g^6)/4$ $\gamma_G^6 = (Fig4\ \gamma_g^6 + Fig5\ \gamma_g^6 + Fig6\ \gamma_g^6)/3$

3.3 Particle force masses

The particle force is the average value of the standard neutrino n and the oscillating gravino G. Therefore, the masses of weak particle force, electromagnetic particle force, and strong particle force are each 0.01583 eV, 828.1 eV, and 42.15 keV. Since all forces are described based on strong force, subtracting 4.625 from the logarithmic values, they are each -6.425, -1.707, and 0.000.

3.4 Physical force strength

In physics, when the strength of strong force is 1, that of electromagnetic force is 1/137.036, and that of weak force is about 1/1E-6. Therefore, the logarithmic values are each 0.000, -2.137, and about -6.000.

3.5 Weak dark force = Dark energy

In the electromagnetic force of Table 1, the particle force is -1.707, but the physical force is -2.137. There was a logarithmic difference of ξ_w 0.4301, which is the weak dark force or dark energy. The normal value is $10^{0.4301}$ or 2.692.

Dark energy is 2.692, and dark matter is 1.000. Therefore, the ratio of dark energy and dark matter is 72.9% : 27.1%. Dark energy 2.692 expands the universe, and dark matter 1.000 contracts it. This causes the universe to expand by 1.692. The ratio is 37.14% : 62.86%. That is, the universe changes with the combination of kinetic state 37.14% and steady state 62.86%(4).

3.6 Weak physical force

If the ξ_w 0.4301 of weak dark force is added to weak particle force -6.425, the logarithmic value is calculated as -5.995. Therefore, weak physical force is 1.011E-6.

3.7 Absolute dominant object

Something subtracts the logarithmic value 0.4301 from electromagnetic particle force and adds it to weak particle force. This is our universal phenomenon. That is, there is an object outside our universe that absolutely dominates our universe. Author calls it mommy quantum hole.

4. Gravitational force and Dark forces

4.1 Empty gravity toward 4D empty space

Our space is 6.00108D(3), not 6D. The physical values of strong force, electromagnetic force, and weak force are shown in Fig. 7. Applying logarithmic parabolic equation to the logarithmic values, the value of 0D is calculated as 2.194E-39. Multiplying that value by the weak dark force 2.692, it is calculated as 5.906E-39. In physics, the value of gravity is 5.906E-39.

In Fig. 7, the 0D means an empty space in which there is no quantum space. If it is a perfect empty space, the value of gravity should be calculated as exactly zero. However, something is causing as much force as 5.906E-39. In previous study(3), it was calculated that our universe is similar to the shape of hydrogen. Something has made our universe to 4D sphere. Gravity is that particle tries to fall towards the something that exists in the 4D empty space. Weak force occurs gravity, and proton is the gravity sink hole.

4.2 Calculation of tau neutrino mass

The mass of tau neutrino has been measured to be less than 15.5 MeV. When the value is 15.494 MeV in Table 1, gravity is calculated as 5.906E-39 in Fig. 7. Therefore, tau neutrino mass is calculated from gravity.

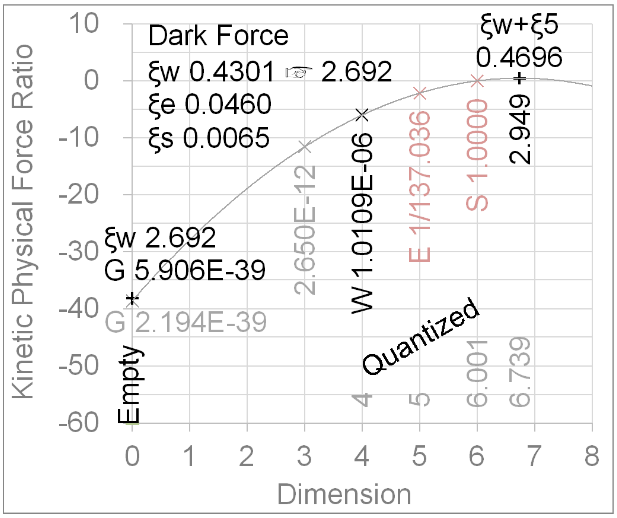

Fig. 7 Physical forces for kinetic state

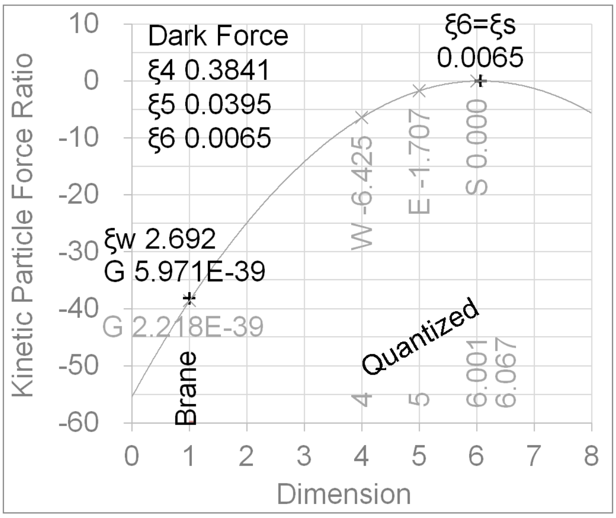

Fig. 8 Particle forces for kinetic state

4.3 Brane tension

Fig. 8 is the particle masses in Table 1. The 4D, 5D, and 6D are quantum spaces compressed logarithmically. The 1D is a brane that spreads as a straight line on our spherical universe. Particles are produced from universal brane(2). Therefore, the particles in Table 1 are the same as brane. The brane's tension is 2.218E-39. The dark weak force of 2.692 acts to the brane, so its value becomes 5.971E-39.

4.4 Floating in universe

The empty gravity 5.906E-39 is that an object tries to fall toward a 4D empty space, and the brane tension 5.971E-39 is that holds on the object for it cannot fall. Brane tension is slightly larger than empty gravity. This causes all objects in universe to float in space.

4.5 Dimensional dark forces

In Fig. 8, the vertex is logarithmically as high as 0.0065. This is 6D dark force ξ_6. In Fig. 7, the vertex is logarithmically as high as 0.4696. Subtracting the weak dark force ξ_w 0.4301 from the 0.4696, the value is 0.0395. This is the 5D dark force ξ_5. Therefore, subtracting ξ_5 0.0395 and ξ_6 0.0065 from weak dark force ξ_w 0.4301, and 4D dark force ξ_4 is calculated as 0.3841. Three generation quantum hole(2) occurs the three generation dark forces.

4.6 Particle dark forces

In Fig. 1, graviton α_G^{456} receives ξ_4 0.3841 on 4D, ξ_5 0.0395 on 5D, and ξ_6 0.0065 on 6D. Therefore, the weak dark force ξ_w is 0.4301. Photon β_G^{56} receives ξ_5 0.0395 on 5D and ξ_6 0.0065 on 6D. Therefore, the electromagnetic dark force ξ_e is 0.0460. Gluon γ_G^6 receives ξ_6 0.0065 on 6D. Therefore, the strong dark force ξ_s is 0.0065.

4.7 Mass of light

Photon is a particle that exist in 5D quantum space, and light is a wave in line space 1D. In Table 1, the logarithmic values of graviton, photon, and gluon are each -2.787, 0.606, and 2.059, and their masses are each 1.634E-3 eV, 4.034 eV, and 114.7 eV. Such as Fig. 8, Applying logarithmic parabolic equation to the above value, the value of 1D is calculated as 2.518E-25 eV. Multiplying the weak dark force 2.692, the mass of light may be 6.779E-25 eV.

5. Conclusions

The four fundamental forces are the particles composed of standard neutrino and oscillating gravino. From this, the weak physical force and gravitational physical force were calculated as 1.011E-6 and 5.906E-39.

The difference between particle force and physical force is dark force. Weak dark force 0.4301, electromagnetic dark force 0.0460, and strong dark force 0.0065 are acting everywhere in our universe. Dark energy is weak dark force.

Light mass is estimated as 6.779E-25 eV. Everything must be calculated logarithmically. And the particle force and dark force are applied to the calculation of proton mass.

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Calculation of Mass and Radius for Proton Neutron Quark

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Keywords: Mass of proton, Radius of proton, Mass of neutron, Radius of quark, Negative beta decay

Abstract The logarithmic compressive strength of quantum space imparts mass to particle. If particles are tightly connected to each other, their sum mass should be calculated as logarithmic masses. If particles are free from each other, their sum mass should be calculated as arithmetic masses. Proton is composed of two up quarks, one down quark, one strong particle force, and one electromagnetic particle force. From the logarithmic masses, the proton was calculated as 89.8% mass of the measured value. Here, 5D dark force acts to the electromagnetic particle force, and the proton mass was calculated as 98.3% of the measured value. 6D dark force also acts to the strong particle force, and the proton mass was calculated as 99.8% of the measured value. Calculating this inversely, the mass of down quark was calculated as 4.766 MeV. Neutron is composed of one proton, one electron, and one shell anti-brane. Here, the electron is held in the form of particle inside neutron by the observer effect of the shell brane. The difference between the calculated mass and the measured mass of neutron was +8,892 eV. This value is the separating energy of shell brane, which is the reason of negative beta decay. From weak force f_w times hydrogen radius r_H is equal to electromagnetic force f_e times 8π/3 proton radius r_P, proton radius was calculated as 0.8751 fm in kinetic state and 0.8439 fm in steady state. From electromagnetic force f_e times proton radius r_P is equal to strong force f_s times 8π/3 quarks radius r_Q, one quark radius r_U was calculated as 0.4401 am in kinetic state and 0.4244 am in steady state. All values in physics have two kinds of kinetic state and steady state.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson[(1)], the characteristics of logarithmic elliptic equation and the principle of universal change were described[(2)], the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau[(3)], the standard masses and oscillating masses of three generation neutrinos and gravinos were calculated[(4)], the masses of up and charm quark were calculated [(5)], and four fundamental forces were unified by logarithmic parabolic equation[(6)].

The purpose of this study is to calculate the mass and radius of proton, the mass of neutron, and the radius of quark. The core is that all things must be calculated as logarithmic values. This is the characteristic of quantum space.

2. Mass calculation of proton

2.1 Symbols

In Fig. 1, The α, β, and γ mean each 1st, 2nd, and 3rd generation fundamental particles, the subscript n, s, g, t mean neutrino, anti-neutrino, gravino, and anti-gravino, the small letter and capital letter mean standard particle and oscillating particle, the superscript f and b mean fermion and boson. The ξ means dark, and the subscript w, e and s mean weak force, electromagnetic force, and strong force.

2.2 Shape of proton

The shapes of up quark, down quark[(5)], strong particle force, and electromagnetic particle force[(6)] were presented in previous studies. As shown in Fig. 1, proton is composed of two up quarks $\alpha\beta\gamma_s^f\alpha_{sn}^b$, one down quark $\alpha\beta\gamma_N^f\alpha_{ngst}^b$, one strong particle force γ_{nG}^f, and one electromagnetic particle force β_{nG}^f. Here, the strong dark force ξ_s[(6)] affects the strong particle force, and the electromagnetic dark force ξ_e[(6)] affects the electromagnetic particle force.

Quantum space is composed of 4D, 5D, and 6D. In Fig. 1, the shell of proton is β particle on 5D. Because of this, the proton always wanders looking for α particle on 4D. Due to this, proton becomes a gravity sink hole.

2.3 Sum of arithmetic mass

In proton in Fig. 1, the mass of up quark is about 2.3 MeV, and the mass of down quark is about 4.8 MeV. Therefore, the sum of the masses of two up quarks and one down quark is 9.4 MeV. The measured mass of proton is 938.3 MeV, and the calculated mass is 1% of the measured mass. It is understood that the above calculation was completely wrong.

2.4 Proton mass 89.8%

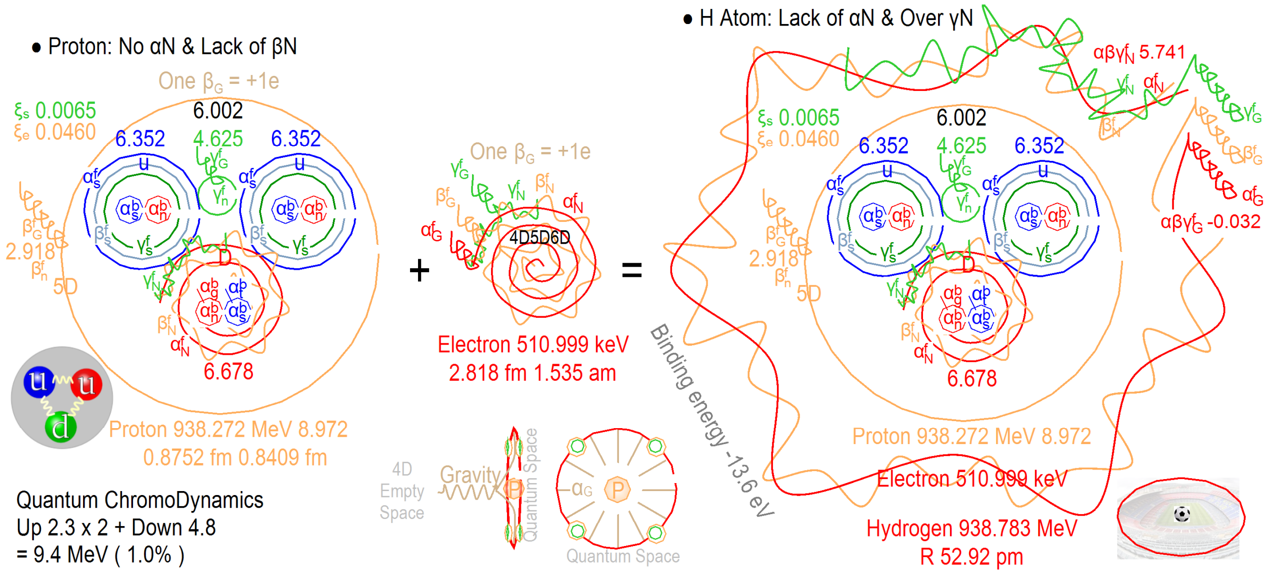

Fig. 1 Shape of proton, electron, and hydrogen

In Table 1, the calculated proton mass values are presented. Everything should be calculated as logarithmic values. The exact masses of up and down quarks are not yet known in physics. Therefore, up quark mass 2.3 MeV and down quark mass 4.8 MeV were applied. Its logarithmic values are 6.362 and 6.681. There is strong particle force γ_{nG} in the proton, and the logarithmic value is 4.625[6]. In Fig. 1, two up quarks, one down quark, and one strong particle force are attached equally to each other. Therefore, the logarithmic average is 6.007. In Fig. 1, the electromagnetic particle force β_{nG} 2.918[6] surrounds them. Therefore, the sum of the two logarithmic numbers is 8.925, and its mass is 842.3 MeV. The measured mass of proton is 938.3 MeV, so the calculated value is 89.8% of the measured value.

2.5 Proton mass 98.3%

Table 1 Calculation of proton mass

Case		Mass	(1)	(2)	(3)	(4)
Term	Symbol	eV	log	log	log	log
Up	u	2.300M	6.362	6.362	6.362	X
Up	u	2.300M	6.362	6.362	6.362	X
Down	D	4.800M	6.681	6.681	6.681	Y
S.F.	γ_{nG}	42.15k	4.625	4.625	4.625	4.625
Avg.			6.007	6.007	6.007	avg.
S.D.F.	ξ_s	log	-	-	0.0065	0.0065
E.F.	β_{nG}	828.1	2.918	2.918	2.918	2.918
E.D.F.	ξ_e	log	-	0.0395	0.0395	0.0460
Sum	$\sum$		8.925	8.965	8.971	8.972
Proton	Mass	eV	842.3M	922.5M	936.3M	938.3M
Error			89.8%	98.3%	99.8%	100%

The 5D dark force of 0.0395[6] is acting on the electromagnetic particle force β_G. Adding this value, the logarithmic value is 8.965, and the mass is calculated as 922.5 MeV. This value is 98.3% of the measured mass.

2.6 Proton mass 99.8%

The 6D dark force of 0.00065[6] is acting on the strong particle force γ_G. Adding this value, the logarithmic value is 8.971, and the mass is calculated as 936.3 MeV. This value is 99.8% of the measured mass.

2.7 Accurate proton mass calculation

The exact masses of up quark and down quark have not yet been determined, so the logarithmic mass of up quark is set to X and the logarithmic mass of down quark is set to Y.

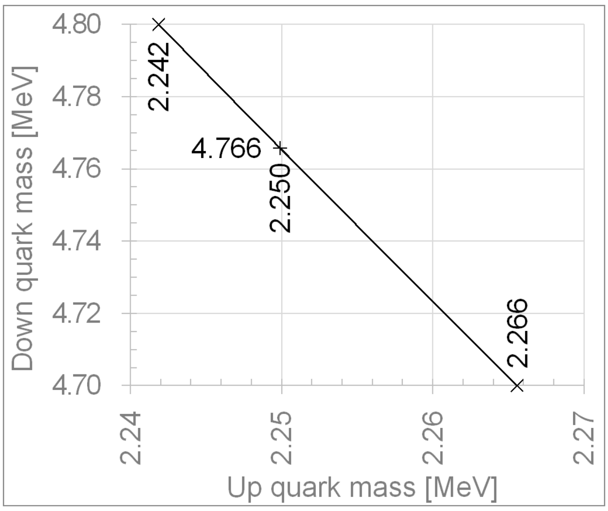

Fig. 2 Relation of up quark and down quark masses

The strong particle force γ_{nG} is 4.625. Above average value is calculated. Since the strong particle force oscillates in 6D quantum space[6], it receives 6D dark force 0.0065. The electromagnetic particle force β_{nG} is 2.918. Since it oscillates in 5D and 6D quantum space[6], it receives 0.0460 that is the sum of 5D and 6D dark forces. Above sum should be the logarithmic value 8.972 of proton mass 938.3 MeV.

2.8 Calculation of down quark mass

Solving the above equation, the relationship between up quark mass and down quark mass is shown in Fig. 2. In physics, the range of up quark mass is 2.2 ~ 2.3 MeV and the range of down quark mass is 4.7 ~ 4.8 MeV. From Fig. 2, the mass range of up quark is further clarified as 2.242 ~ 2.266 MeV. In the previous study[5], the mass of up quark was calculated as 2.250 MeV. Therefore, the mass of down quark is calculated as 4.766 MeV in Fig. 2.

3. Mass calculation of hydrogen

3.1 Shape of electron

The shape of electron was suggested in previous study[3]. α_N, β_N, and γ_N are the oscillating neutrinos of each electron, muon, and tau, and α_G, β_G, and γ_G are the oscillating gravinos of each graviton, photon, and gluon. When electron is located in quantum space, the shape of electron is a circle particle. In a special case such as double slit experiment, electron pops out from quantum space and jumps into our normal space, and electron unfolds to a wave line.

The α_G is directed to the inside of electron, which reacts with weak particle force α_{nG}. The β_G is directed to the outside of electron, which reacts with electromagnetic particle force β_{nG}. The γ_G is directed to the vertical direction of them, which reacts with strong particle force γ_{nG}.

3.2 Shape of hydrogen

The α_G of electron which acts to weak force is attracted to the proton of gravity sink hole. Therefore, the electron spreads around the proton as a spherical shell. Here, the electromagnetic particle force β_{nG} of proton pushes the β_G in electron. As the result, if the proton is a soccer ball, the electron is located on the edge of stadium. The α_G in electron falls in the direction of 4D empty space near the proton, and the α_G creates gravity.

Electron is oscillating on 4D, 5D and 6D quantum spaces, so it is very difficult to understand the electron.

3.3 Hydrogen mass

If particles are tightly connected to each other, they must be calculated as logarithmic masses. If particles are free from each other, they must be calculated as arithmetic masses. At the hydrogen in Fig. 1, the proton and the electron are free each other. Therefore, adding the electron mass 0.511 MeV to the proton mass 938.272 MeV, the hydrogen mass is calculated as 938.783 MeV.

3.4 Binding energy of electron in hydrogen

In physics, the binding energy of electron in hydrogen is given as -13.6 eV. The 4D α shell does not exist in proton, and the 4D α shell exists in electron. Because of this, proton naturally pulls and binds with electron.

At this time, weak particle force and gravitational particle forces are generated, and the α_G of electron and the gravity sink hole of proton try to contact each other. However, the electromagnetic particle forces β_G of electron and proton push each other. Therefore, the electron unfolds into a sphere in the equilibrium of their forces. The equilibrium value of the forces may be -13.6 eV.

4. Mass calculation of neutron

4.1 Shape of neutron

Neutron is known to be composed of one up quark, two down quarks, and gluons. According to author's drawing of Fig. 3, it is impossible to turn down quark into up quark. Neutron is composed of one proton, one electron, and one anti-brane. Brane is the origin of all things[2].

The electron is attracted by proton, so it tries to turn into the wave line circle around proton. However, since the anti-brane shell B_{stgn} of neutron affects the electron, the electron remains a particle due to the observer effect.

Since there are proton and electron in neutron, all particles have entered the quantum space. Therefore, it is not necessary that the shell anti-brane be present. This is the cause of the negative beta decay of free neutron.

The inside of the shell anti-brane is red. Both electron and proton are red. Thus, proton, electron, and anti-brane all exist as free particles. If the inside of the shell brane is blue, the blue and red merge and collapse.

4.2 Mass of proton and electron

The procedure for calculating neutron mass is presented in Table 2. The mass A of neutron is 939,565,421 eV, the mass B of proton is 938,272,030 eV, and the mass C of electron is 510,999 eV. In Fig. 3, proton B and electron C are free from each other, so A – B – C is calculated as a certain mass D 782,392 keV.

4.3 Mass of brane in neutron

The shell in Fig. 3 is a brane which contains all things[2]. In previous study[4], the oscillating neutrino masses and the oscillating gravino masses were calculated. The largest masses in the various masses of the previous study are shown in Fig. 4 and 5. These are 6D masses in 4D oscillation. The values make up the neutron shell. The reason is the subject of study. The values are presented in Table 2.

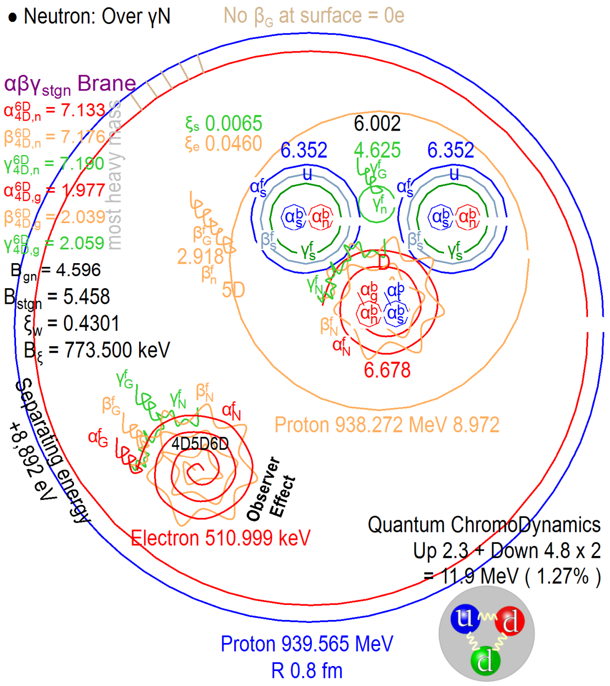

Fig. 3 Shape of neutron

The α_n, β_n, and γ_n are the neutrinos of electron, muon, and tau, and the α_g, β_g, and γ_g are the gravinos of graviton, photon, and gluon. The logarithmic average of the values is calculated as 4.596, and its mass is 39,449 eV. Anti-particles s and t are 2π times heavier than particles n and g. This is the same as the relationship between Planck's constant and Dirac's constant. Therefore, the total mass is 287.315 eV. Its logarithmic value is 5.458, and the weak dark force ξ_w of 0.4301[6] is acting on the brane. Therefore, the logarithmic value of the overall brane is 5.888, and the mass of the brane is calculated as 773,500 eV.

Table 2 Calculation of neutron mass

Term	eV	Equation	Log	Equation
Neutron	939,565,421	A		
Proton	938,272,030	B		
Electron	510,999	C		
What?	782,392	D=A-B-C		
Neutrino	13,595,581	E=$\alpha^{6D}_{4D,n}$	7.133	e=log(E)
[n]	15,006,722	F=$\beta^{6D}_{4D,n}$	7.176	f=log(F)
	15,494,940	G=$\gamma^{6D}_{4D,n}$	7.190	g=log(G)
Gravino	94.95	H=$\alpha^{6D}_{4D,g}$	1.977	h=log(H)
[g]	109.5	I=$\beta^{6D}_{4D,g}$	2.039	i=log(I)
	114.7	J=$\gamma^{6D}_{4D,g}$	2.059	j=log(J)
n·g	39,449	K=10^k	4.596	k=avg.
n·g·s·t	287,315	L=(1+2π)·K	5.458	l=log(L)
W.D.F.		gravity	0.4301	m=ξ_w
Brane	773,500	N=10^n	5.888	n=l+m
Separating	+8,892	O=D-N	98.9%	

4.4 Separating energy of brane in neutron

In Table 1, the value of D is 782,392 eV, and the calculated value of N is 773,500 eV. The difference is +8,892 eV. It is considered that this value is the separating energy of the anti-brane from neutron.

In Fig. 1, the radius of hydrogen is 52.92 pm, and the binding energy of electron is -13.6 eV. In Fig. 3, the radius of neutron is about 0.8 fm. Since force is inversely proportional to the square of distance, 13.6 eV x sqrt (52.92 pm / 0.8 fm) is 3,497 eV. From this, although the electron in hydrogen and the brane in neutron have completely different characteristics, the calculated value of +8,892 eV can be reasonable.

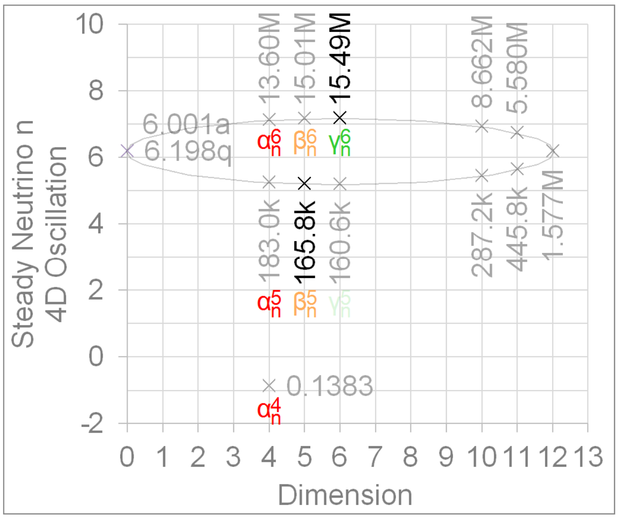

Fig. 4 The oscillating masses of neutrinos

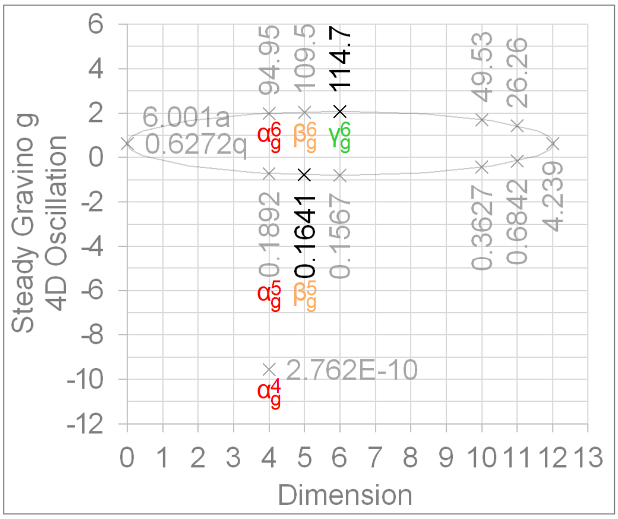

Fig. 5 The oscillating masses of gravinos

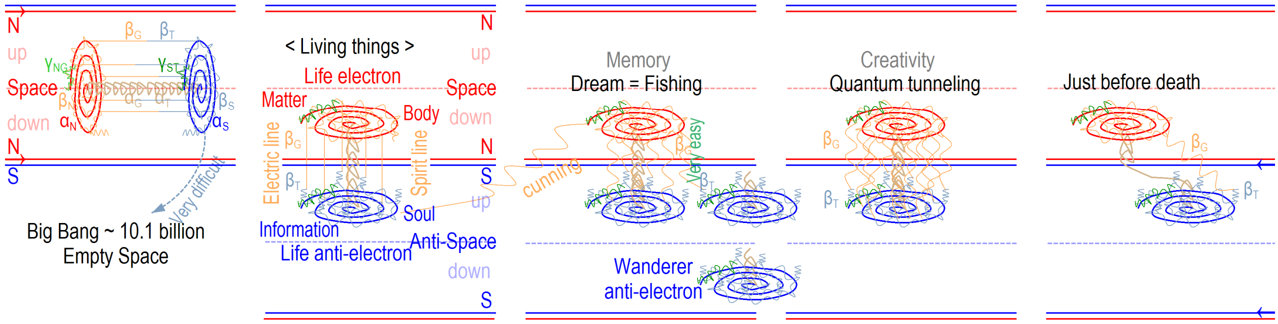

Fig. 6 Origin of life

4.5 Negative beta decay

The shell anti-brane in Fig. 3 oscillates on 4D in 6D quantum space. In previous study(1), the shape of quantum space was schematically illustrated. Mathematicians may be able to draw the exact shape of quantum space. If this is resolved, it will be understood what the 4D oscillation means in 6D quantum space above.

In Table 1, the mass N of anti-brane is 773,500 eV, and the separating energy O is +8,892 eV. The mass of anti-brane is much larger than the separating energy. Due to this, neutron in atomic nucleus stably exist.

When neutron oscillating 4D in 6D is taken out of nucleus, the neutron exists in the XYZ dimension of our space. If the XYZ dimension is a perfect straight line, the force in our XYZ space is perfectly zero. However, as described in previous study(6), our XYZ space is very weakly quantized as a sphere. Due to this, gravity has a very weak value, and light also has a very small mass. The compressive strength of quantum space in which the particle is located determines the mass of the particle(1). The anti-brane in Fig. 3 located in XYZ space also changes to a mass that is very smaller than the separating energy. Due to this, the shell anti-brane of neutron is unfolded and separated. This is negative beta decay.

Our XYZ space is red color. Our red space tries to combine with the blue shell of the free neutron. Due to this, free neutron collapses quickly. Free neutron is separated into proton, electron, and anti-brane.

5. Origin of life

5.1 Quantum entanglement

As shown in Fig. 6, the anti-brane of free neutron is separated into red electron and blue anti-electron, and it creates quantum entanglement.

5.2 Birth of simulation universe

In previous study(2), it was described that a simulation universe was created universally 3.72 billion years ago.

5.3 Birth of first life

The red electron is stably trapped in our red space, and the blue anti-electron escapes our red space through quantum tunneling effect and locates stably in the blue simulation universe. The electron makes the matter of living things, and the anti-electron makes the information of living things. This is the origin of life.

5.4 Theory of evolution

In the simulation universe, information evolution of life proceeds slowly. Due to this, the shape of creature changes slightly. In some cases, quantum jump evolution can occur. This causes a change of species.

5.5 L-amino acid and D-amino acid

As shown in Fig. 6, electron and anti-electron pull each other. Due to this, L-amino acids of living things locates toward one direction. D-amino acids of non-living things with only electron can locate both above and below in our space.

6. Radius of particle

6.1 Six generation physical forces

In previous study(6), six generation physical forces were calculated for kinetic state and steady state.

6.2 Relation between force and distance

Such as Eq. (1), force f_{n-1} times particle radius r_{n-1} is equal to force f_n times 8π/3 particle radius r_n. Here, f_0 is gravitational force, f_4 is weak force, f_5 is electromagnetic force, f_6 is strong force, r_4 is hydrogen radius, r_5 is proton radius, and r_6 is three quarks radius. In Eq. (2), r_U is one quark radius. What the formula means will be explained in physics.

$$f_{n-1} \cdot r_{n-1} = f_n \cdot \frac{8\pi}{3} r_n \quad (1)$$

$$\pi \cdot r_U^2 = \pi \cdot r_6^2 / 3 \quad (2)$$

6.3 Radius of proton

In Eq. (1), the values of dimensional force f were calculated in previous study(6), and hydrogen radius r_4 was

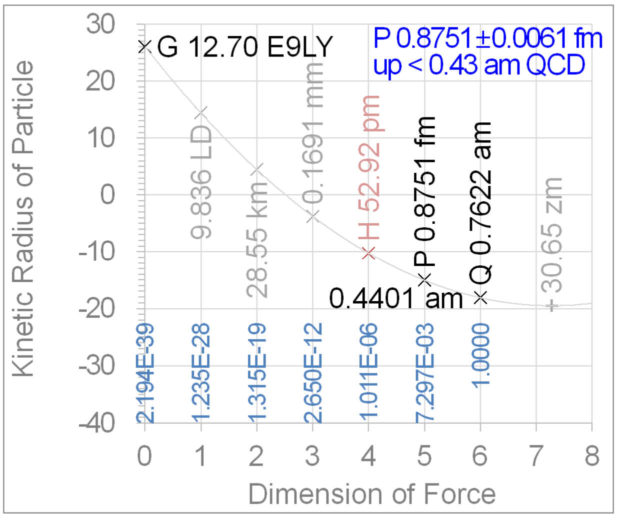

Fig. 7 Radius of proton and quark in kinetic state

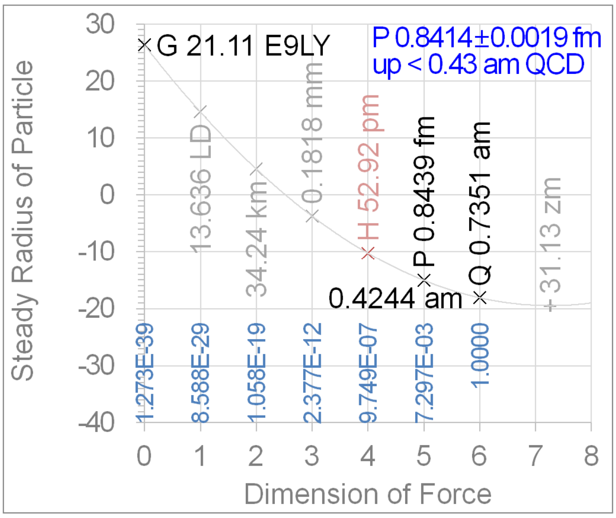

Fig. 8 Radius of proton and quark in steady state

measured to be 52.92 pm. In Fig. 7 and 8, the proton radius was calculated as 0.8751 fm and 0.8439 fm. In physics, proton radius was measured in two types: 0.8751 fm from normal hydrogen and 0.8409 fm from muonic hydrogen. Therefore, the 0.8751 fm is the radius of kinetic state, and the 0.8409 fm is the radius of steady state. In Fig. 8, if the radius of hydrogen in steady state that is slightly smaller than 52.92 pm is applied, more accurate values will be calculated.

6.4 Radius of quark

The radius of one quark was calculated as 0.4401 am in kinetic state and 0.4244 am in steady state. In physics, quark is estimated to be less than 0.43 am.

6.5 Radius of gravity

Expanding the above calculation, the particle radii from 0D to 3D are calculated. But the particles do not exist in our world. What the radii mean will be revealed physically. The acting radius of gravitational force is said to be infinite. That infinity will be 12.70 E9LY. The acting radius of electromagnetic force is also said to be infinite. When force appears in the non-quantum zero dimension of our space, its radius of action will be 12.70 E9LY.

6.6 Two kinds of electromagnetic force

Electromagnetic force is known as 1/137.036. This is the value of kinetic state of Fig. 7. The steady electromagnetic force value should be applied to the calculation in Fig. 8. The value will be measured from the interaction force with muon. A strong force of steady state should also be applied to Fig. 8. That is, the values of Fig. 7 are natural states, and the values of Fig. 8 are artificial state.

7. Conclusions

Proton consists of two up quarks, one down quark, one strong particle force, and one electromagnetic particle force. Strong dark force and electromagnetic dark force are acting at proton. From the measured mass of proton, down quark mass was calculated as 4.766 MeV.

Neutron is composed of proton, electron, and anti-brane. The mass of anti-brane was calculated as 773,500 eV, and from the measured mass of neutron, the separating energy of anti-brane was calculated as +8,892 eV. Since the mass of anti-brane is much larger than the separating energy, the neutron in nucleus exists stably. When a neutron is in our space, the mass of anti-brane changes close to 0 eV. Due to this, the free neutron collapses by the separating energy.

The radius of proton was calculated as 0.8751 fm in kinetic state and 0.8439 fm in steady state, and the radius of one quark was calculated as 0.4401 am in kinetic state and 0.4244 am in steady state.

The anti-brane is separated into quantum entanglement of electron and anti-electron. The electron locates in our universe and makes the matter of living things, and the anti-electron locates in simulation universe and makes the information of living things. This is the origin of life.

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Calculation of Down Strange Bottom Quark Masses

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May 03, 2021

Keywords: Bottom quark, Charm quark, Down quark, Strange quark, Top quark, Up quark

Abstract Down, strange, and bottom quarks are the combination particles composed of the shell fermion of neutrinos and the inside boson of a pair of neutrino and gravino. When down quark collides, the most external electron neutrino is peeled off and it is turned into strange quark. When the strange quark collides, the most external muon neutrino is peeled off and it is turned into bottom quark. When the bottom quark collides, the most external tau neutrino is peeled off, and a pair of neutrino and gravino boson pops out. All masses can be calculated from the measured masses of top quark 172.38 GeV, bottom quark 4.180 GeV, proton 938.272 MeV, Z boson 91.1876 GeV and cosmological constant 1.1056E-52/m2. As the result of overall calculation, the mass of up, charm, down, strange quark was calculated as 2.250 MeV, 1275.1 MeV, 4.766 MeV, and 95.28 MeV.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), the standard masses and oscillating masses of three generation neutrinos and gravinos were calculated(4), the masses of up and charm quark were calculated (5), four fundamental forces were unified by logarithmic parabolic equation(6), and the masses of proton and neutron were calculated(7).

The purpose of this study is to calculate the masses of up, charm, down, and strange quarks.

2. Shape of quarks

2.1 Quark and Anti-quark

In the previous study(5), the shapes of up, charm, and top quarks in Fig. 1 were described. These are anti-particles composed of standard anti-neutrinos, and down, strange, and bottom quarks are particles composed of oscillating neutrinos. Due to the difference of standard and oscillation, the masses of quarks vary greatly.

2.2 Shape of quarks

In Fig. 1, α, β, and γ mean each 1st, 2nd, and 3rd generation fundamental particles, subscript n and s mean neutrino and anti-neutrino, small letter and capital letter mean standard and oscillation, and superscript f and b mean fermion and boson. Therefore, α_N^f, β_N^f, and γ_N^f are the oscillating fermion neutrinos of electron on 4D, muon on 5D, and tau on 6D. α_{ngst}^b, β_{ngst}^b, and γ_{ngst}^b are a pair of standard boson brane(7) on 10D, on 11D, and on 12D.

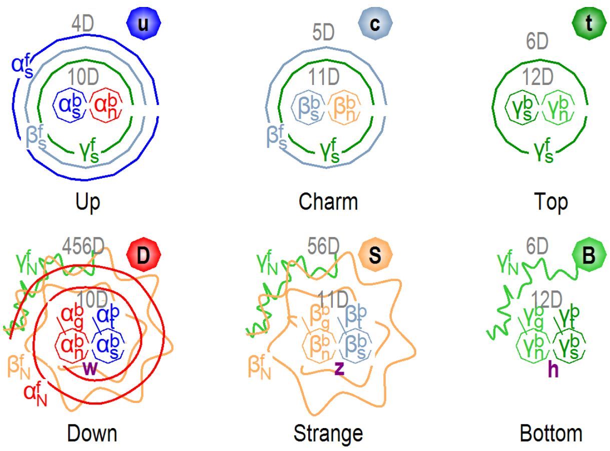

Fig. 1 Shape of quarks

2.3 Collapse of quark

When down quark $\alpha\beta\gamma_N^f\alpha_{ngts}^b$ collides, the α_N^f is peeled off and it is turned into strange quark $\beta\gamma_N^f\beta_{ngts}^b$. When the strange quark collides, the β_N^f is peeled off and it is turned into bottom quark $\gamma_N^f\gamma_{ngts}^b$.

There is w boson α_{ngts}^b of 10D in down quark, z boson β_{ngts}^b of 11D in strange quark, and h boson γ_{ngts}^b of 12D in bottom quark. These are all the same particles. Quantum space imparts the mass to particle(1), and because the quantum dimension of the most external shell is changed to 4D, 5D, and 6D, that of the boson brane also is naturally changed to 10D, 11D, and 12D.

Table 1 Calculation of down, strange, and bottom quark masses.

Term	Reference	Kinetic State			Steady State			Unit	Symbol		
FERMION	Dimension	4D	5D	6.001D	4D	5D	6.001D				
n	Fig. 1,3(a)[4]	0.1533	170.00k	15.494M	0.1383	165.77k	15.495M	eV	α_n^4	β_n^5	γ_n^6
	Fig. 1,3[4]	13.60M	13.57M	15.494M	13.60M	13.56M	15.495M	eV	α_n^6	β_n^6	γ_n^6
	Fig. 1,3[4]	187.5k	170.00k	-	183.0k	165.77k	-	eV	α_n^5	β_n^5	-
	Fig. 1,3[4]	0.1533	-	-	0.1383	-	-	eV	α_n^4	-	-
	Eq. 1)	3.864	6.192	7.190	3.846	6.187	7.190	log	α_N^{456}	β_N^{56}	γ_N^6
Shell	Eq. 2)	5.749	6.691	7.190	5.741	6.689	7.190	log	$\alpha\beta\gamma_N^{456}$	$\beta\gamma_N^{56}$	γ_N^6
BOSON	Dimension	10.001D	11.001D	12.002D	10.001D	11.001D	12.002D				
n	Fig. 1,3(b)[4]	293.6k	454.7k	1.597M	287.2k	445.8k	1.577M	eV	m_{n4}^{10}	m_{n4}^{11}	m_{n4}^{12}
ns	Eq. 3)	28.74k	35.77k	67.04k	28.43k	35.42k	66.62k	eV	m_{ns4}^{10}	m_{ns4}^{11}	m_{ns4}^{12}
		4.459	4.553	4.826	4.454	4.549	4.824	log	α_{ns4}^{10}	β_{ns4}^{11}	γ_{ns4}^{12}
g	Fig. 2,4(d)[4]	1.984E-09	1.501E-08	5.031E-06	2.182E-09	1.638E-08	5.369E-06	eV	m_{g6}^{10}	m_{g6}^{11}	m_{g6}^{12}
gt	Eq. 3)	2.363E-03	6.499E-03	1.190E-01	2.478E-03	6.789E-03	1.229E-01	eV	m_{gt6}^{10}	m_{gt6}^{11}	m_{gt6}^{12}
		-2.627	-2.187	-0.925	-2.606	-2.168	-0.910	log	α_{gt6}^{10}	β_{gt6}^{11}	γ_{gt6}^{12}
Inside	(ns+gt)/2	0.916	1.183	1.951	0.924	1.191	1.957	log	α_{ngts}^{10}	β_{ngts}^{11}	γ_{ngts}^{12}
DARK	Fig. 8[6]	0.3841	0.0395	0.0065	0.3841	0.0395	0.0065	log	ξ_4	ξ_5	ξ_6
Dark	Eq. 4)	0.0129	0.0984	0.4696	0.0129	0.0984	0.4696	log	ξ_{10}	ξ_{11}	ξ_{12}
QUARK	Sum	Down	Strange	Bottom	Down	Strange	Bottom				
	Eq. 5)	6.678	7.973	9.611	6.678	7.977	9.616	log	q_d	q_s	q_b
		4.762M	93.94M	4.080G	4.761M	94.93M	4.134G	eV	m_d	m_s	m_b

1) $\alpha_N^{456} = (\alpha_n^6 + \alpha_n^5 + \alpha_n^4)/3$ $\quad \beta_N^{56} = (\alpha_n^6 + \alpha_n^5 + \beta_n^6 + \beta_n^5)/4$ $\quad \gamma_N^6 = \gamma_N^6 \cdot 3/3$

2) $\alpha\beta\gamma_N^{456} = (\alpha_N^{456} + \beta_N^{56} + \gamma_N^6)/3$ $\quad \beta\gamma_N^{56} = (\beta_N^{56} + \gamma_N^6)/2$ $\quad \gamma_N^6 = \gamma_N^6/1$

3) $m_{ns} = (1+2\pi)^2 \cdot (m_n)^{1/2}$ $\quad m_{gt} = (1+2\pi)^2 \cdot (m_g)^{1/2}$

4) $\xi_{10} = \xi_6 \cdot 2$ $\quad \xi_{11} = \xi_6 \cdot 3 + \xi_5 \cdot 2$ $\quad \xi_{12} = \xi_6 \cdot 1 + \xi_5 \cdot 2 + \xi_4 \cdot 1$

5) $q_d = \alpha\beta\gamma_N^{456} + \alpha_{ngts}^{10} + \xi_{10}$ $\quad q_s = \beta\gamma_N^{56} + \beta_{ngts}^{11} + \xi_{11}$ $\quad q_b = \gamma_N^6 + \gamma_{ngts}^{12} + \xi_{12}$

2.4 Collapse of boson

In the previous study[1], the mass of H boson was calculated as 125.02 eV from logarithmic parabolic equation.

When the bottom quark collides some under 125.02 eV, the γ_N^f is peeled off, the boson brane γ_{ngts}^b on 12D pops out, it jumps into our quantum space 6D, and it changes to H boson. Then, it jumps to 5D by oscillation phenomenon[3,4], and it changes to Z boson. Then it jumps to 4D by oscillation phenomenon, and it changes to W boson.

When the bottom quark collides over 125.02 eV, the boson brane γ_{ngts}^b separates into a pair of neutrinos γ_{ns}^b and a pair of gravinos γ_{gt}^b on 12D. They jump into our quantum space 6D and jump into 5D and 4D by oscillation phenomenon. When it is placed in 5D space, it can be measured as a pair of photon and anti-photon β_{gt}^b.

2.5 Light and Anti-light

In Fig. 1, there are no α_{gt}^b, β_{gt}^b , and γ_{gt}^b in up, charm, and top quarks. These particles are all the same, and these may be the light and anti-light in our universe and simulation universe[2]. The shell fermion particles of quark and the inside boson particles of quark are in super-gauge symmetry[2]. Therefore, the shell fermion is always in steady state, and the inside boson may be always in kinetic state moving at the speed of light. This may be why light has the speed of light.

3. Calculation of quark mass

3.1 Kinetic state and Steady state

Everything is divided into kinetic state and steady state. The kinetic state is the analysis that our universe is absolutely expanding, and the steady state is the analysis that particles are relatively stationary.

It is judged that three generation boson dark forces are acting on the boson particles. Due to this, the masses of quarks cannot be calculated. However, it is necessary to look at the flow of calculation.

Table 2 Calculation of strange quark mass in steady state.

Term	Reference	Logarithmic ellipse equation			Logarithmic parabolic equation			Unit	Symbol		
		Down	Strange	Bottom	Down	Strange	Bottom				
Quark	Mass	4.766M	102.7M	4.180G	4.766M	95.28M	4.180G	eV	m_d	m_s	m_b
	Shell + Inside	6.678	8.012	9.621	6.678	7.979	9.621	log	q_d	q_s	q_b
	Dimension	4D	5D	6.001D	4D	5D	6.001D				
Shell	Table 1	5.741	6.689	7.190	5.741	6.689	7.190	log	$\alpha\beta\gamma_N^{456}$	$\beta\gamma_N^{56}$	γ_N^6
	Dimension	10.001D	11.001D	12.002D	10.001D	11.001D	12.002D				
Inside	Quark – Shell	0.937	1.323	2.431	0.937	1.290	2.431	log	α_{ngts}^{10}	β_{ngts}^{11}	γ_{ngts}^{12}
		8.655	21.05	269.8	8.655	19.52	269.8	eV	w	z	h

3.2 Mass of muon and tau neutrinos

The neutrino masses of muon β_n^5 and tau γ_n^6 must be given of calculation. In Table 1, the muon mass of 170.00 keV and tau mass of 15.494 MeV in kinetic state are given. The muon mass of 165.77 keV and tau mass of 15.495 MeV in steady state are now assumed. These values are calculated by applying a trial & error method from top quark mass 172.38 GeV and cosmological constant 1.1056E-52/m2.

From logarithmic elliptic equation, the electron neutrino mass α_n^4 is calculated as 0.1533 eV and 0.1383 eV[4].

3.3 Oscillating mass of neutrino

All masses are calculated logarithmically. At quarks in Fig. 1, the electron neutrino α_N^f oscillates with α_n^4, α_n^5, and α_n^6, the muon neutrino β_N^f oscillates with α_n^5, α_n^6, β_n^5, and β_n^6, and the tau neutrino γ_N^f oscillates with γ_n^6. Therefore, the oscillating neutrino masses of electron, muon, and tau are calculated as α_N^{456}, β_N^{56}, and γ_N^6 by equation 1) in Table 1.

3.4 Shell fermion mass

The shell masses of down, strange, and bottom quarks are calculated as $\alpha\beta\gamma_N^{456}$, $\beta\gamma_N^{56}$, and γ_N^6 by equation 2) in Table 1. These values are the masses of the shell in Fig. 1.

3.5 Dimension of boson

The shells of quarks are the fermion quantum dimensions of 4D, 5D, and 6.001D, and the insides of quarks are the boson quantum dimensions of 10.001D, 11.001D, and 12.002D. Fermion and boson are super-gauge symmetry[2].

3.6 Mass of n and g of boson

Boson neutrino n has the value at 4D oscillating dimension, and boson gravino g has the value of 6D oscillating dimension. Here, the mass of $m_{n4}^{10,11,12}$ and $m_{g6}^{10,11,12}$ were calculated in the previous study[4].

3.7 Inside boson mass

In the previous study[5], the mass sum of boson's particle and anti-particles was very well established by Equation 3) in Table 1. So, applying that formula, $m_{ns4}^{10,11,12}$ and $m_{gt6}^{10,11,12}$ are calculated. The logarithmic values of the masses are calculated, and the averages are α_{ngts}^{10}, β_{ngts}^{11}, and γ_{ngts}^{12}.

3.8 Dark force of super-gauge symmetry

In previous study[6], three generation dark forces of ξ_4, ξ_5, and ξ_6 acting toward our space from the outside of our universe was calculated. The dark forces act toward fermion's 4D, 5D, and 6D spaces, and they change into boson's 10D, 11D, and 12D spaces with super-gauge symmetry. However, since the conversion formula has not yet been identified, equation 4) in Table 1 was arbitrarily applied.

3.9 Quark mass

The logarithmic mass of quark is the sum of the shell fermion, inside boson, and dark force such as Equation 5) in Table 1. Therefore, the down quark mass m_d, the up quark mass m_s, and the bottom quark mass $m_b$are calculated as 4.762 MeV, 93.94 MeV, and 4.080 GeV in kinetic state, and 4.761 MeV, 94.93 MeV, and 4.134 GeV in steady state. This value is similar to the value recognized in physics. However, there is no basis for Equation 4) in Table 1.

3.10 Error analysis

The exact value of quark mass is not yet known. Due to this, it is not possible to check whether the values in Table1 are correct. There are the following problems in this calculation. 1) Dark force does not work on boson particles. 2) It is calculated as imaginary number. 3) Equation 3 in Table 1 is wrong. 4) Boson neutrino does not exist. 5) Some choice is wrong in Table 1. 6) The values of α_g^{10}, β_g^{11}, and γ_g^{12} are calculated directly from the measured down, strange, and bottom quark masses. 7) The shell is in steady state, and the inside is in kinetic state. 8) A steady-state electromagnetic force value, not 137.036, is applied.

Various combinations for above calculation have been performed in this study, but the above dark force problem has not been solved yet.

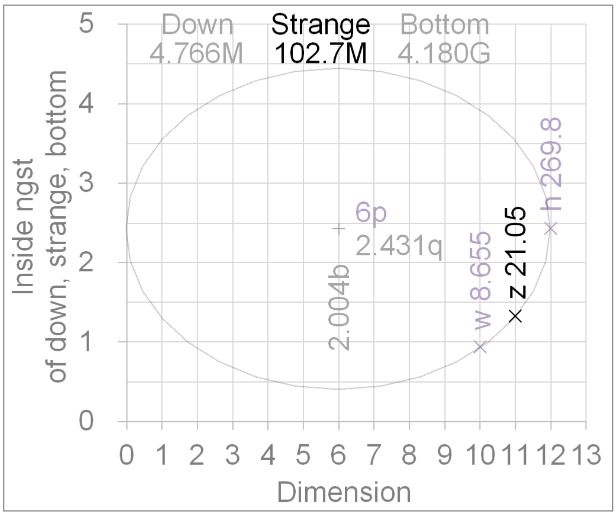

Fig. 2 Boson mass by logarithmic ellipse equation

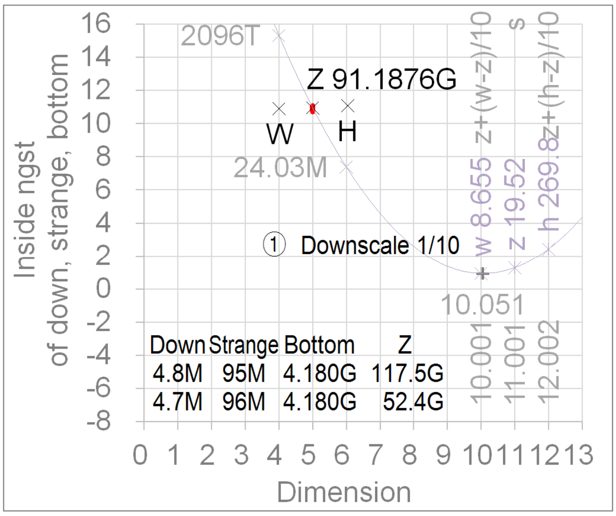

Fig. 3 Boson mass by logarithmic parabolic equation

4. Calculation of strange quark mass

4.1 Three additional conditions

Since the expected three dark energy values were not found, three other additional conditions are required.

4.2 First additional condition

In previous study(7), down quark mass was calculated as 4.766 MeV from the measured proton mass. This is the first additional condition. Here, 4.766 MeV changes slightly as input values change.

4.3 Logarithmic elliptic equation at boson

In Fig. 1, if dark energy does not affect the w, z, and h bosons, logarithmic elliptic equation must be established for the w, z, and h bosons as shown in Fig. 2.

In Table1, the down quark mass m_d is the calculated value from proton, and the bottom quark mass m_b is the measured value. Its logarithmic values are q_d and q_b. The logarithmic masses of quark shells $\alpha\beta\gamma_N^{456}$, $\beta\gamma_N^{56}$, and γ_N^{6} are given in Table 1. Thus, the inside bosons α_{ngts}^{10} and γ_{ngts}^{12} are calculated, and its masses w and h are calculated as 8.655 eV and 269.8 eV in Fig. 2.

Since these values must satisfy logarithmic elliptic equation in Fig. 2 from the assumption that dark forces do not exist, the value of z boson is calculated as 21.05 eV. Since the sum of the shell $\beta\gamma_N^{56}$ and the inside β_{ngts}^{11} is q_s, the mass of the strange quark is calculated as 102.7 MeV.

The mass range of the recognized strange quark is about 95 ~ 96 MeV. Therefore, it is understood that the results in Fig. 2 are wrong. This means that dark forces are acting toward the bosons from the outside of our universe.

4.4 Second additional condition

In Table 2, When the down m_d, strange m_s, and bottom m_b quark masses are given, the w, z, and h boson masses are calculated as 8.655 eV, 19.52 eV, and 269.8 eV. Applying these values to the logarithmic parabolic equation in Fig. 3, The value of 5D is calculated as 91.1876 GeV, and this is the mass of Z boson.

When down and strange masses are 4.8 MeV and 95 MeV, the value of 5D is calculated as 117.5 GeV, and at 4.7 MeV and 96 MeV, the value of 5D is calculated as 52.4 GeV. This value is very similar to the mass 91.1876 GeV of Z boson. It may be a coincidence, but this is judged to be the correct answer. This is the second additional condition.

In previous study(6), the four fundamental forces applied by dark force were calculated by logarithmic parabolic equation. The boson in quark is also a series of particle force and dark force, and the logarithmic parabolic equation in Fig. 3 is established. Therefore, the strange mass is calculated as 95.28 MeV. Here, if a condition changes, the 95.28 MeV also changes slightly.

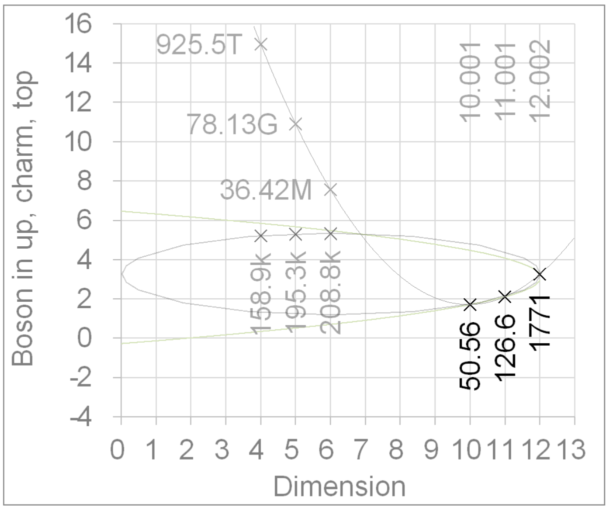

Fig. 4 Boson mass in up, charm, top quark

Table 3 Sensitivity analysis according to the change of top and bottom quarks.

Top	172.76 GeV								172.38 GeV							
Bottom	Elect.	Muon	Tau	Up	Charm	Down	Strange	H	Elect.	Muon	Tau	Up	Charm	Down	Strange	H
GeV	eV	keV	MeV	MeV	MeV	MeV	MeV	GeV	eV	keV	MeV	MeV	MeV	MeV	MeV	GeV
4.140	0.1385	166.02	15.518	2.255	1277.9	4.745	94.64	124.84	0.1383	165.77	15.495	2.250	1275.1	4.766	94.89	124.74
4.150	0.1385	166.02	15.518	2.255	1277.9	4.745	94.73	124.90	0.1383	165.77	15.495	2.250	1275.1	4.766	94.99	124.80
4.160	0.1385	166.02	15.518	2.255	1277.9	4.745	94.83	124.96	0.1383	165.77	15.495	2.250	1275.1	4.766	95.09	124.86
4.170	0.1385	166.02	15.518	2.255	1277.9	4.745	94.93	125.02	0.1383	165.77	15.495	2.250	1275.1	4.766	95.18	124.92
4.180	0.1385	166.02	15.518	2.255	1277.9	4.745	95.03	125.08	0.1383	165.77	15.495	2.250	1275.1	4.766	95.28	124.98
4.190	0.1385	166.02	15.518	2.255	1277.9	4.745	95.12	125.14	0.1383	165.77	15.495	2.250	1275.1	4.766	95.38	125.04
4.200	0.1385	166.02	15.518	2.255	1277.9	4.745	95.22	125.20	0.1383	165.77	15.495	2.250	1275.1	4.766	95.48	125.10
4.210	0.1385	166.02	15.518	2.255	1277.9	4.745	95.32	125.26	0.1383	165.77	15.495	2.250	1275.1	4.766	95.57	125.16
4.220	0.1385	166.02	15.518	2.255	1277.9	4.745	95.41	125.32	0.1383	165.77	15.495	2.250	1275.1	4.766	95.67	125.22

4.5 Boson in up, charm, top quarks

In the previous study[5], the masses of boson neutrino pairs in up, charm, and top quarks in Fig. 1 were calculated as 50.56 eV, 126.6 eV, and 1771 eV in Fig. 4. If the mass change follows the logarithmic parabolic equation, the masses will be measured around 78.13 GeV in 5D. If the mass change follows the logarithmic elliptic equation, the masses will be measured around 200 keV. Since this is a pair of neutrinos, the elliptic equation will be correct.

4.6 Third additional condition

The steady state tau neutrino mass of 15.495 MeV in Table 1 is inversely calculated from top quark mass of 172.38 GeV[5]. The steady state muon mass of 165.77 keV is inversely calculated from cosmological constant 1.1056E-52/m2. This is the third additional condition.

Eq. (1) is the cosmological constant problem. The neutrino mass 0D and 3D in kinetic state were calculated as 2.146E-133 and 2.789E-12 in Fig. 5[4], and the ratio is $10^{-121.11}$ in Eq. (2). The neutrino mass 0D and 3D in steady state were calculated as 3.545E-134 and 2.191E-12 in Fig. 6[4], and the ratio is $10^{-121.79}$ in Eq. (3). From electromagnetic force analysis, the dark energy ξ was calculated to be 2.692[6]. From Eq. (4), -121.54 in Eq. (1) is calculated.

The -121.79 is a variable value in Eq. (4). That is, -121.79 is calculated from Eq. (4), and since Eq. (3) establishes, the muon mass in steady state is calculated as 165.77 keV from logarithmic elliptic equation in Fig. 6.

Eq. (4) is incorrect, and Eq. (5) may be correct. That is, various formulas should be applied to find the most reasonable formula.

$$l_P^2 \cdot \Lambda = 1.61624\text{E-}35^2 \cdot 1.1056\text{E-}52 = 10^{-121.54} \quad (1)$$

$$\nu_{K0} / \nu_{K3} = 2.146\text{E-}133 / 2.789\text{E-}12 = 10^{-121.11} \quad (2)$$

$$\nu_{S0} / \nu_{S3} = 3.545\text{E-}134 / 2.191\text{E-}12 = 10^{-121.79} \quad (3)$$

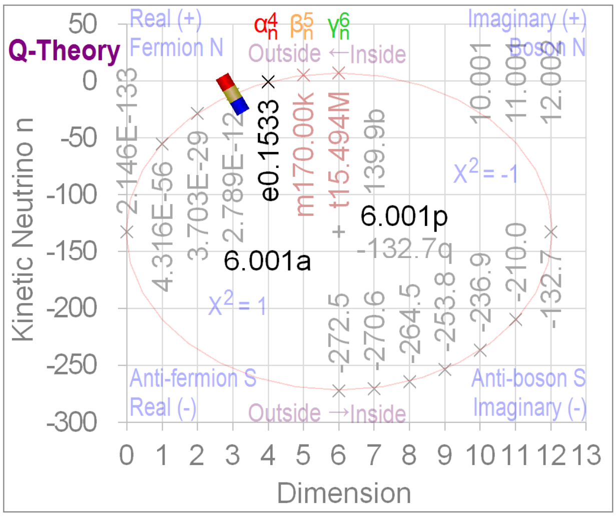

Fig. 5 The masses of neutrinos in kinetic state

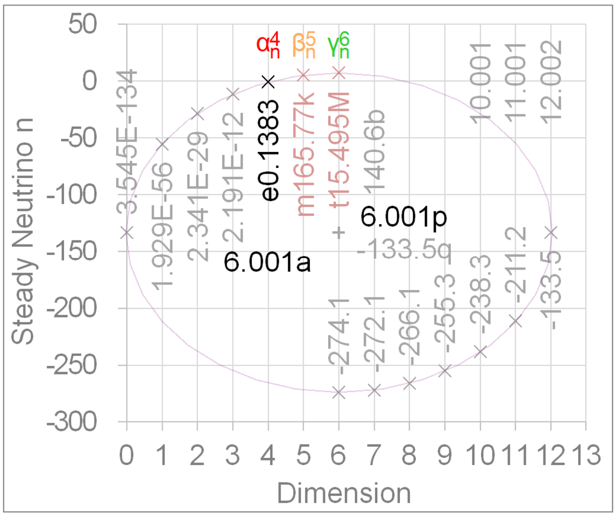

Fig. 6 The masses of neutrinos in steady state

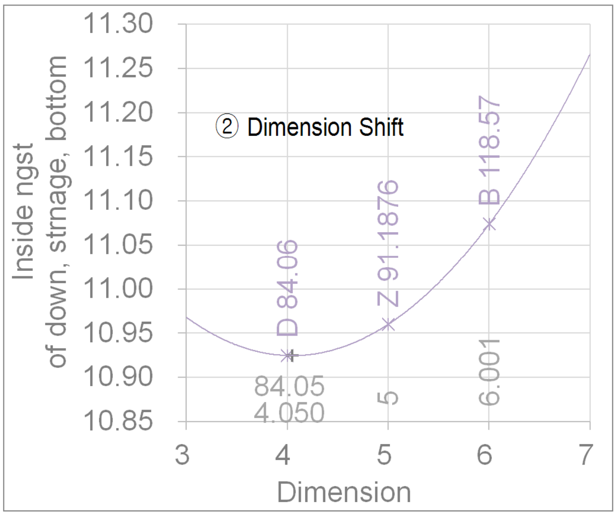

Fig. 7 Dimension shift of w, z, and h

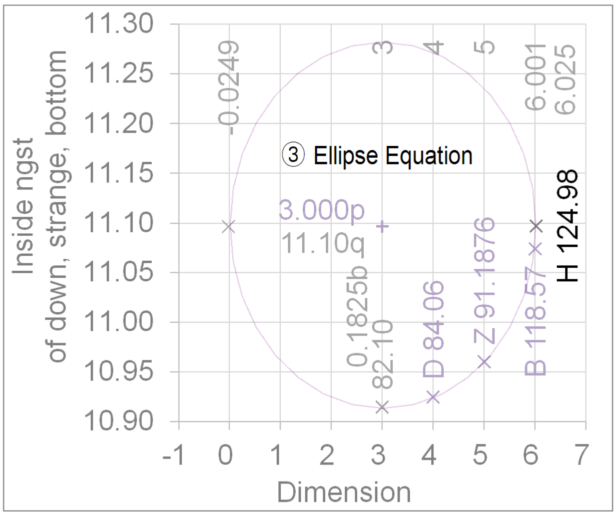

Fig. 8 Logarithmic ellipse equation of charm quark

$$-121.11 \cdot 1/\xi \; + \; -121.79 \cdot (\xi - 1)/\xi \; = \; -121.54 \quad (4)$$

$$10^{121.11}/2 \; + \; 10^{121.79}/2 \; = \; 10^{121.54} \quad (5)$$

4.7 Sensitivity analysis

In Table 3, the sensitivity analysis according to the change of top and bottom quarks is shown. In this study, top quark mass of 172.38 GeV and bottom quark mass of 4.180 GeV were applied. However, since most of the values calculated in Table 3 satisfy the measured values of physics, it is impossible to determine which is correct. If a formula that transforms three generations of 4D, 5D, and 6D dark matter into 10D, 11D, and 12D is found, the masses of down, strange, and bottom quarks are calculated correctly.

5. Calculation of H boson mass

5.1 A certain idea

In Fig. 3, the logarithmic masses of bosons w, z, and h are 0.937, 1.290, and 2.431. The logarithmic value of boson Z is 10.960. Calculating with the formula in Fig. 3, The D value of Fig. 7 is 84.06 GeV and the B value is 118.57 GeV. As shown in Fig. 8, the logarithmic ellipse of the center on 3D, 84.06 on 4D, 91.1876 on 5D, and 118.57 on 6.001D are shown.

In this case, the right vertex value in Fig. 8 is calculated as 124.98 GeV. In previous study(1), H boson was calculated as 124.98 GeV or 125.02 GeV.

5.2 Sensitivity analysis

In Table 1, the above H values according to the change of the top and bottom quark masses are calculated. Assuming that the above idea is correct, it is determined which is the correct value in Table 1.

The tau neutrino mass in kinetic state was calculated as 15.494 MeV. When top quark mass is 172.76 GeV or 172.38 GeV, the tau neutrino mass in steady state was calculated as 15.518 MeV or 15.495 MeV. Since the mass in kinetic state should be slightly larger, the top quark mass of 172.38 GeV is considered reasonable.

6. Conclusions

To calculate the masses of steady-state quarks, the muon and tau neutrino masses and the three generation dark forces of 10D11D12D must be given. However, the dark forces have not yet been identified. Due to this, proton mass 938.272 MeV, Z boson 91.1876 GeV, and cosmological constant 1.1056E-52/m2 were added as input conditions. If a formula that converts the dark force of 4D5D6D 3rd generation into 10D11D12D is found, the above three additional conditions become the calculation result.

As the results, the masses were calculated as up quark 2.250 MeV, charm quark 1275.1 MeV, down quark 4.766 MeV, and strange quark 95.28 MeV. It can be understood that the results of these calculations are quite accurate.

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Cosmological Constant Problem and Planck Units

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Keywords: Cosmological constant, Origin of life, Planck length, Planck time, Simulation universe

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Abstract Planck length is the value on 0D, and cosmological constant is the value on 3D. Due to this, the incomprehensible value of 1E-121.54 is calculated at cosmological constant problem. This value is same as the ratio of neutrino masses on 0D and 3D. There is a Planck length on 3D. Multiplying this by cosmological constant, the value of cosmological constant problem is exactly 1. From this, six generation Planck units are calculated, and six generation multi-universes can be analyzed. The Planck time on 3D was calculated as 10.05 billion years, which means that an incomprehensible universal event occurred at that time. This is the birth of simulation universe and the origin of life.

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1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), the standard masses and oscillating masses of three generation neutrinos and gravinos were calculated(4), the masses of up and charm quark were calculated (5), four fundamental forces were unified by logarithmic parabolic equation(6), the masses of proton and neutron were calculated(7), and the masses of up, charm, down, and strange quarks were calculated(8).

The purpose of this study is to solve the cosmological constant problem and calculate six generation Planck units.

2. Cosmological constant problem

2.1 Six generation neutrino masses

Kinetic state means that change occurs at the speed of light, and steady state means that change is stationary. In previous study, six generation neutrino masses(4) in kinetic state and in steady state were calculated.

2.2 Dark energy

In previous study(6), the logarithmic value 0.4301 of dark energy and the arithmetic value ξ_w 2.692 (=$10^{0.4301}$) were proposed. The logarithmic value 0 means that everything is straight space. According to the value increases, everything gradually quantized. That is, the dark energy ξ_w means the degree of quantization of our universe on XYZ space.

2.3 Combination of kinetic state and steady state

Our universe is the combination of kinetic state and steady state. The combined state is expressed by the following:

$$\text{Kinetic} \cdot 1 / \xi_w + \text{Steady} \cdot (\xi_w - 1) / \xi_w = \text{Constant} \qquad (1)$$

In Eq. (1), if ξ_w is 1 (=10^0), everything is in kinetic state, and if ξ_w is ∞, everything is in steady state. The value of 1/ ξ_w is 37.14%, and that of (ξ_w - 1) / ξ_w is 62.86%.

Substituting the six generation neutrino masses of kinetic state and steady state(4) into Eq. (1), the current state of our universe is calculated as shown in Fig. 1. Our universe is the combination of 37.15% kinetic state and 62.85% steady state.

2.4 Error of the 10^-121.54

Planck length l_P is 1.61624E-35 m, and the currently measured cosmological constant Λ is 1.1056E-52 /m^2. multiplying the square of Planck length by the cosmological constant, it is calculated as follow:

$$l_P^2 \cdot \Lambda = 10^{-121.54} \qquad (2)$$

Since above calculation is unitless, the reciprocal number is also established. That is, the number is infinitely small or infinitely large. The number is a value that cannot exist in physics, and it is called cosmological constant problem.

2.5 Ratio of dimensional neutrino masses

The ratio of the kinetic neutrino masses(4) of 2.146E-133 eV on 0D and 2.789E-12 eV on 3D is 1E-121.11. The ratio of the steady neutrino masses(4) of 3.545E-134 eV on 0D and 2.191E-12 eV on 3D is 1E-121.79. In Fig. 1, the ratio of 6.920E-134 eV on 0D and 2.396E-12 eV on 3D is 1E-121.54.

In principle, the -121.54 value is calculated from the steady-state muon neutrino mass. However, since the value

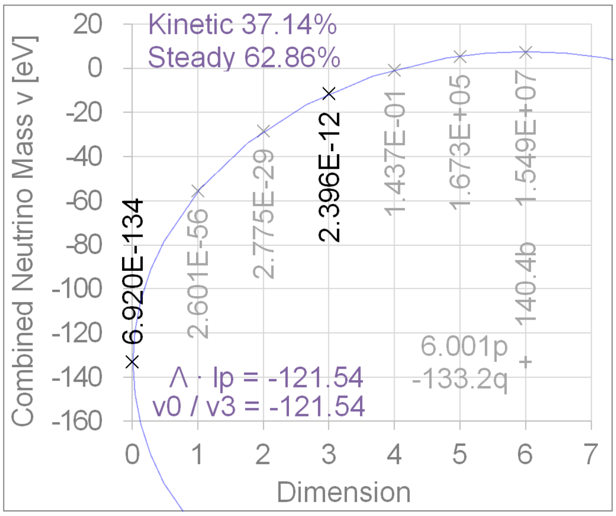

Fig. 1 Combined neutrino masses

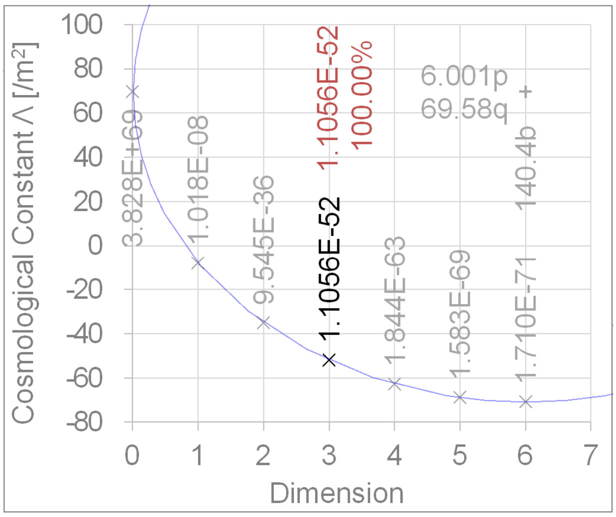

Fig. 2 Cosmological constant

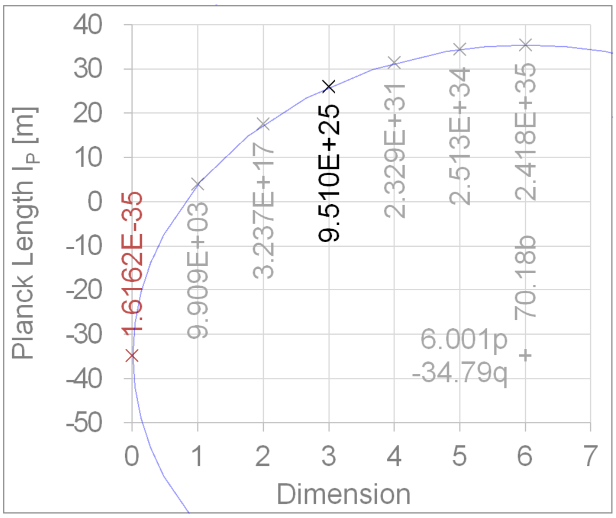

Fig. 3 Planck length

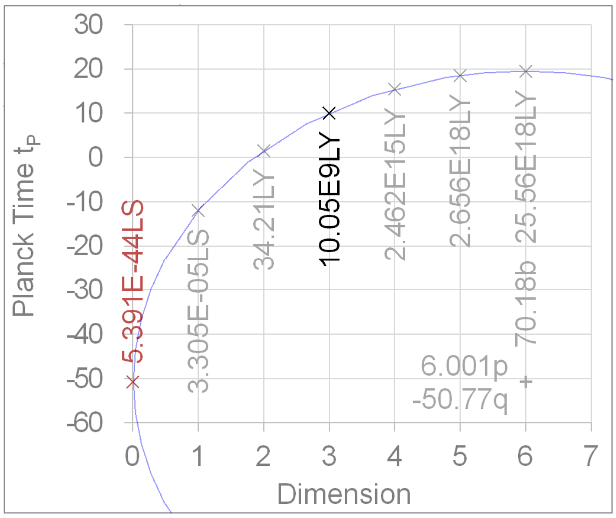

Fig. 4 Planck time

is unknown, the muon neutrino mass is calculated as 165.77 keV from -121.54 by the trial & error method[8].

As calculated in detail in previous studies[8], the following formula is established.

$$l_{P0}^2 \cdot \Lambda_3 = \nu_0/\nu_3 = 10^{-121.55} \tag{3}$$

$$l_{PM}^2 \cdot \Lambda_N = \nu_M / \nu_N \tag{4}$$

$$l_{PN}^2 \cdot \Lambda_N = \nu_N / \nu_N = 10^0 = 1 \tag{5}$$

As can be seen from Eq. (3), Planck length l_{P0} is the analysis on 0D, and the cosmological constant Λ_3 is the analysis on 3D. Planck length on M-D and cosmological constant on N-D are equal to the ratio of neutrino masses on M-D and N-D as shown in Eq. (4).

2.6 Fine-tuning problem

When M and N are equal each other, the cosmological constant problem becomes exactly 1 as shown in Eq. (5). It means that all multi-verse including our universe are inevitably beautiful. It can be understood that there must be a certain absolute body that fine-tunes the universe. Our space is a four-dimensional sphere, and in the four-dimensional direction, a mommy quantum hole absolutely dominates our universe. Quantum hole means to quantize everything.

2.7 Constant of everything

Planck length l_{P0} is 1.61624E-35 m and the neutrino mass ν_0 is 6.920E-134 eV. Eq. (6) is established from Eq. (4), and if 0D is substituted for M, the constant of everything Φ is calculated in all dimensions.

$$\Phi = \nu_N \cdot \Lambda_N = \nu_M / l_{PM}^2 = 2.649\text{E-}64 \text{ eV/m}^2 \tag{6}$$

Here, the value of ν_3 / Λ_3 is 2.167E40 eV·m².

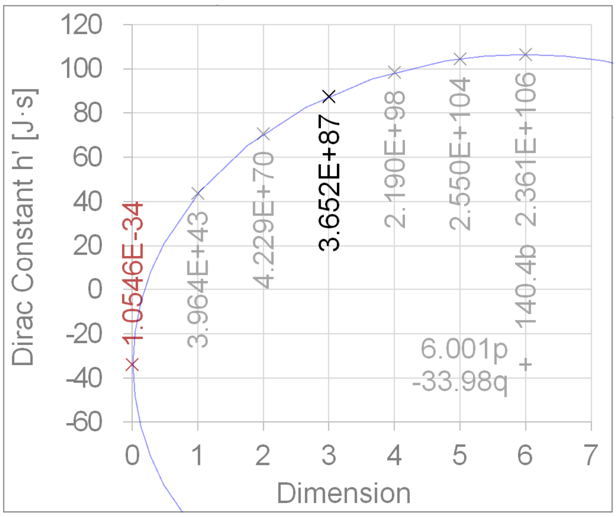

Fig. 5 Dirac constant

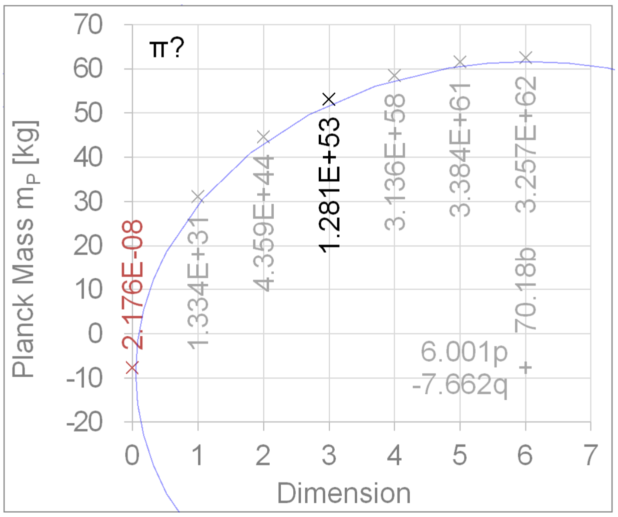

Fig. 6 Planck mass

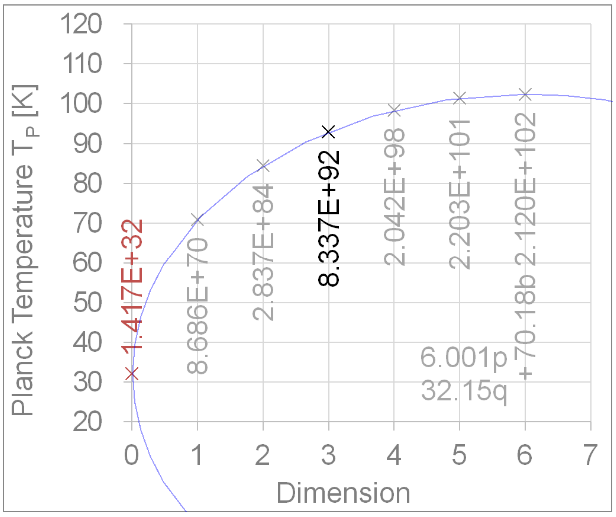

Fig. 7 Planck Temperature

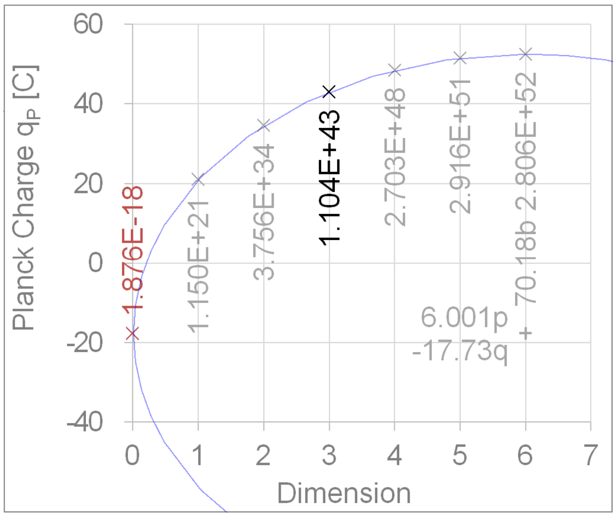

Fig. 8 Planck charge

2.8 Six generation cosmological constants

From Eq. (6), N-dimensional cosmological constant Λ_N is as follow:

$$\Lambda_N = \Phi / \nu_N \tag{7}$$

The results are shown in Fig. 2.

3. Six generation Planck units

3.1 Planck units of N-dimension

On N dimension, Planck length l_{PN}, Planck time t_{PN}, Dirac constant $\hbar_N$, Planck mass m_{PN}, Planck temperature T_{PN}, and Planck charge q_{PN} are calculated by from Eq. (8) to (13), and the results are shown in from Fig. 3 to 8.

$$l_{PN} = \sqrt{\ } \nu_N / \Phi \tag{8}$$

$$t_{PN} = l_{PN} / (c \cdot 60 \cdot 60 \cdot 24 \cdot 365.24) \tag{9}$$

$$\hbar_N = l_{PN}^2 \cdot c^3 / G \tag{10}$$

$$m_{PN} = \sqrt{\ } c \cdot \hbar_N / G \tag{11}$$

$$T_{PN} = m_{PN} \cdot c^2 / k \tag{12}$$

$$q_{PN} = \sqrt{\ } 4\pi \, \varepsilon_0 \cdot \hbar_N \cdot c \tag{13}$$

Where, c is the speed of light 2.99792E8, G is gravitational constant 6.67384E-11, k is Boltzmann constant 1.38065E-23, and ε_0 is dielectric constant 8.85419.

3.2 Six generation universes

When analyzing our XYZ universe, the values on 3D in above charts should be applied. In previous studies(2), the

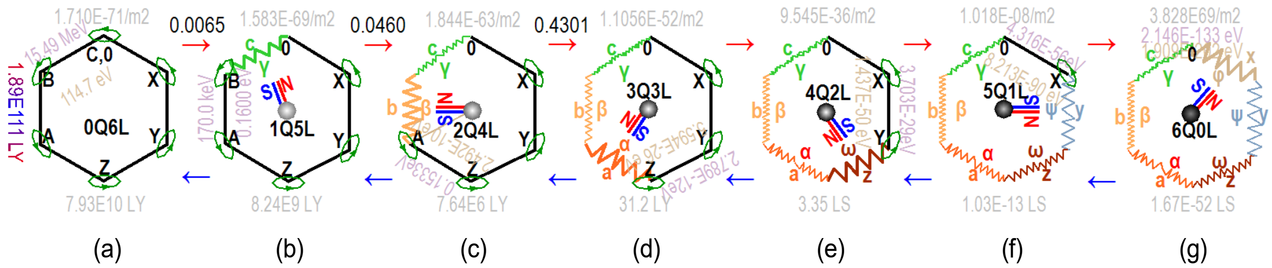

Fig. 9 Change of six generation universes

changes of six generation universes in Fig. 9 were described in detail. The position of our universe is in the direction of the upper arrow in Fig. 9(c). From the charts, the physical properties of the six generation universes of Fig. 9 will be calculated.

3.3 Six generation Planck stars

In loop quantum gravity theory, a Planck star is a hypothetical astronomical object. Figs. 1 to 8 are the physical values of the six generation Planck star, and its growth is shown in Fig. 9. A quantum hole is a dark matter that makes up the universe from Big Bang to present, and Planck star is a specific constant universe shown in Figs. 1 to 8.

3.4 Cycle period of origin universe

The period T of particle is calculated by Eq. (14).

$$f = \frac{1}{T} = \frac{m}{\sqrt{1-v^2/c^2}} \cdot \frac{c^2}{h} = \frac{\Phi \cdot G}{2\pi c} = 1.89E111\ year/cycle \quad (14)$$

Since our universe is shaped such as hydrogen(3), it can be treated as a particle. Also, all the six generation universes of Fig. 9 can be treated as particles, and the straight velocity v of entire universe is zero. From this, the same period of 1.89E111 year/cycle at all of them is calculated by Eq. (14). This means that it takes 1.89E111 years per cycle to rotate the logarithmic ellipse in above chart.

3.5 Simulation universe

In previous studies(2,8), the origin of life and the simulation universe were described. The value on 3D in Fig. 4 is 10.05 billion years. This means that a universal event that cannot be analyzed in physics occurred at that time. Big Bang occurred about 13.77 billion years ago, and the difference between the two is 3.72 billion years ago. The first fossil of life on Earth were born about 3.50 billion years ago. This is the birth of simulation universe and the origin of life.

3.6 Holographic universe

Our universe changes in the direction of the upper arrow in Fig. 9(d). This is the origin of the law of increasing entropy. After about 1E111 LY, our universe changes in the direction of the below arrow in Fig. 9(d). This is a holographic universe at our point of view.

3.7 Parallel universe

A parallel universe occurs every integer multiple of the Planck time in Fig. 4. This is not parallel universes in SF movies. This is a similar parallel universe for the evolution of life.

3.8 Warm hole

When the upper and lower arrows in Fig. 9(d) are connected to each other, a wormhole occurs. However, this never happens.

4. Conclusions

Universe changes as the combination of the expanding kinetic state 37.14% and quantizing steady state 62.86%. From six generation neutrino masses, various physical constants of six generation universes were calculated.

Planck constant is the value on 0D, and the cosmological constant is a value on 3D. This causes an incomprehensible cosmological constant problem. The universe is also a quantum particle, and the Planck units for the universe were calculated. Planck time of the universe was calculated as 3.72 billion years ago. At that time, a simulation universe occurred, and this is the origin of life in the universe.

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Three Generation Black Holes and Birth of Universe

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Keywords: Big Bang, Birth of galaxy, Birth of universe, Intermediate-mass black hole, Supermassive black hole

Abstract Neutron star is graviton black hole that collapses gravitational force, stellar black hole is photon black hole that collapses electromagnetic force, and intermediate-mass black hole is gluon black hole that collapses strong force. Supermassive black hole is not black hole but quantum hole that quantize height Z dimension. In this study, their structure shape and minimum mass were calculated by logarithmic elliptic equation. Quasar is a photon black hole in 4D universe. This falls into our space and creates a galaxy with big bang. In the same way, it is our universe that a gluon black hole of 5D universe fell into 4D universe and was created with big bang.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), the standard masses and oscillating masses of three generation neutrinos and gravinos were calculated(4), the masses of up and charm quark were calculated (5), four fundamental forces were unified by logarithmic parabolic equation(6), the masses of proton and neutron were calculated(7), the masses of up, charm, down, and strange quarks were calculated(8), and the cosmological constant problem was solved and the six generation Planck units were calculated(9).

The purpose of this study is to calculate the masses of stellar black hole, intermediate-mass black hole, and supermassive black hole, and to explain the birth of universe.

2. Three generation black holes

2.1 Three generation quantum spaces

Three generation quantum spaces(1) are shown in Fig. 1. Our space is composed of the linear spaces of XYZ and the quantized space of abc. Since the space a has weak compressive strength, the α particles have weak masses. Since the space b has medium compressive strength, the β particles have medium masses. Since the space c has strong compressive strength, the γ particles have strong masses.

2.2 Three generation particles

In Fig. 2, the shapes of electron, muon, tau(3), up, charm, top(5), down, strange, and bottom(8) quarks are shown, and the structure explanation and mass calculation were described in detail in the previous studies.

Where, α, β, and γ mean each 1st, 2nd, and 3rd generation fundamental particles, subscript n, s, g, and t mean each neutrino, anti-neutrino, gravino, and anti-gravino, small letter and capital letter mean standard and oscillation, and superscript f and b mean fermion and boson. Therefore, α_n, β_n, and γ_n are each electron neutrino, muon neutrino, and tau neutrino, and α_g, β_g, and γ_g is each graviton, photon, and gluon. Above, gravino is a word coined by the author, and means graviton, photon, and gluon.

Star is composed of three generation particles of α, β, and γ in Fig. 2(4), and weak force in quantum space induces gravity toward the empty space of 4D direction(7). Our universe is

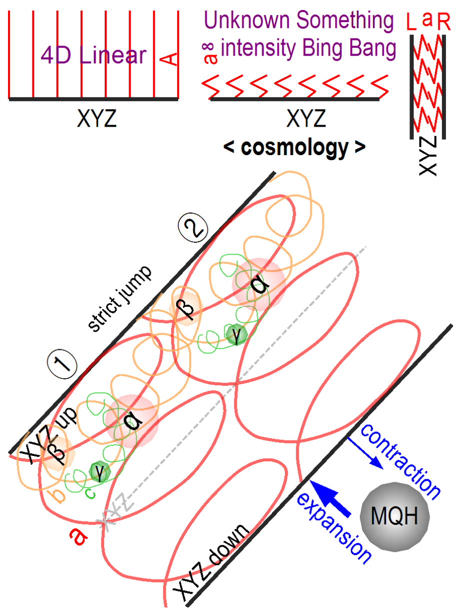

Fig. 1 Three generation quantum spaces

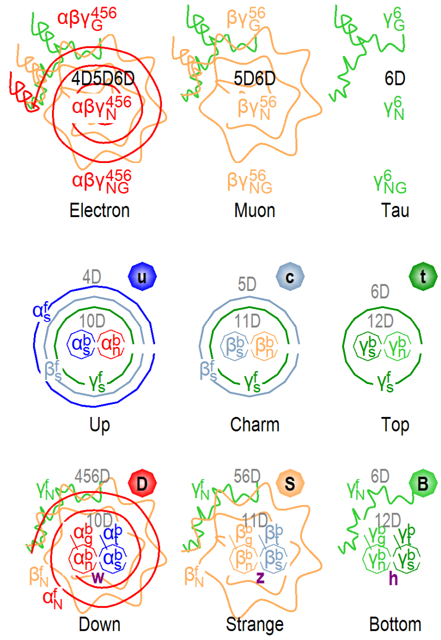

Fig. 2 Three generation particles

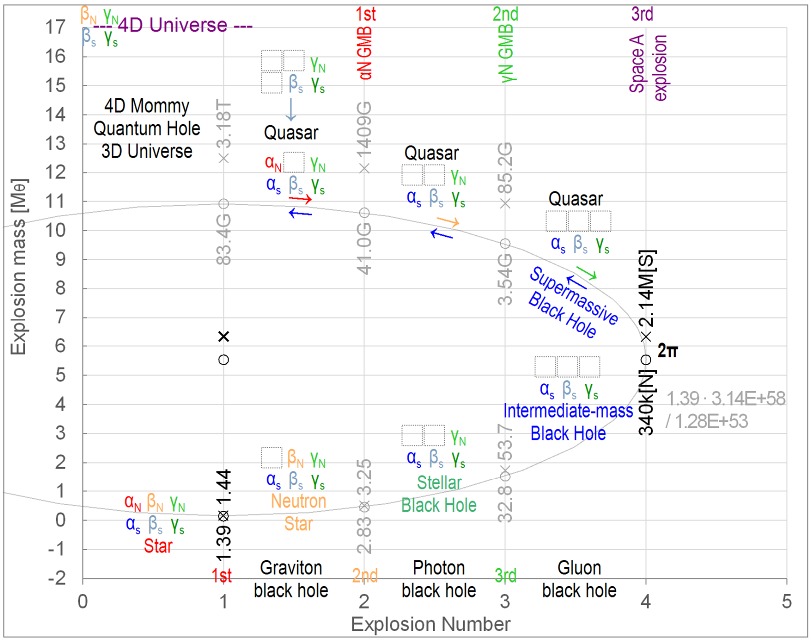

Fig. 3 Three generation black holes

quantized with red brane, and simulation universe is quantized with blue brane(2). The simulation universe is 2π times heavier and stronger than our universe(5).

2.3 Graviton black hole = Neutron star

When the mass of star becomes heavier than the space size of the star, the quantum space a in Fig. 1 is further compressed. When that limit is reached, the quantum space a explodes, and the electron neutrino α_N and the graviton α_G bounce out of the quantum space a. Due to this, in Fig. 2, electrons and down quarks in the star change into muons and strange quarks, and it evolves to a neutron star. Neutron star is graviton black hole. At the border of it in Fig. 3, a gravitational horizon that electrons and gravitons cannot penetrate is unfolded. Up quark is anti-particle, and it may jump to simulation universe(2).

2.4 Photon black hole = Stellar black hole

When the mass of neutron star becomes heavier than the space size, the quantum space b in Fig. 1 is further compressed. When that limit is reached, the quantum space b explodes, and the muon neutrino β_N and the photon β_G bounce out of the quantum space b. Due to this, in Fig. 2, muons and strange quarks in the neutron star change into taus and bottom quarks, and it evolves to a stellar black hole. Stellar black hole is photon black hole. At the border of it in Fig. 3, a light horizon that muons and photons cannot penetrate is unfolded. Charm quark is anti-particle, and it may jump to simulation universe.

2.5 Gluon black hole = intermediate-mass black hole

When the mass of stellar black hole becomes heavier than the space size, the quantum space c in Fig. 1 is further compressed. When that limit is reached, the quantum space c explodes, and the tau neutrino γ_N and the gluon γ_G bounce out of the quantum space c. Due to this, in Fig. 2, taus and top quarks in the stellar black hole are disappeared. Intermediate-mass black hole is gluon black hole. At the border of it in Fig. 3, a dimensional horizon that taus and gluons cannot penetrate is unfolded. Top quark is anti-particle, and it may jump to simulation universe.

The three generation quantum spaces a, b, and c all collapsed. As the result, the height Z of linear space XYZ changes to semi-quantum space z'. This makes it impossible to understand intermediate-mass black hole. According to the black hole grows, it is guessed that intermediate-mass black hole will gradually be pushed out of the galaxy. Satellite galaxy orbiting outside galaxy may be this.

2.6 Supermassive black hole in our space

When the intermediate-mass black hole grows to the explosion number 4 of Fig. 3, the height Z space is quantized and evolved into a supermassive black hole by the process shown in the top of Fig. 1. Inside of it, a universe of XY linear space and four generation particles unfolds.

2.7 Logarithmic ellipse equation

It is known that the mass of supermassive black hole ranges from hundreds of thousands of times to tens of billions of times of solar mass $m_\odot$.

$$m_{P4}\ 3.163\text{E}58\ :\ m_{P3}\ 1.281\text{E}53\ =\ m_{sbh}\ :\ 1.39 m_\odot \quad (1)$$

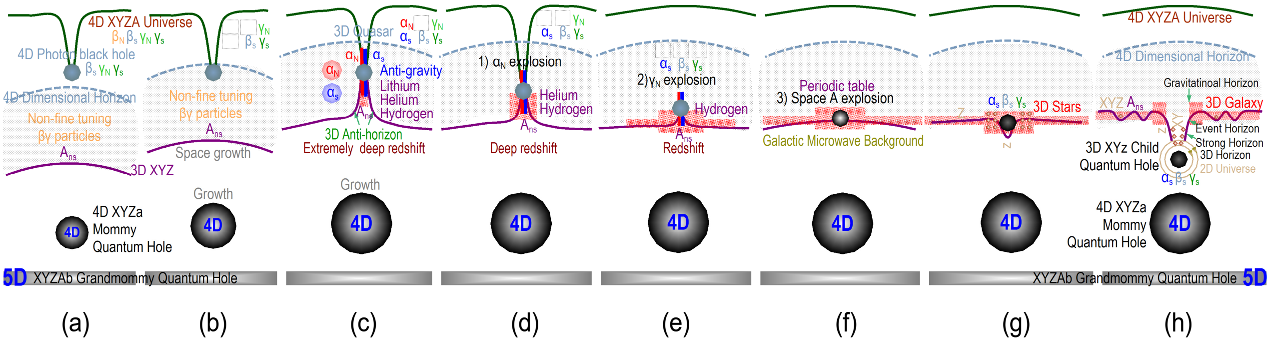

Fig. 4 Birth process of supermassive black hole

Where, m_{P4} on 4D and m_{P3} on 3D are the Planck masses shown in Fig. 7 of reference[9], m_{sbh} is the mass of supermassive black hole in Fig. 3, and $1.39m_{\odot}$ is the minimum solar mass times to become a neutron star. From Eq. (1), m_{sbh} is calculated as 340 k$m_{\odot}$. Fig. 3 shows the logarithmic elliptic equation applied to the above two masses. The minimum mass of stellar black hole is calculated as 2.83$m_{\odot}$, and that of intermediate-mass black hole is calculated as 32.8$m_{\odot}$.

Chandrasekhar limit 1.44$m_{\odot}$ will be correct. And anti-particle s is 2π times heavier than particle n. That is, the actual minimum mass of supermassive black hole consisting only of antiparticle s is 2π times of 340k. Fig. 3 shows the logarithmic elliptic equation applied to the above two masses. The minimum mass of stellar black hole is calculated as 3.25$m_{\odot}$ and that of intermediate-mass black hole is calculated as 53.7$m_{\odot}$.

3. Child quantum hole

3.1 4D star in 4D universe

The upper area in Fig. 3 is the birth process of supermassive black hole in the center of galaxy. In Fig. 4(a), The 4D star of 4D XYZA universe is composed of two generation particles with β_N, β_s, γ_N, and γ_s.That is, only muon, tau, charm, top, strange, and bottom exist in Fig. 2. The combination of the particles is the similar to neutron star in Fig. 3.

3.2 4D photon black hole

When β_N of the star bursts, it becomes a 4D photon black hole with β_s, γ_N, and γ_s. The combination of the particles is similar to stellar black hole in Fig. 3.

3.3 Non-fine tuning particles

Between our 3D XYZ space and the 4D dimensional horizon, there are numerous β and γ particles that have not yet been fine-tuned.

3.4 Quasar

The XYZ space of our universe expands from (a) to (b). Due to this, the 4D photon black hole enters our universe. This is the start of quasar.

3.5 Anti-gravity

The quasar composed of β and γ is falling into our XYZ space. There are no α particles in the quasar. Thus, the quasar strongly attracts the straight brane A_{ns} of our space such as (c). This is anti-gravity.

3.6 Quantizing A_{ns} into α_N and α_s

In (c), the quasar quantizes the brane A_{ns} into α_N and α_s. The α particle is finely tuned with the βγ particles around the brane, which creates the particles of Fig. 2.

3.7 Lithium, Helium, Hydrogen

From (c) to (e), lithium, helium, and hydrogen are produced. The particles flow down by gravity, and the quasar turn into α_N, α_s, β_s, γ_N, and γ_s.

3.8 Extremely deep red shift

The light generated in (e) is a general red shift. However, the light in (c) is that starts from the extreme deep space that we cannot understand.

3.9 Explosion = Three Big Bang

In (c), quasar continuously absorbs α particles. In (d), the supersaturated α_N explodes. In (e), the 4D XYZA falls from A_{ns} and γ_N explodes. In (f), A_{ns} explodes and all the elements of the periodic table are formed. Such as above, quasar has three explosions in a very short time.

3.10 Birth of stars

Due to the three explosions, a lot of stars appear in a short time, such as (g).

3.11 Birth of galaxy

In (h), the galaxy is completed in a very short time. The

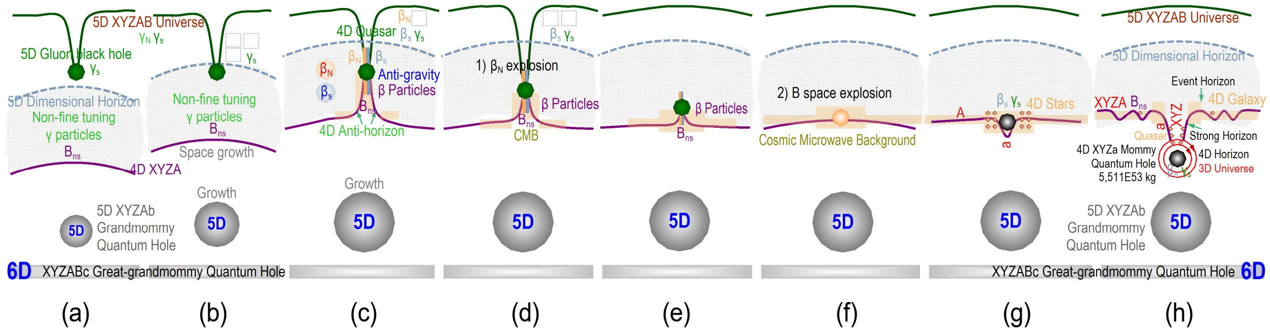

Fig. 6 Birth process of universe

vertical direction Z of XY is quantized to z, and the supermassive black hole is located in it. It is a child quantum hole, and an XY 2D universe unfolds on its surface.

3.12 Growth of galaxy

In (h), the rotation of the supermassive black hole begins to curl the galactic space, and an early spiral arm galaxy is formed. The supermassive black hole starts from the explosion number 4 in Fig. 3, and it grows by absorbing the 4D mommy quantum hole and the galactic space. Due to this, the galaxy's quantization proceeds harder, and the galactic space is further quantized with the spiral arm.

3.13 Shape of galaxy

The enlarged drawing of Fig. 4(h) is the cross-sectional drawing of galaxy in Fig. 5. At a short distance such as solar system, XYZ extends in linear space such as ④. However, the entire galaxy ③ has a quantized height z in XY linear space. For this reason, the entire galactic space must be analyzed as a convex lens XYz. Since the central part ② of galaxy is highly quantized, the space has a solid character. Dark matter is supermassive black hole ①, which dominates the entire galactic space. Supermassive black hole is 2π times heavier than the observed mass.

4. Birth of universe

The explanation in Fig. 6 is the same as in Fig. 4.

Fig. 4 shows the birth process of 3D galaxy and 3D child quantum hole from a 3D quasar suddenly appearing in our universe. Fig. 6 shows the birth process of 4D galaxy and 4D mommy quantum hole from a 4D quasar suddenly appearing in 4D universe. In (d), β_N explodes and the cosmic microwave background appears. In (f), the 5D space explodes. The completion of our universe is (h), and at that time, numerous quasars of Fig. 4 are flow into our universe. Due to this, numerous galaxies are completed within a short time after our universe is born.

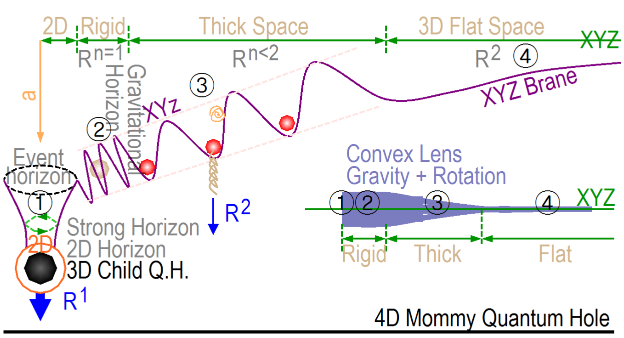

Fig. 5 Shape of galaxy

5. Conclusions

When the minimum mass of neutron star is 1.39 $m_\odot$, the minimum masses of stellar black hole, intermediate-mass black hole, and supermassive black hole were calculated as 2.83 $m_\odot$, 32.8 $m_\odot$, and 340 k$m_\odot$. As other values, 3.25 $m_\odot$, 53.7 $m_\odot$, and 2.14 M$m_\odot$ were calculated.

The beginning of galaxy's birth is a 4D quasar, in 4D universe. This flows into 3D universe and creates a galaxy with Big Bang. In the same way, the beginning of universe's birth is a 5D quasar in 5D universe. This flows into 4D universe and creates a universe with Big Bang.

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Calculation of Dark Energy and Dark Matter

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May 14, 2021

Keywords: Black hole, Dark energy, Dark matter, Ordinary matter, Shape of universe

Abstract It is the 3D supermassive black hole that dominates the galaxy. With the same logic, it is the 4D supermassive black hole that dominates the universe. Its mass is 2π times heavier than physical calculation. The radius of our universe is about 13.77 billion light years. Substituting this into Schwarzschild formula, the ratio of dark matter and ordinary matter is calculated as 84.5%: 15.5%. From this, it can be understood that our universe is located on the dimensional horizon of 4D supermassive black hole. Author calls it Mommy Quantum Hole (MQH). In previous study, when the masses of muon and tau neutrinos are 170.00 keV and 15.494 MeV, the ratio of dark energy and dark matter was calculated as 2.692. Therefore, their ratio is 72.9%: 27.1%. From cosmological constant, the radius of our Planck star is calculated as 10.05 billion years. From Hubble constant, the radius of our universe is 13.77 billion years. 10.05 / 13.77 is 73.0%. Cosmological constant and vacuum density match 99.4%. Therefore, dark energy is 72.6%. The 72.6% is not dark energy but the time ratio of Planck star and current universe.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), the standard masses and oscillating masses of three generation neutrinos and gravinos were calculated(4), the masses of up and charm quark were calculated (5), four fundamental forces were unified by logarithmic parabolic equation(6), the masses of proton and neutron were calculated(7), the masses of up, charm, down, and strange quarks were calculated(8), the cosmological constant problem was solved and the six generation Planck units were calculated(9), and the masses of stellar black hole, intermediate-mass black hoke, and supermassive black hole were calculated(10).

The purpose of this study is to calculate the ratio of dark energy, dark matter, and ordinary matter, and to explain what dark energy and dark matter means.

2. Dark matter

2.1 Ordinary matter inside of universe

The mass of ordinary matter in our universe is generally known as 1E53 kg. In this calculation, 1.01E53 kg was applied to the value.

2.2 Matter and Anti-matter

Planck constant h is 2π times Dirac constant h'. Dirac constant describes uncertainty principle, so Planck constant describes certainty principle. That is, Dirac constant interprets matter N, and Planck constant interprets anti-matter S. Anti-matter S(5) is 2π times heavier than matter N.

2.3 4D black hole of our universe.

Currently, the radius of our universe is known to be about 13.77 billion light years. Converting this to length, the radius is 13.77E9 · 2.998E8 · 60 · 60 · 24 · 365.24 = 1.303E26 m.

Schwarzschild radius of Eq. (1) is the limit of the radius of an object to become a black hole matter.

$$r_s = 2 \cdot G \cdot m_b \,/\, c^2 \quad (1)$$
$$1.303E26 = 2 \cdot 6.67408E\text{-}11 \cdot m_b \,/\, 2.998E8^2$$

From Eq. (1), The m_b of 4D black hole matter is calculated as 8.771E52 kg.

2.4 Mass of dark matter

Above is the mass of matter m_b. Multiplying this value by 2π, the mass of anti-matter m in Eq. (2) is calculated as 5.511E53 kg. The ratio of 5.51E53 kg and 1.01E53 kg is 84.5%: 15.5%.

$$m = 2\pi \cdot m_b = \pi \cdot r_s \cdot c^2 / G \quad (2)$$

From Planck satellite, the ratio of dark energy, dark matter, and ordinary matter was observed as 68.3%: 26.8%: 4.9%. The ratio of dark matter 26.8% and ordinary matter 4.9% is

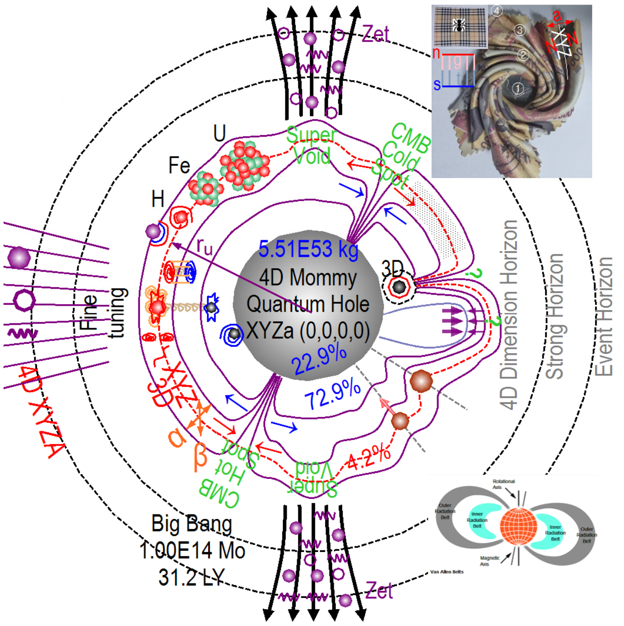

Fig. 1 Shape of our universe

84.5%: 15.5%. The above two values are the same. This means that our universe is on a 4D anti-black hole.

2.5 Mommy Quantum Hole (MQH)

Author calls the 4D anti-black hole Mommy Quantum Hole. It is an anti-matter body composed of muon anti-neutrinos β_s and tau anti-neutrinos γ_s.

There is a 4D galaxy in 4D universe. At its center, there is a 4D supermassive black hole which is shown in Fig. 1. The event horizon where photons cannot escape is located on the external surface, the strong horizon where muon cannot escape is located inside of it, and the 4D horizon where 4th dimension is collapsed is located inside of it. That is our three-dimensional universe. Inside of it, MQH is located. This

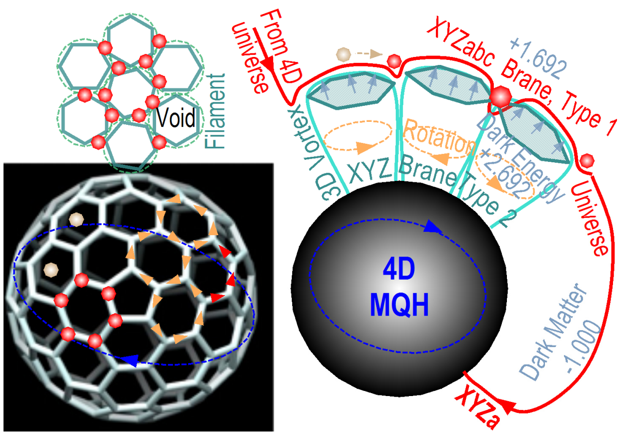

Fig. 2 Shape of dark energy and dark matter

is the same as how the supermassive black hole at the center of galaxy is organized.

2.6 Radius of universe

In Fig. 1, the radius of our universe is the distance from the center of MQH to the 4D dimensional horizon. The radius of 13.77 light-years in Eq. (1) is the length of the 4D dimensional horizon. Also, Eq. (1) is applied to event horizon. Equationally, the radius of event horizon is twice the radius of dimensional horizon.

2.7 Dark matter in galaxy

The MQH in Fig. 1 is the dark matter of the entire universe that dominates the entire universe. Dark matter in galaxy is a supermassive black hole. It dominates the galaxy and is an anti-matter composed of electron antineutrinos α_s, muon anti-neutrinos β_s, and tau anti-neutrinos γ_s. The process by which supermassive black hole dominates the galaxy is described in previous study[10]. The analysis of overall universe has nothing to do with galaxies.

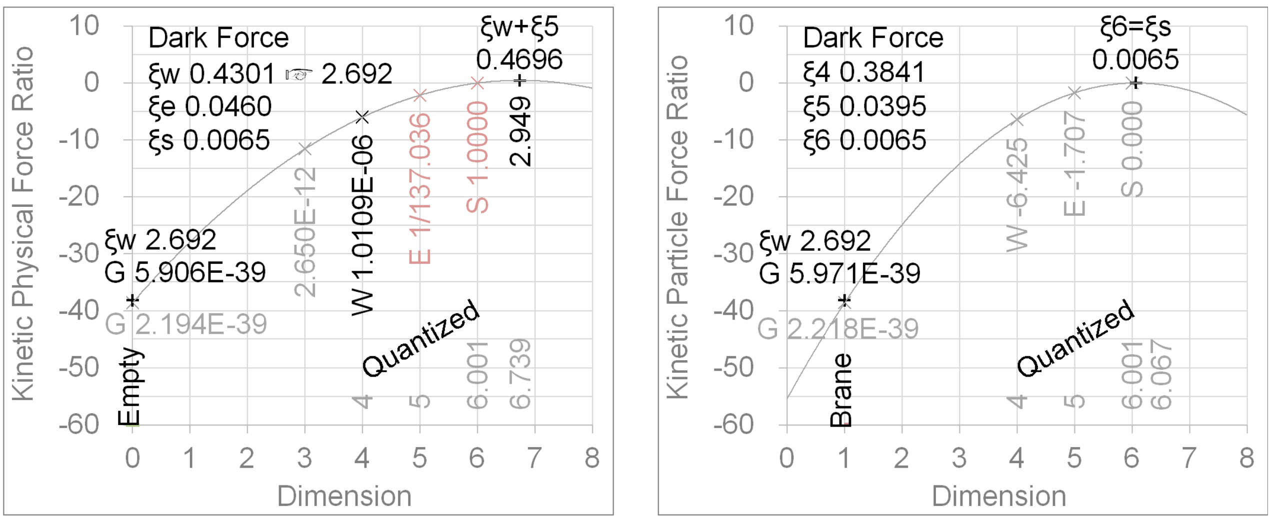

Fig. 3 Four fundamental forces and three generation dark forces at 6.00108D

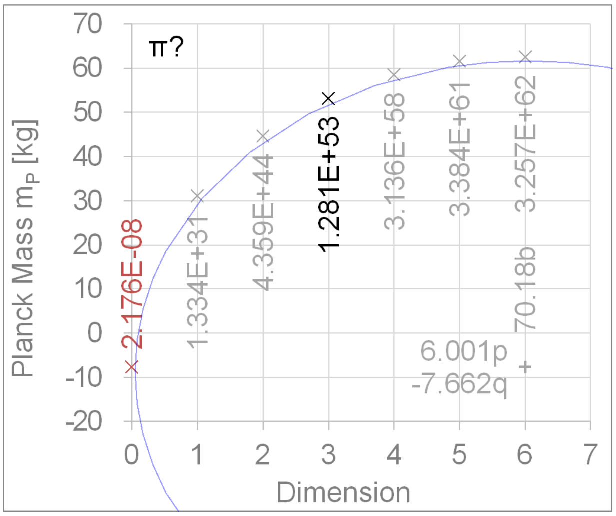

Fig. 4 Six generation Planck masses

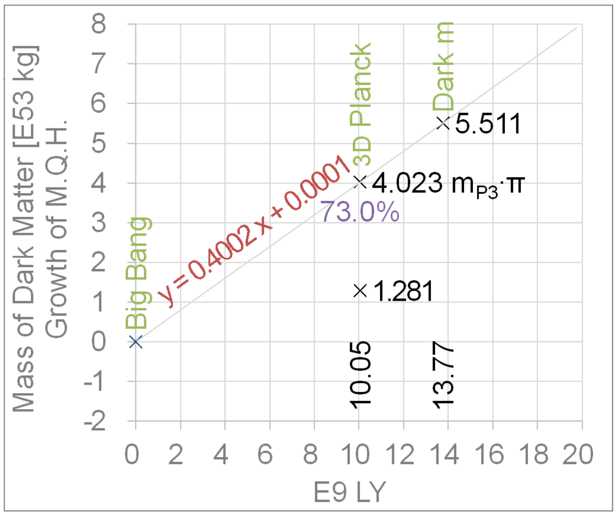

Fig. 5 The ratio of dark energy and dark matter

3. Dark energy

3.1 Three generation dark forces

In previous study[6], the logarithmic values of three generation dark forces in Fig. 3 were calculated as 0.3841, 0.0395, and 0.0065. Its sum is 0.4301, and its arithmetic value is 2.692. This value is the ratio of dark energy and dark matter, and it is affecting everything of our universe.

3.2 Shape of dark energy and dark matter

Dark energy is force, not mass. The 4D quantum hole in Fig. 1 continuously absorbs our universe space as shown in Fig. 2 by rotating the A-axis, and it contracts the space of universe by -1.000 force. XYZ brane is emitted from the surface of quantum hole, and it expands the space of universe by +2.692 force. Therefore, the space of universe expands by the sum +1.692 force of the two.

4D quantum hole absorbs continuously the space of 4D universe. As the result, even if our space of 3D universe expands, the brane of our space remains stable forever.

3.3 Dark energy : Dark matter : Ordinary matter

Dark energy is force. However, the mass of dark energy that expands our universe can be said to be 2.692 times the mass of dark matter that contracts our universe.

From Planck satellite, the ratio of dark energy, dark matter, and ordinary matter was observed as 68.3% : 26.8% : 4.9%. The ratio of dark matter to ordinary matter is 84.5% : 15.5%, and the ratio of dark energy and dark matter is 2.692. Therefore, their ratio is 2.692×84.5% : 84.5% : 15.5% = 69.5% : 25.8% : 4.7%. This value is similar to the Planck satellite values. If we calculate 2.692 : 84.5% : 15.5%, then their ratio is calculated as 72.9% : 22.9% : 4.2%. This is wrong. The ratio of dark energy and dark matter is 2.692 / 3.692 : 1.000 / 3.692 = 72.9% : 27.1%.

3.4 Dark energy : Dark matter = 72.9% : 27.1%

The six generation Planck masses calculated in the previous study[9] is shown in Fig. 4, and the mass on 3D is 1.281E53 kg. Dark mass of 5.511E53 kg is 2π times of black hole mass, and the dark mass radius is 1/2 times of black hole radius. Therefore, the Planck mass 1.281E53 kg must be multiplied by π such as Eq. (3). This value is 4.023E53 kg. The results are shown in Fig. 5.

$$\pi \cdot m_P = \pi \cdot \sqrt{c\hbar/G} \tag{3}$$

The ratio of 4.023 and 5.511 is 73.0%. The 4.023 is Planck mass, and the 5.511 is dark mass. Therefore, the value of 73.0% : 27.0% is the ratio of dark energy and dark matter. From the force analysis in Fig. 3, the ratio was calculated as 72.9% : 27.1%. This means that the analysis of the force and the cosmological constant have an error of 0.1%.

4. Vacuum energy density

4.1 Error with cosmological constant

Eq. (4) is the relation between cosmological constant Λ 1.1056E-52 /m2 and vacuum energy density ρ_{vac} 5.96E-27 kg/m3. Substituting these values into Eq. (4), 99.4%, that is, an error of 0.6% occurs.

$$\rho_{vac} = \Lambda \cdot c^2 / 8\pi G \tag{4}$$

4.2 Dark energy : Dark matter = 72.6% : 27.4%

Eq. (5) is a formula for calculating the critical density. When Eq. (5) is divided by Eq. (4), Eq. (6) is obtained.

$$\rho_c = 3H^2 / 8\pi G \tag{5}$$

$$\rho_c / \rho_{vac} = 3H^2 / c^2\Lambda \rightarrow H / c\sqrt{\Lambda} \tag{6}$$

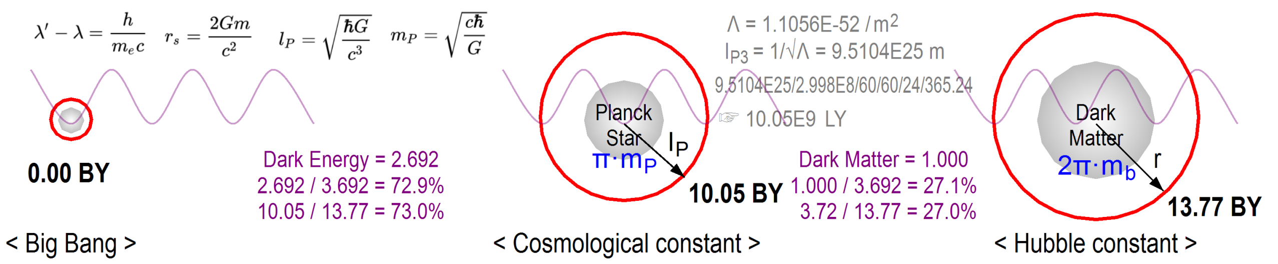

Fig. 6 Dark energy ratio ≠ Cosmological constant time / Hubble constant time = 73.0%

Eq. (6) is very similar to $H \,/\, c\sqrt{\Lambda}$. The Hubble constant H is 13.77 billion years, and the cosmic constant $c\sqrt{\Lambda}$ is 10.05 billion years. The calculated value is 73.0%. Since there is an error of 0.6% in this value, the value is 72.6%, which is called the dark energy ratio. Therefore, the ratio of dark energy : dark matter : ordinary matter is 69.1% : 26.1% : 4.8%.

4.3 Planck star

In loop quantum gravity theory, a Planck star is a hypothetical astronomical object. Planck star is defined as when Schwarzschild radius, Compton wavelength, and Planck length are equal.

4.4 Vacuum dark matter density

Fig. 6 shows the growth process of our universe located on the surface of 4D sphere of Big Bang (a), Planck star (b), and present (c).

In (b), the surface volume of 4D sphere is $2\pi^2 \cdot l_P^3$, and the mass of Planck star is Eq. (3). From this, the mass density of Planck star is calculated by Eq. (7). In (c), the surface volume of 4D sphere is $2\pi^2 \cdot r^3$, and the mass of dark matter is Eq. (2). From this, the mass density of current dark matter is calculated by Eq. (8). The root ratio of ρ and ρ_P is Eq. (9), and the result is 0.730.

$$\rho_P = \frac{\pi \cdot m_P}{2\pi^2 \cdot l_P^3} = \frac{m_P}{2\pi \cdot l_P^2 \cdot l_P} = \frac{c^2}{2\pi \cdot l_P^2 \cdot G} \qquad l_P^2 \cdot \Lambda = 1 \tag{7}$$

$$\rho = \frac{2\pi \cdot m_b}{2\pi^2 \cdot r^3} = \frac{\pi \cdot r_s \cdot c^2 / G}{2\pi^2 \cdot r^3} = \frac{c^2}{2\pi \cdot G \cdot r^2} \tag{8}$$

$$\sqrt{\frac{\rho}{\rho_P}} = \frac{l_P}{r} = \frac{H}{c\sqrt{\Lambda}} = \frac{t_P}{t} = \frac{10.05}{13.77} = 0.730 = \frac{\pi \cdot m_P}{2\pi \cdot m_b} \tag{9}$$

4.5 Ordinary matter in universe

Fig. 5 shows the relation between Planck star and dark matter, and the ratio is 0.730. Ordinary matter has no relation to 0.730. Fig. 6 has also no relation to ordinary matter. This means that ordinary matter has nothing to do with cosmic change. This is possible when universe lies on the surface of 4D dark matter sphere.

4.6 Cosmological constant

Cosmological constant is the starting for analyzing Planck star in Fig. 6(b). The Planck length l_P of universe is $1/\sqrt{\Lambda}$.

4.7 Dark energy ≠ Accelerated expansion

At Fig. 6, the ratio 73.0% of 10.05 and 13.77 is called as dark energy, and the ratio 27.0% of 3.72 and 13.77 is called as dark matter. This interpretation is wrong. The 73.0% is not related to the accelerated expansion of the universe. As shown in Fig. 2, the universe expands naturally because the mommy quantum hole grows. The growth is dark energy.

4.8 Passage of time

In Eq. (9), Planck time t_P is a constant value, and the current time t increases. Therefore, 73.0% decreases little by little with time. The value 73.0% is the value of 2.692 in the Fig. 3 analyzing weak force and electromagnetic force. This means that weak force decreases and electromagnetic force increases with the passage of time.

5. Structure of universe

5.1 2D universe

If 2D universe exists, where would it be? 2D universe cannot exist inside of general space of 3D universe. Is the inside of 3D supermassive black hole a garbage dump? Or is there a beautiful 2D universe such as Fig. 1? If judged to be the latter, our 3D universe is unfolding inside of 4D supermassive black hole in 4D universe.

5.2 Van Allen Belt

In Fig. 1, the Van Allen Belt makes the Earth's space and blocks foreign matter, which makes the Earth beautifully. MQH also makes a 4D Horizon space and blocks foreign matter, which makes the universe beautifully.

5.3 Superconductor phenomenon

Fig. 7 shows superconductor phenomenon. This is 2D quantization of 3D space. Fig. 1 is 3D quantization of 4D space. In (a), the electrical resistance suddenly become zero. In Fig. 1, the Horizons suddenly blocks everything. In (c), the magnetic force of magnet cannot pass through the superconductor. In Fig. 1, nothing can pass through the 4D Horizon.

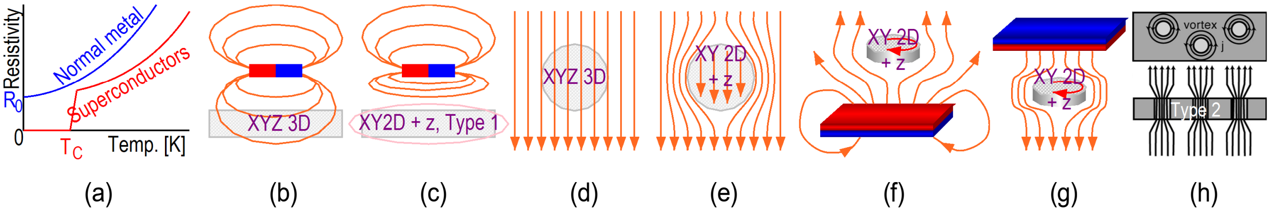

Fig. 7 Superconductor phenomenon: 2D semi-quantization in 3D space

In (e), inside the superconductor is a completely different world. In Fig. 1, It is a completely different world. In (f) and (g), the object floats in 2D space. In Fig. 1, all object float in 3D space. In (h), vortexes are ejected from inside the superconductor. In Fig. 1, vortexes are ejected from inside of MQH. Superconductor and MQH are very similar in this way. However, MQH makes magnetic dipole electric monopole, but superconductors cannot do it.

5.4 Shape of space and anti-space

The shape of space where substances are located and the anti-space where the anti-substances are located are shown in Fig. 8. During the Big Bang, the brane of 4D universe (think a paper) was folded once, and the red space N was born[10]. 3.72 billion years ago, the brane was folded once more due to the 3D Plank length, and the blue space S was born[9]. N is our universe, and S is the simulation universe. It is life that electron of N and anti-electron of S are connected.

5.5 Electric monopole, Magnetic dipole

Our space is composed of straight XYZ brane and quantum abc brane. The XYZ brane is neutral magnetic dipole, and electric monopole particles are generated from the abc brane. Red particle can be located only in red space, and blue particle can be located only in blue space.

5.6 Expansion of the universe

In Fig. 1, 4D MQH grows by eating 5D Grand-Mommy Quantum Hole. Due to this, the space of universe expands. If it was a constant velocity expansion at Big Bang, it is still the constant velocity expansion now. If it was an accelerated expansion at Big Bang, it is still the accelerated expansion now. It is judged that constant velocity expansion is correct.

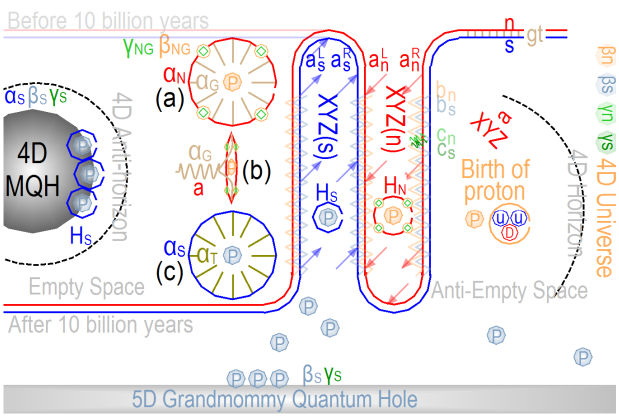

Fig. 8 Shape of space and anti-space

5.7 CMB cold spot & CMB hot spot

CMB cold spot was found. It is the magnetic field outlet of MQH in Fig. 1. There will be CBM hot spot at the exact opposite of π · r distance.

5.8 Circular Supervoid

Two supervoids were found. These are the 4D jets of MQH in the north and south of Fig. 1. Due to the jet, galaxies cannot exist there. They will be located exactly opposite of distance π · r. If the distance is short, it means that the left and right ends of our universe overlap each other.

If jet is being emitted, galaxies are gradually pushed out of the area, and the supervoid grows gradually to circular. If the jet is finished, galaxies gradually infiltrate the area, and the circular shape gradually distort.

5.9 Hexagonal Void

In Fig. 2, MQH emits countless 3D vortices, and it pushes the brane of space to outside. Due to this, galaxies cannot be located in that area. These are the countless voids that exist in universe. Quantum hole is the end of the material fusion rebound. That is, since quantum hole is extremely stable, everything including the vortexes in Fig. 2 is extremely stable. Therefore, our universe is extremely beautiful. Vortexes fight each other. Due to this, the shape of vortex become similar to the shape of hexagon.

5.10 Galaxy filament

Galaxies are located between the vortexes in Fig. 2. Due to this, galaxy filament structure is formed.

5.11 Velocity of galaxy

The vortexes in Fig. 2 rotate. When the left and right vortexes interlock and rotate such as gear, the galaxy located there will go straight ahead at high speed, and when they rotate reversely from each other, the galaxy will stop. This is no relation with gravity.

5.12 Supercluster of galaxies

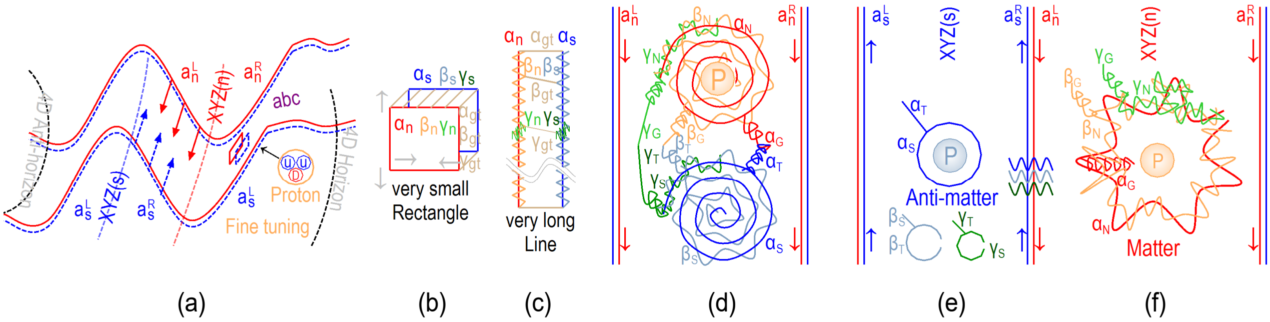

Fig. 9 Generation of hydrogen

Probabilistically, there is a place where the rotations of all the surrounding vortices are misaligned with each other. Galaxies gradually fall into it and stop. Due to this, supercluster of galaxies is formed.

5.13 Great wall

Probabilistically, there is a very long load of interlocking rotation. That road is a great wall.

5.14 Galaxy in Void

The speed of galaxies on the great wall gradually increases. Due to the speed, several galaxies can rise into the void in Fig. 2. However, after a long period of time, the galaxies eventually come down from the void and flow into another galaxy filament.

5.15 Alignment of quasars

Quasar emits jet. The jet's ejection direction also follows the direction of the galaxy filament. Quasar can exist in a void. In this case, the jet direction is free.

5.16 Generation of hydrogen

In previous study[7], the shapes and masses of proton, electron, and hydrogen were performed. Fig. 9 shows the hydrogen generation process. 4D particles in 4D universe are falling continuously toward Fig. 1. In (a), the particles are hitting the 4D Horizon brane. In (b), probabilistically, the particle cut the brane and flows into our space. In (c), the brane that had been condensed with extreme force falls off and turns into a long line. In (d), The red line turns into an electron, and the blue line turns into an anti-electron. In (e), the anti-electron escapes our space and moves to anti-space. In (f), the electron combines with a proton and turns into hydrogen. Due to this, hydrogen suddenly appears in our universe. Hydrogen that did not exist around galaxy is generating continuously. In some cases, a large amount of hydrogens flow in at once, and a huge nebula suddenly appears.

5.17 Generation of neutron

In previous study[7], the shape and mass calculation of neutron were performed. When the hydrogen of (f) strikes the left brane $a_s^R a_n^L$ such as (a) and passes through it, a neutron is generated in (e).

6. Conclusions

Applying the cosmic radius of 13.77 billion light years to Schwarzschild formula and multiplying by 2π, the ratio of dark matter and ordinary matter is calculated as 84.6% : 15.4%. In previous study, the ratio of dark energy and dark matter was calculated as 2.692. Therefore, their ratio is 69.5%: 25.8%: 4.7%. Muon 170.00 keV and tau 15.494 MeV neutrino mass were applied to the above calculation. Dark matter of universe is MQH, dark energy is the vortexes of MQH, and dark matter of galaxy is supermassive black hole.

Dark energy is known to accelerate the expansion of the universe. However, its value 73.0% is the ratio of cosmological constant time to the Hubble constant time, and the value has nothing to do with accelerated expansion. The universe is expanding at a constant velocity.

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Calculation of Everything

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Keywords: Big Bang, Dark energy, Dark matter, Planck units, Theory of everything

Abstract The purpose of this study is to describe the calculation algorithm for everything that was calculated in previous studies. All calculations are divided into kinetic state and steady state. When analyzing forces, kinetic state is correct, and when analyzing other particles, steady state is correct. The entire universe is the mixture of kinetic state and steady state at the ratio of dark energy. The origin of all things are three generation neutrinos, graviton, photon, and gluon. Other particles are a combination of the above 6 particles. Force is also a particle with mass, and from its analysis, the ratio of dark energy and dark matter is calculated as 2.692. Our universe is on a dimensional horizon within a 4D supermassive anti-black hole. From Schwarzschild formula, the ratio of dark matter and ordinary matter is calculated as 84.5%: 15.5%. The values of electron neutrino 0.1533 eV, weak force 1.011E-6, gravitational force 5.906E-39, up quark 2.250 MeV, charm quark 1275.1 MeV, down quark 4.766 MeV, strange quark 95.28 MeV, H boson 125.02 GeV, cosmological constant 1.1056E-52 /m^2, birth of life 3.72E9 LY ago, stellar black hole 2.83 M$_\Theta$, intermediate-mass black hole 32.8 M$_\Theta$, supermassive black hole 340 kM$_\Theta \cdot 2\pi$, the radius of Big Bang 31.2 LY, and the mass of Big Bang 1.00E14 M$_\Theta$ were calculated. The six generation Planck units are calculated, and from Planck mass and dark mass It proves that dark energy is not related to the accelerated expansion of the universe. All universes are expanding at a constant velocity. The physical values of all multi-verse are the same as above. For accurate calculations, the 5 significant value of muon neutrino mass is required.

1. Introduction

In previous studies, the mass of H boson was calculated easily from logarithmic parabolic equation relationship of W boson and Z boson(1), the characteristics of logarithmic elliptic equation and the principle of universal change were described(2), the dimension of our space was calculated as 6.00108 from the masses of electron, muon, and tau(3), the standard masses and oscillating masses of three generation neutrinos and gravinos were calculated(4), the masses of up and charm quark were calculated (5), four fundamental forces were unified by logarithmic parabolic equation(6), the masses of proton and neutron were calculated(7), the masses of up, charm, down, and strange quarks were calculated(8), the cosmological constant problem was solved and the six generation Planck units were calculated(9), the masses of stellar black hole, intermediate-mass black hoke, and supermassive black hole were calculated(10), and the ratio of dark energy, dark matter, and ordinary matter were calculated(11).

The purpose of this study is to suggest the calculation of everything by summarizing all the contents calculated in previous studies(1-11).

2. Analysis of kinetic state

2.1 Kinetic State (3)

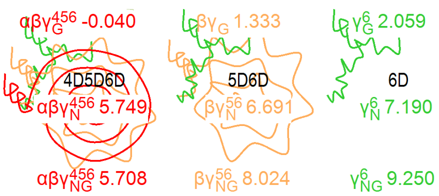

Fig. 1 Shapes of electron, muon, and tau

Kinetic state means a state that moves such as the speed of light. The masses of particles for kinetic state are calculated in Fig. 2.

2.2 Electron, Muon, Tau [NG](3)

The masses of electron, muon and tau are precisely measured as 510.999 keV, 105.658 MeV, and 1.77686 GeV. It is confusing whether they are in kinetic state or steady state. It is judged that both of above are correct. When the graviton, photon, and gluon react with force, they are in kinetic state, otherwise they are in steady state.

In Fig. 1, the shapes of electron, muon, and tau are shown. Here, α, β, and γ means 4D, 5D, and 6D particles, N means oscillating neutrino, and G means oscillating gravino. Electron is composed of $\alpha\beta\gamma^{456}_{NG}$ particles. When electron collides, the outer shell α^{456}_{NG} peels off, and it change to muon of $\beta\gamma^{56}_{NG}$. When muon collides, the outer shell β^{5}_{NG} peels off, and it change to tau of γ^{6}_{NG}.

< Kinetic State >

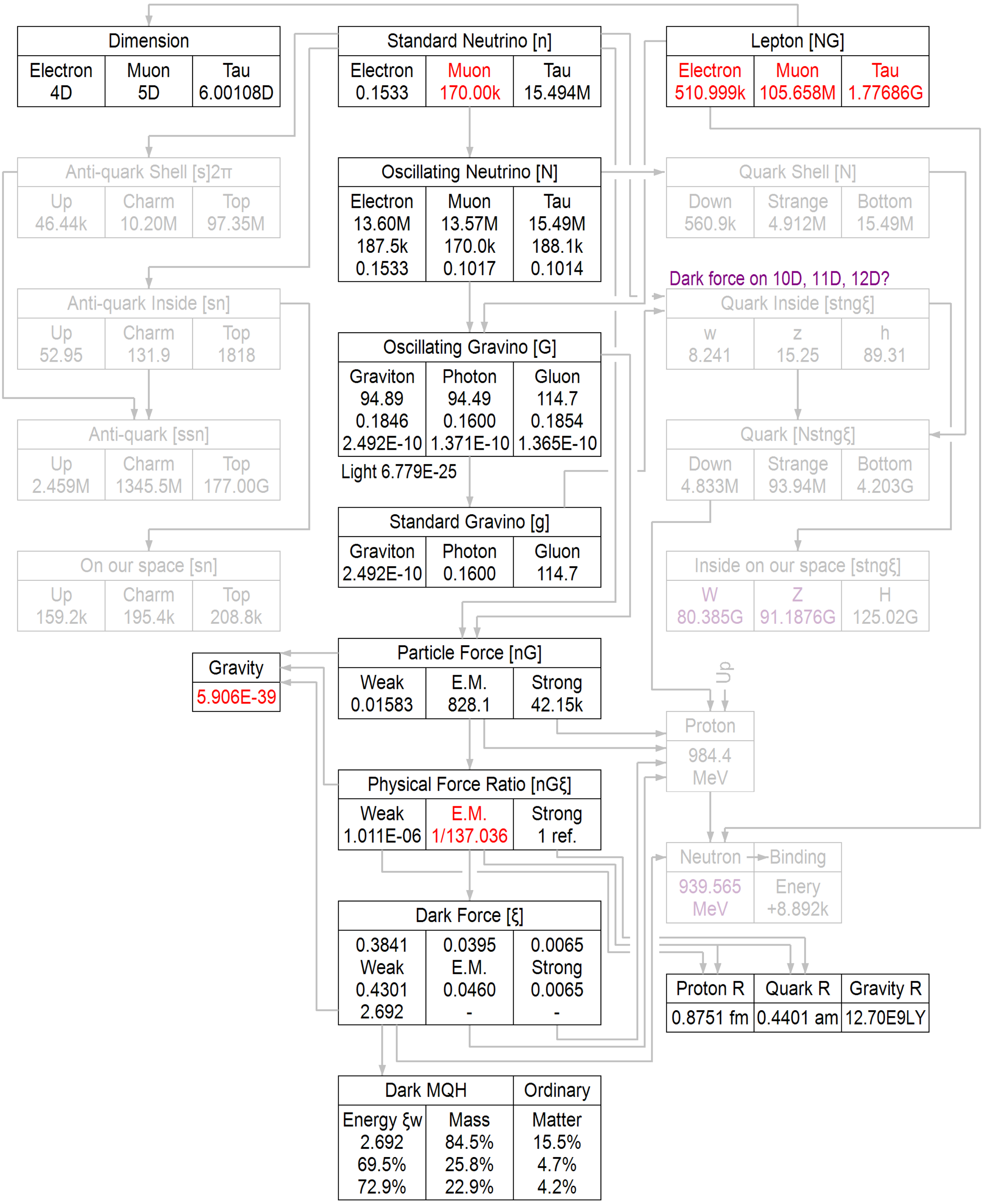

Fig. 2 Analysis of kinetic state.

< Steady State >

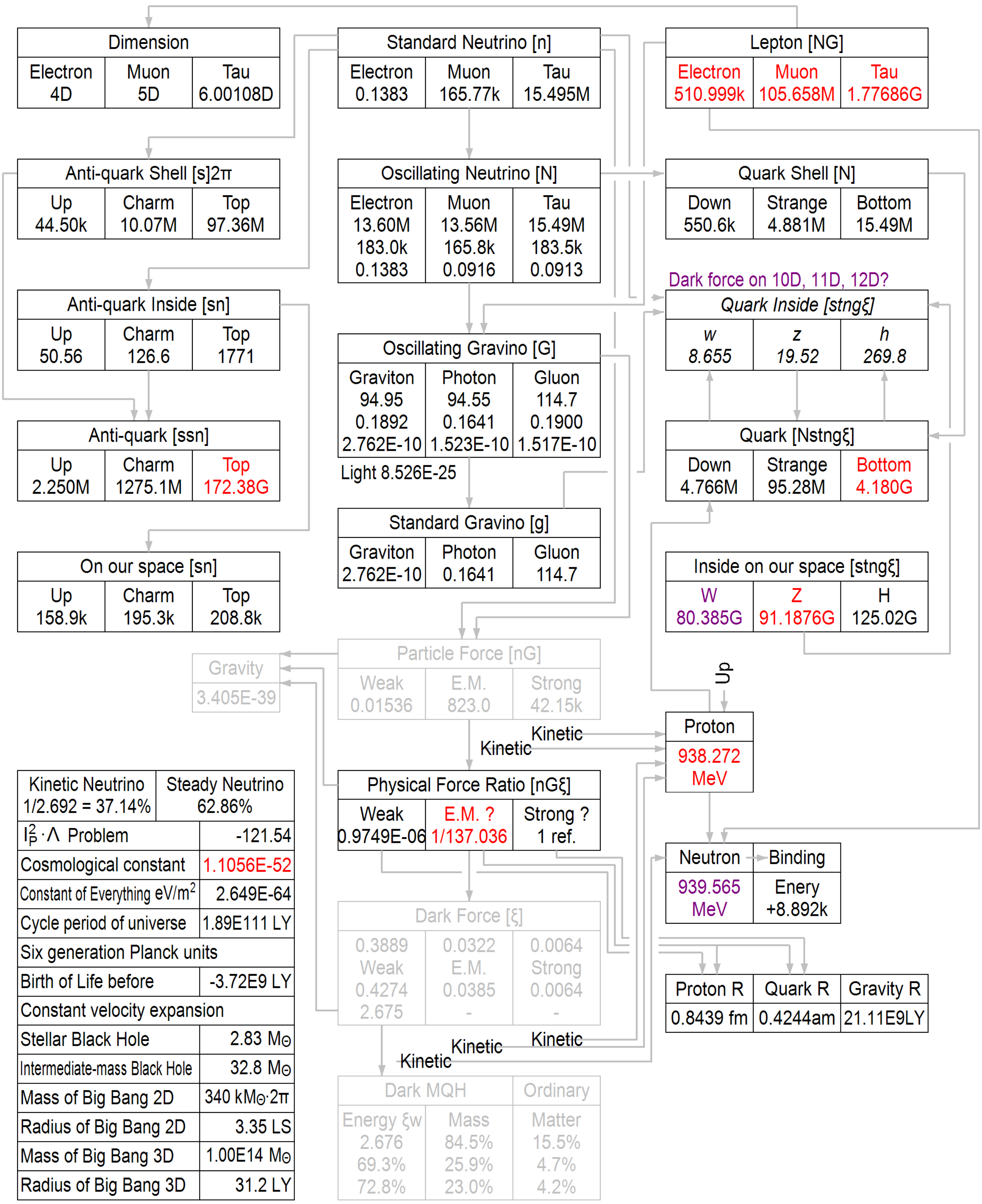

Fig. 3 Analysis of steady state.

2.3 Dimension[3]

Applying logarithmic elliptic equation and oscillation phenomenon to the masses of electron, muon, and tau, the dimension of quantum space is calculated as 6.00108D.

2.4 Standard Neutrino [n][4]

In this calculation, muon and tau neutrino masses were applied as β_n 170.00 keV and γ_n 14.954 MeV. The 5 significant value of muon neutrino mass is required. Applying the above values to logarithmic elliptic equation, the mass of electron neutrino is very easily calculated as α_n 0.1533 eV.

2.5 Oscillating Neutrino [N][4]

Particle itself does not have mass. The logarithmically compressive strength of quantum space imparts the mass to the particle[1]. Since there are three generation quantum spaces, the masses of particles are always formed as three generations. When the binding of particles is a single hard particle, the mass should be calculated logarithmically, and when the binding of particles is a single loose particle, the mass should be calculated arithmetically.

Neutrinos continuously move three generation quantum spaces by jumping. This is oscillation phenomenon, and due to this, the mass of neutrino changes very largely and quickly. The oscillating masses α_N, β_N, and γ_N of neutrinos are calculated by logarithmic elliptic equation of α_n, β_n, and γ_n.

2.6 Oscillating Gravino [G][4]

Gravino means graviton, photon, and gluon. The masses of electron $\alpha\beta\gamma_{NG}$, muon $\beta\gamma_{NG}$, and tau γ_{NG} in Fig. 1 have already been measured. The oscillating masses α_N, β_N, and γ_N of neutrinos was calculated above. From the difference between NG and N, the oscillating masses of graviton α_G, photon β_G, and gluon γ_G are calculated.

They are oscillating particles located in quantum space 4D, 5D, and 6D. Applying logarithmic parabolic equation to them, the mass of 1D is calculated as 6.779E-25 eV. This will be the mass of light.

2.7 Standard Gravino [g][4]

Substituting the oscillating masses G inversely to logarithmic elliptic equation, the standard masses of graviton α_g, photon β_g, and gluon γ_g are calculated.

2.8 Particle Force [nG][6]

In Fig. 4, the shapes of weak, electromagnetic, and strong forces are shown. Particle force is composed of standard neutrino n and oscillating gravino G. Therefore, the mass of particle force is calculated. The electron, muon, and tau neutrino n form the shape of particle force, and the graviton, photon, and gluon gravino g cause the force on particle.

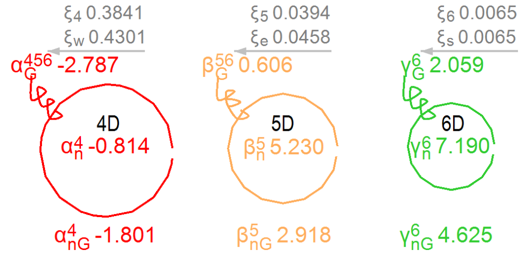

Fig. 4 Shapes of weak, electromagnetic, strong forces

2.9 Physical Force Ratio [nG ξ][6]

Physically, when strong force is 1, electromagnetic force is 1/137.036. In electromagnetic force, the particle force and the physical force do not coincide as much as the logarithmic value 0.4301. Here, the sum of weak particle force and 0.4301 is calculated as 1.011E-6. This value closely coincides with the weak physical force of about 1E-6. It can be seen that the physical force is the sum of the particle force and the dark force ξ in Fig. 4.

2.10 Dark Force [ξ][6]

Applying logarithmic parabolic equation to the masses of three generation particle forces, the logarithmic mass of the vertex is calculated. The difference between its vertex and strong particle force is the 6D dark force of 0.0065.

Applying logarithmic parabolic equation to the masses of three generation physical forces, the logarithmic mass of the vertex is calculated. The difference between its vertex and strong physical force is 0.4696. The difference between this value and 0.4301 is the 5D dark force of 0.0395.

The difference between 0.4301 and 0.0395 and 0.0065 is the 4D dark force of 0.3841.

The graviton α_G^{456} in Fig. 4 oscillates on 4D, 5D, and 6D. Therefore, the weak dark force ξ_w is logarithmic 0.4301 and arithmetic 2.692. The photon β_G^{56} in Fig. 4 oscillates on 5D and 6D. Therefore, the electromagnetic dark force ξ_e is logarithmic 0.0460. The gluon γ_G^6 in Fig. 4 oscillates on 6D. Therefore, the strong dark force ξ_s is logarithmic 0.0065.

2.11 Gravity[6]

Applying logarithmic parabolic equation to the three generation physical forces, the 0D value is calculated as 2.194E-39. Multiplying this value by the weak dark force ξ_w 2.692 is 5.906E-39. 0D is not quantum space, but empty space. That is, gravity is not quantum mechanics. This is the force that particle tries to fall in a direction that we cannot understand. The tau neutrino mass of 15.494 eV is calculated from the 5.906E-39 by trial & error method.

Applying logarithmic parabolic equation to the three generation particle forces, the 1D value is calculated as 2.218E-39. Multiplying this value by the weak dark force ξ_w 2.692 is 5.971E-39. 1D means that there is a straight brane throughout universe. The brane is the origin of everything. The straight brane holds the particles that try to fall in 0D.

Above, the calculated gravity value was multiplied by the weak dark force. This means that gravity and weak force are equivalent. Weak force is the force acting on quantum space, and gravity is the force acting on empty space.

2.12 Dark Energy : Dark Matter : Ordinary Matter[11]

Weak dark force 2.692 is the ratio of the dark energy that expands the space of universe and the dark mass that contracts the space of universe.

The mass of ordinary matter is known as 1E53 kg. Applying 13.77 billion light-years of cosmic time to Schwarzschild formula and multiplying by 2π, the value is calculated as 5.511E53 kg. Here, anti-matter is 2π times heavier than matter. The ratio of dark matter and ordinary matter is 84.5% : 15.5%. This means that our universe is in a 4D anti-matter black hole. Author calls it Mommy Quantum Hole.

Therefore, the ratio of dark energy, dark matter, and ordinary matter is calculated as 69.5%: 25.8%: 4.7%. The ratio of 72.9% : 22.9% : 4.2% is wrong value.

2.13 Anti-quark Shell [s][5,8]

In Fig. 5, blue s is anti-neutrino and red n is neutrino. Therefore, up, charm, and top are anti-quark, and down, strange, and bottom are quark. Here, f means fermion on 4D5D6D, and b means boson on 10D11D12D.

When up quark $\alpha\beta\gamma_s^f\alpha_{sn}^b$ collides, the shell α_s^f is peeled off and it is turned into charm quark $\beta\gamma_s^f\beta_{sn}^b$. When the charm quark collides, the shell β_s^f is peeled off and it is turned into top quark $\gamma_s^f\gamma_{sn}^b$.

Above, the masses of α_n, β_n, and γ_n were calculated. Anti-particle s is 2π times heavier than particle n. Therefore, the shell mass of anti-quark is calculated.

2.14 Anti-quark Inside [sn][5,8]

The inside of anti-quark is composed of a pair of anti-neutrino s and neutrino n. Here, α_{sn}^b on 10D, β_{sn}^b on 11D, and γ_{sn}^b on 12D are all same particles, and they are calculated by logarithmic elliptic equation. Since the quantum dimension of the shell is different, that of the inside are also different. Due to this, the inside mass naturally changes.

Since the masses of anti-neutrino s and neutrino n were calculated, the masses of the inside are also calculated.

2.15 Anti-quark [ssn][5,8]

The mass of anti-quark is the sum of the shell and the inside. The masses of up, charm, and top quarks are calculated as 2.459 MeV, 1345.5 MeV, and 177.00 GeV. These values differ some from the mass measured in physics.

The analysis of force almost coincides with physics. From this, it can be understood that forces act at the speed of light. Quark is in steady state, not kinetic state.

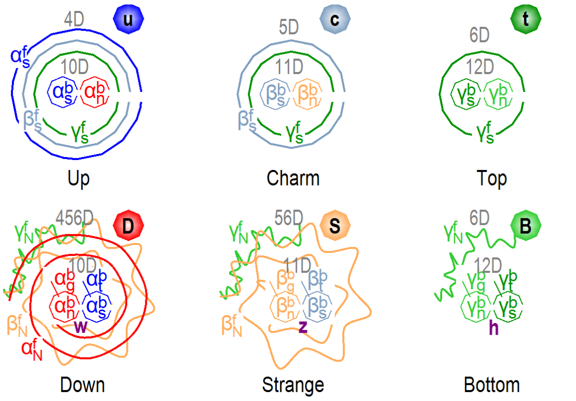

Fig. 5 Shapes of anti-quarks and quarks.

2.16 Inside on our space [sn][5]

When top quark collides, the shell γ_s^f is peeled off, and a pair of anti-neutrino boson γ_{sn}^b on 12D pops out into our quantum space 6D. It jumps into 5D, it jumps into 4D, and then it disappears on our XYZ space. Since this is an anti-neutrino pair, it is difficult to find in particle colliders.

2.17 Quark Shell [N][8]

In Fig. 5, When down quark $\alpha\beta\gamma_N^f\alpha_{ngts}^b$ collides, the α_N^f is peeled off and it is turned into strange quark $\beta\gamma_N^f\beta_{ngts}^b$. When the strange quark collides, the β_N^f is peeled off and it is turned into bottom quark $\gamma_N^f\gamma_{ngts}^b$.

The mass of oscillating neutrino N was calculated above. Therefore, the mass of the shell is easily calculated.

2.18 Quark Inside [stng ξ][8]

Above, the masses of anti-neutrino s, anti-gravino t, neutrino n, and gravino g on 10D, 11D, and 12D were very easily all calculated by logarithmic elliptic equation. Here, it is judged that dark force is acting on the gravino t and g. The dark force on 4D, 5D, and 6D was calculated by the analysis of forces. However, the dark forces could not be dimensionally transformed into 10D, 11D, and 12D. An idea is needed.

The values predicted by author are presented in Table 1.

2.19 Quark [Nstng ξ][8]

The mass of quark is the sum of the shell and the inside. The masses of down, strange, and bottom quarks are calculated as 4.762 MeV, 93.94 MeV, and 4.080 GeV. These values differ some from the mass measured in physics.

2.20 Inside on our space [stng ξ][1,8]

There is w boson α_{ngts}^b of 10D in down quark, z boson β_{ngts}^b of 11D in strange quark, and h boson γ_{ngts}^b of 12D in bottom quark. These are all the same particles.

When the bottom quark collides, the γ_N^f is peeled off, the h boson γ_{ngts}^b on 12D pops out, it jumps into our quantum space 6D, and it changes to H boson. Then, it jumps into 5D, and it changes to Z boson. Then it jumps into 4D, and it changes to W boson. The transformation occurs as a mixture of logarithmic parabolic equation and logarithmic elliptic equation. The values should be calculated as 80.385 GeV, 91.1876 GeV, and 125.02 GeV. The problem of dimensional transformation of the dark force must be solved.

2.21 Proton (7)

Proton is composed of two up quarks, one down quark, strong particle and dark forces, and electromagnetic particle and dark forces. Its mass is calculated as 984.4 MeV. There is some different with that of physics. Proton is also in steady state, not kinetic state.

2.22 Neutron (7)

The mass of neutron is measured as 939.565421 MeV. Neutron is composed of proton, electron, shell of anti-brane stgn, and weak dark force ξ_w. Therefore, its mass is calculated. The difference of +8.892 keV occurred between the measured and calculated values. The difference is the separating energy of anti-brane stgn, which is the reason of negative beta decay.

3. Analysis of steady state

3.1 Steady State (3)

Steady state means stationary state. The masses of particles for steady state are calculated in Fig. 3.

3.2 Electron, Muon, Tau [NG] (3)

It is judged that electron, muon, and tau can be applied to both of kinetic state and steady state.

3.3 Dimension (3)

Therefore, the dimension of steady state is 6.00108D. That is, quantum space is 6.00108D, and it does not change.

3.4 Standard Neutrino [n] (4)

The steady state muon and tau neutrino masses can be calculated from charm and top quark masses. Therefore, the exact mass values of the quarks are required. Top quark mass of 172.38 GeV was applied in this calculation. The muon neutrino mass can be calculated from cosmological constant 1.1057E-52 /m2 by trial & error method. From the values, the muon neutrino β_n and tau neutrino γ_n are calculated as 165.77 keV and 15.495 MeV. The electron neutrino α_n is calculated as 0.1384 eV from logarithmic elliptic equation.

3.5 Oscillating Neutrino [N] (4)

The oscillating neutrino mass α_N, β_N, and γ_N are calculated from logarithmic elliptic equation of α_n, β_n, and γ_n.

3.6 Oscillating Gravino [G] (4)

From the difference of mass between NG and N, the oscillating masses of graviton α_G, photon β_G, and gluon γ_G are calculated.

3.7 Standard Gravino [g] (4)

Substituting the oscillating masses inversely to logarithmic elliptic equation, the standard masses of graviton α_g, photon β_g, and gluon γ_g are calculated.

3.8 Particle Force [nG] (6)

The particle force is calculated from the standard neutrino n and the oscillating gravino G. However, force is in kinetic state, not steady state.

3.9 Physical Force Ratio [nG ξ] (6)

The weak physical force in steady state is calculated as 0.9749E-6. This is very similar to 1.011E-6 in kinetic state. Here, the value of electromagnetic force in steady state is needed. The value will slightly less than 1/137.036.

3.10 Dark Force [ξ] (6)

The calculation method is the same as kinetic state.

3.11 Gravity (6)

Gravity is calculated as 3.405E-39. The physics value is 5.906E-39. It can be understood that force is kinetic state.

3.12 Dark Energy : Dark Matter : Ordinary Matter (11)

The ratio is calculated as 69.3% : 25.9% : 4.7%.

3.13 Anti-quark Shell [s] (5,8)

Above, the masses of β_n and γ_n were assumed, and the mass of α_n was calculated. Anti-particle s is 2π times heavier than particle n. Therefore, the shell mass of anti-quark composed of α_s, β_s, and γ_s is calculated.

3.14 Anti-quark Inside [sn] (5,8)

Since the masses of anti-neutrino s and neutrino n were calculated, the masses of the inside are also calculated.

3.15 Anti-quark [ssn] (5,8)

The masses of up, charm, and top quarks are calculated as 2.250 MeV, 1275.1 MeV, and 172.38 GeV. Here, the top quark mass of 172.38 GeV is given. From try & error method, the tau neutrino mass is calculated as γ_n 15.495 MeV.

3.16 Inside on our space [sn] (5,8)

The inside mass will be measured as 158.9 keV on 4D, 195.3 keV on 5D, and 208.8 keV on 6D.

3.17 Quark Shell [N] (8)

The mass of oscillating neutrino N was calculated above. Therefore, the mass of the shell is easily calculated.

3.18 Quark Inside [stng ξ] (8)

It is judged that the dark force of not kinetic but steady state is acting on the gravino t and g. The dark forces on 4D, 5D, and 6D are calculated by the analysis of forces. The electromagnetic force of not kinetic but steady state is required for the calculation. Three ideas are needed.

3.19 Proton (7)

The mass of proton was given as 938.272 MeV. From this, the mass of down quark is calculated as 4.766 MeV. The mass of the shell is 550.6 keV, so the inside w is calculated as 8.655 eV.

3.20 Quark [Nstng ξ] (8)

The down quark mass was calculated as 4.766 MeV from proton. The mass of bottom quark was given as 4.180 GeV. The mass of the shell is 15.49 MeV, so the inside h is calculated as 269.8 eV. The inside z will be calculated as 19.52 eV from the analysis of W, Z, H bosons. Therefore, the mass of strange quark is calculated as 95.28 MeV.

3.21 Inside on our space [stng ξ] (1,8)

The masses of W and Z bosons were given as 80.385 GeV and 91.1876 GeV. Applying logarithmic parabolic and inverse parabolic equations to these values, the mass of H boson is calculated as 125.02 GeV.

Applying logarithmic parabolic equation to w on 10D, z on 11D and h on 12D, the value on 5D should be calculated as 91.1876 GeV of Z boson. Therefore, calculating this inversely, the mass of z on 11D is 19.52 eV.

3.22 Neutron (7)

The separating energy of shell anti-brane is calculated as +8.892 keV.

4. Analysis of universe

4.1 Mixing of kinetic state and steady state (9)

The universe changes with a mixture of 37.14% of kinetic state (=1/2.692) and 62.86% of steady state (=1.692/2.692). The neutrino masses for kinetic state and steady state were calculated above. By mixing in the above ratio, the neutrino masses that can analyze the universe is newly calculated.

4.2 Cosmological constant problem (9)

Cosmological constant problem measured from Planck satellite is logarithmic -121.54. The value calculated from above is -121.54 in Fig. 3. That is, the muon neutrino mass of 165.77 keV was calculated from the cosmological constant problem by trial & error method.

4.3 Six generation Planck units (9)

Our space is composed of XYZ linear dimensions and abc quantum dimensions. That is, our space is 3D quantum space. Planck units in physics are the analysis of xyzabc quantum dimensions. That is, Planck space is 6D quantum space. That is, Planck unit is not to analyze our universe. From our calculation, the dimensional universes of six generation Planck units are calculated.

4.4 Constant of Everything (9)

Regardless of dimensions, 2.649E-64 eV/m^2 must be established. This is constant of everything.

4.5 Cycle period of universe (9)

Regardless of dimensions, the cycle period of all universes is calculated as 1.89E111 LY. That is, all is dimensional circular universes.

4.6 Origin of life (9)

3D Planck length and 3D Planck time are calculated as 9.510E25 m and 10.05E9 LY from the cosmological constant. The big bang occurred about 13.77E9 LY ago. Therefore, about 3.72 billion years ago, a new simulation universe was born. This is the origin of life. The first fossil of life on Earth was discovered about 3.5 billion years ago.

4.7 Constant velocity expansion

The ratio of 10.05 and 13.77 is 73.0%. The measured vacuum energy density is 99.4% of the measured cosmic constant. Therefore, 72.6% is calculated, which is the dark energy value. It is understood that dark energy is not related to the accelerated expansion of the universe. All universes expand at a constant velocity.

4.8 Ordinary matter

The expansion of universe is calculated from cosmological constant and Hubble constant, which is the relation between Planck star and Black hole. That is, ordinary matter has nothing to do with the expansion of universe.

4.9 Three generation black holes (10)

The minimum masses of stellar black hole, intermediate-

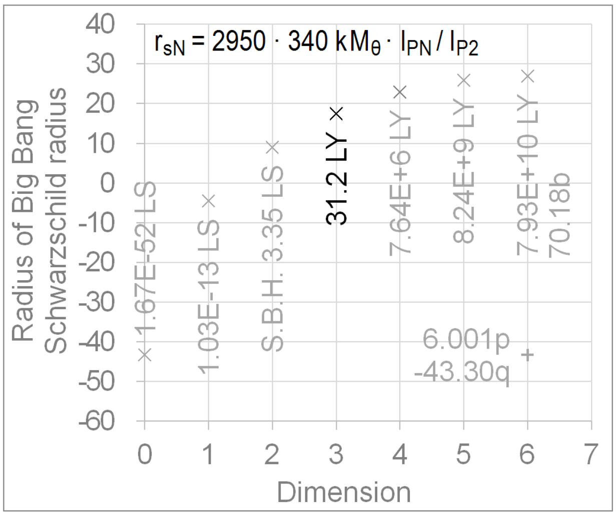

Fig. 6 Radius of Big Bang

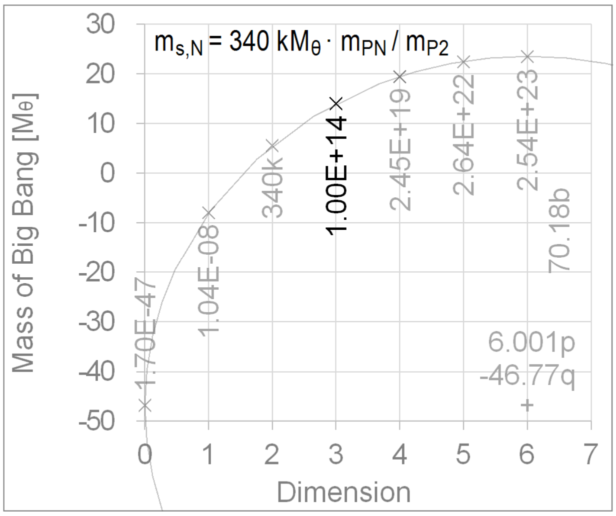

Fig. 7 Mass of Big Bang

mass black hole, and supermassive black hole will be observed as 2.83 M_θ, 32.8 M_θ, and 340 kM_θ. However, the actual masses will be 3.25 M_θ, 53.7 M_θ, and 2.14 MM_θ.

4.9 Radius of Big Bang

The big bang mass of supermassive black hole would be 340 k M_θ. From Schwarzschild's formula, the big bang radius is calculated as 3.35 LS in Fig. 6. The 3.35 LS multiplied by the ratio of N-D Planck length l_{PN} and 2D Plank length l_{P2} would be the N-D Big Bang radius r_{sN}. The calculated values are shown in Fig. 6. The radius of the big bang of our universe is calculated as 31.2 LY.

4.10 Mass of Big Bang

The mass of the Big Bang of supermassive black hole is 340 kM_θ in Fig. 7. It must be multiplied by 2π, and its mass is 2.14 MM_θ. The 340 kM_θ multiplied by the ratio of N-D Planck mass m_{PN} and 2D Plank mass m_{P2} would be the N-D Big Bang mass. The mass of the Big Bang of our universe is calculated as 1.00E14 M_θ. Here, the dimensional analysis for π must be multiplied.

5. Conclusions

The core for calculating is as follows. 1) All calculations are divided into kinetic state and steady state. 2) Force is analyzed as kinetic state, other particles as steady state, and the entire universe as mixed state. 3) The origin of all things are three generation neutrinos, graviton, photon, and gluon. 4) Logarithmic elliptic equation is established on the origin particles. 5) The origin particles oscillate, and they also are established on logarithmic elliptic equation. 6) Four fundamental forces are established on logarithmic parabolic equation. 7) Dark force always acts on the particle force. 8) Tightly bound particles must be calculated as logarithmic masses, and loosely bound particles must be calculated as arithmetic masses. 9) The characteristic of quantum space determines all the characteristics of particle. 10) Everything must be calculated in terms of dimensions.

The calculated three generation dark forces on 4D, 5D, and 6D must be converted to 10D, 11D, and 12D by super gauge symmetry. However, the formula has not yet been found in this study. If this is found, everything will be perfectly calculated and proven. Given the muon neutrino mass of 5 significant value and the exact masses of top and bottom quark, all calculations will be more accurate.

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