

New Standard Model

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Abstract All things are composed of six fundamental particles: electron neutrino 0.1524 eV, muon neutrino 169.06 keV, tau neutrino 15.408 MeV, graviton $2.506E-10$ eV, photon 0.1609 eV, and gluon 115.32 eV. All the other particles are the combined particles. They operate as logarithmic elliptic equations, which satisfy super symmetry, gauge symmetry, renormalization, spontaneous symmetry breaking, hierarchical problem, and fine-tuning universe. From this, a new standard model is drawn. In this paper, the core of previous research is summarized, previous errors are corrected, and new contents are described. The language of physics should be drawing. Various unsolved problems can be solved when the shape of every particle is accurately drawn. The core is two. 1) The compressive strength of three-dimensional quantum space formed as log-elliptic equation gives the particle mass. 2) The brane of quantum space is composed of dipoles of a total of 6 components: three generation neutrinos, graviton, photon, and gluon. Based on this, all problems in physics will be solved.

1. Introduction

In the previous study [1], the shape and mass of various particles were calculated in detail. The study was calculated with a total of 8 input variables. This study is calculated with a total of 6 input variables. In the previous study [2], a new diagram of standard model was proposed. Such as in previous studies [3], the calculation scope of this content is very wide. Therefore, the purpose of this study is to summarize the core of the above extensive research, to fix previous errors, and to add new important contents.

2. New Standard Model

2.1 Current Standard Model

The standard model of particle physics is shown in Fig. 1. It consists of a total of 17 elementary particles and graviton.

2.2 New Standard Model

A new standard model is proposed in Fig. 2. This is some improved in Fig. 2 of Ref [2].

2.3 Six fundamental particles

In Fig. 2, all things are composed of six fundamental particles: electron neutrino ν_e^n , muon neutrino ν_μ^n , tau neutrino ν_τ^n , graviton ρ_g^n , photon ρ_μ^n , and gluon ρ_τ^n . Their shapes are shown in Fig. 3(a).

2.4 Combined particles

All the other particles are the combined particles. Fig. 3(b) is the shape of weak force, electromagnetic force, and strong force, and Fig. 3(d) is the shape of electron, muon, and tau.

2.5 Log-elliptic equation

The mass of particles and the change of the universe follow logarithmic elliptic equation with midpoint 6.00107D and vertex 0D. Since two of the four variables for solving elliptic equation have been identified, given two unknowns, the elliptic equation is drawn.

2.6 Kinetic state, Steady state, Combined state

Particle has the kinetic state rest mass of Fig. 4 and 5 and the steady state rest mass of Fig. 6 and 7. The change of the universe operates as the combined state of Fig. 8 and 9.

2.7 Particle and Antiparticle

Particle is red n and anti-particle is blue s . In fermion, the mass of antiparticle s is 2π times heavier than that of particle n . In boson, the mass of ns is $(1+2\pi)^2 \cdot \sqrt{n}$. That is, if the mass of particle n is known, the mass of antiparticle s is automatically calculated.

2.8 Normal and Oscillation

Lowercase n and s means normal mass, and uppercase N and S means oscillating mass. In Figs. 4-9, (a) is normal mass, and (b-d) is oscillating mass. The shape of the oscillating particle is shown in Fig. 3(c), and its oscillating mass is calculated in Figs. 4-9(e).

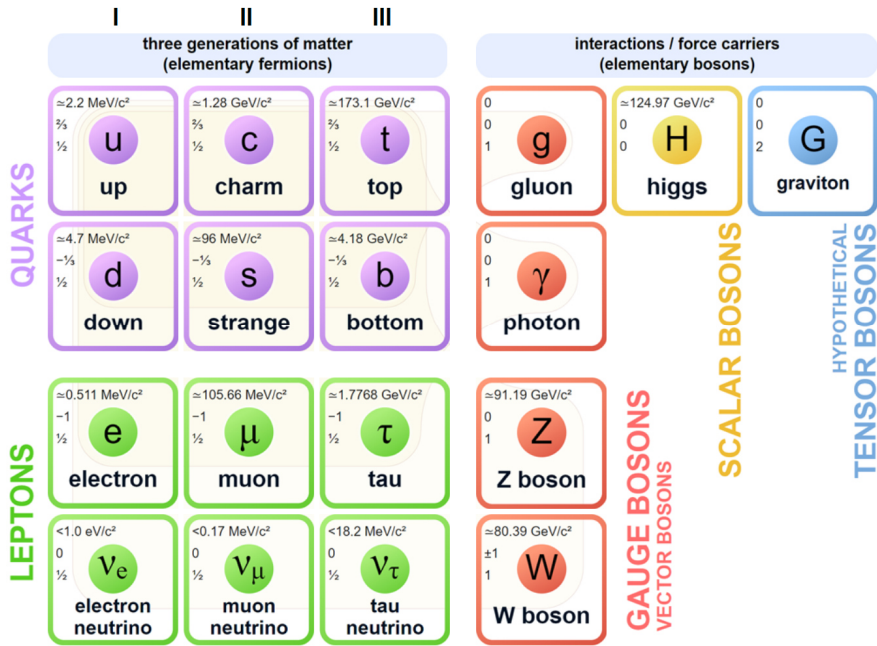


Fig. 1 Current Standard Model

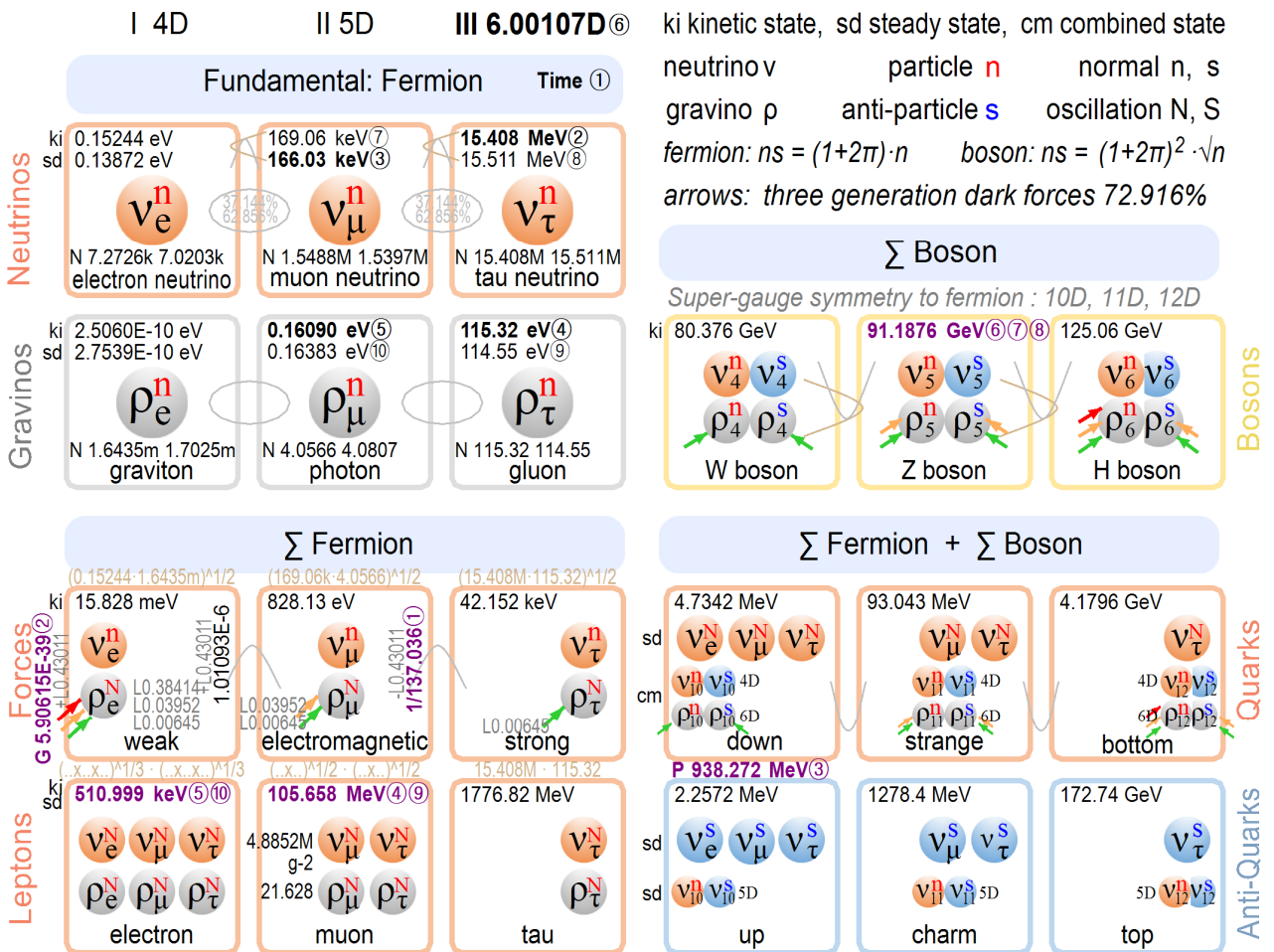


Fig. 2 New Standard Model

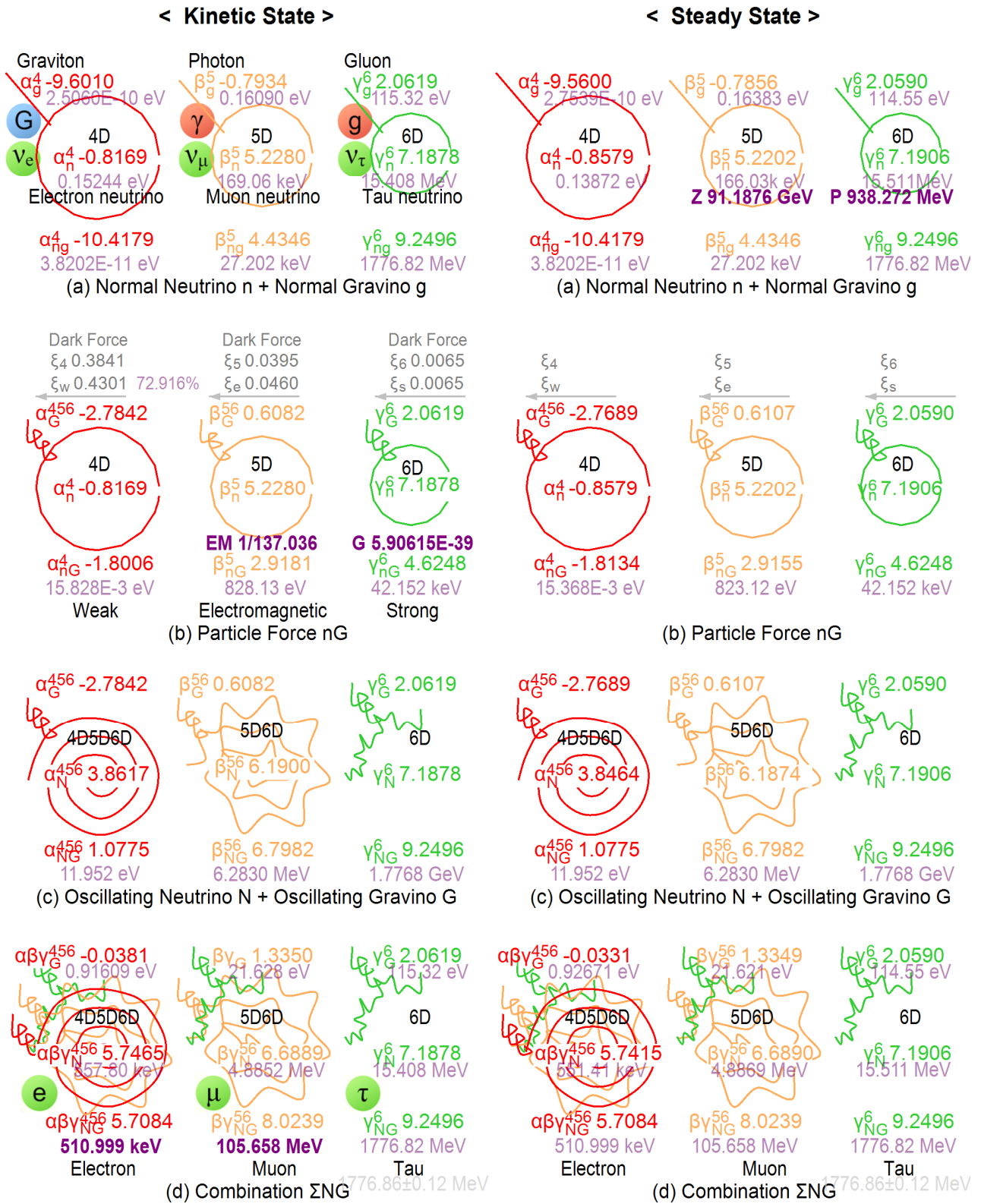
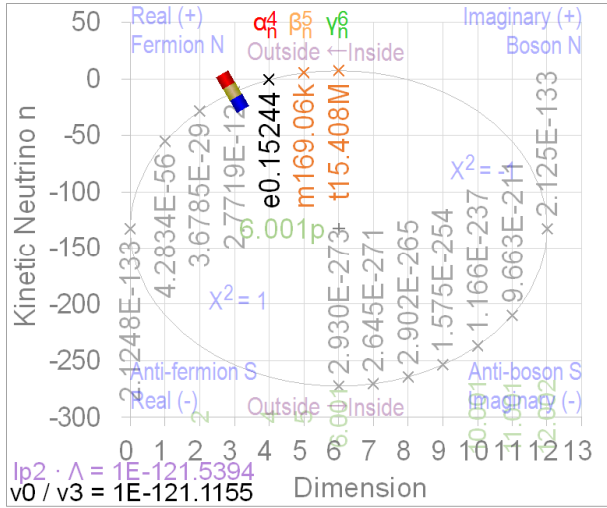
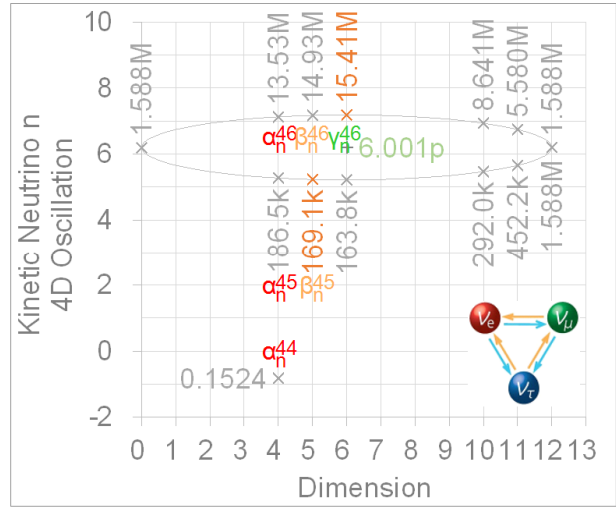


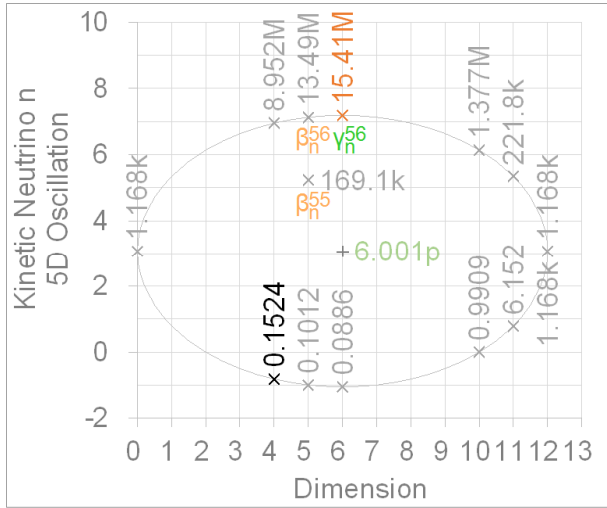
Fig. 3 Particle shape and log-mass



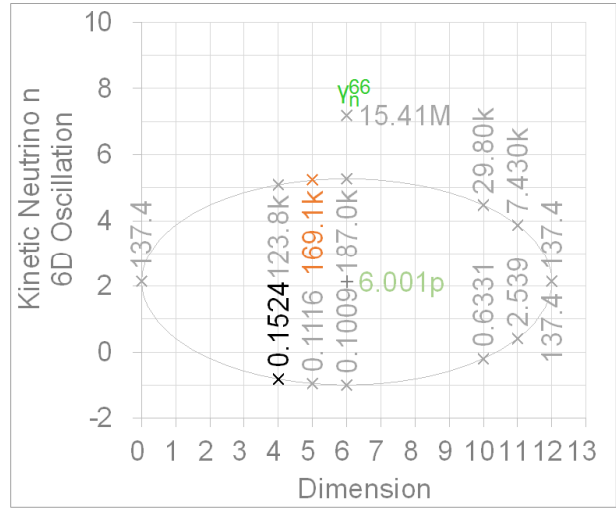
(a) Normal mass



(b) 4D oscillation mass



(c) 5D oscillation mass



(d) 6D oscillation mass

| Kinetic | Normal | | | Oscillation 4D | | | Oscillation 5D | | | Oscillation 6D | | |
|----------|----------|----------|----------|----------------|----------|----------|----------------|----------|----------|----------------|----------|----------|
| | electron | muon | tau | electron | muon | tau | electron | muon | tau | electron | muon | tau |
| high | 6 | 7.18775 | 7.13128 | 7.17393 | 7.18775 | 6.95194 | 7.13002 | 7.18775 | 7.18775 | 7.18775 | | |
| middle | 5 | 5.22804 | 5.27069 | 5.22804 | 5.21421 | 5.22804 | 5.22804 | 5.22804 | 5.09258 | 5.22804 | 5.27195 | |
| low | 4 | -0.81690 | -0.81690 | -0.81690 | -0.81690 | -0.81690 | -0.81690 | -0.99498 | -1.05271 | -0.81690 | -0.95236 | -0.99628 |
| Neutrino | | | | | | | | | | | | |
| high | 6 | | 6.93658 | 6.74666 | 6.20098 | 6.13900 | 5.34599 | 3.06752 | | | | |
| middle | 5 | | 5.46538 | 5.65530 | 6.20098 | | | | 4.47420 | 3.87099 | 2.13784 | |
| low | 4 | | | | | -0.00396 | 0.78905 | 3.06752 | -0.19853 | 0.40469 | 2.13784 | |

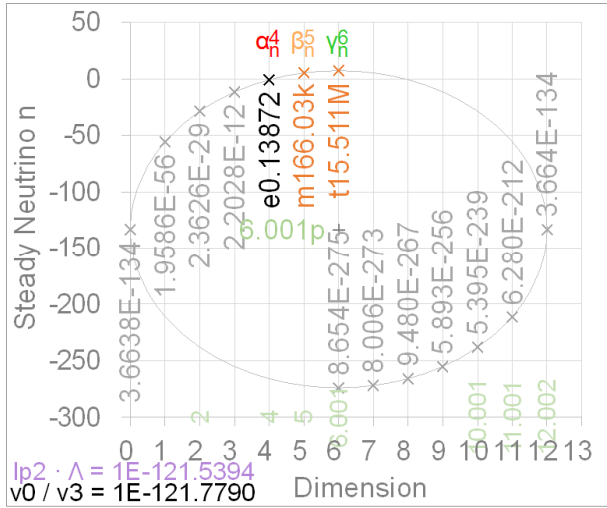
$$\alpha_N^{456} = (\alpha_n^{44} + \alpha_n^{45} + \alpha_n^{46}) / 3 = (-0.81690 + 5.27069 + 7.13128) / 3 = 3.86169 \quad \mathbf{7.27258 \text{ keV}}$$

$$\beta_N^{56} = (\beta_n^{55} + \beta_n^{56} + \beta_n^{45} + \beta_n^{46}) / 4 = (5.22804 + 7.13002 + 7.17393 + 5.22804) / 4 = 6.19001 \quad \mathbf{1.54884 \text{ MeV}}$$

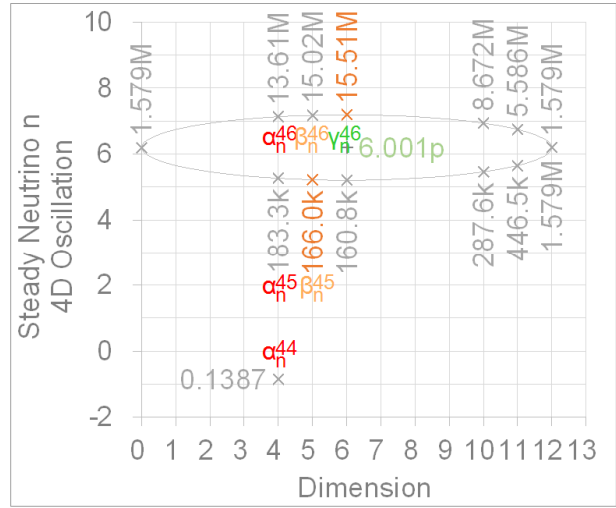
$$\gamma_N^6 = (\gamma_n^{66} + \gamma_n^{56} + \gamma_n^{46}) / 3 = (7.18776 + 7.18776 + 7.18776) / 3 = 7.18776, \quad \mathbf{15.4082 \text{ MeV}}$$

(e) Log values

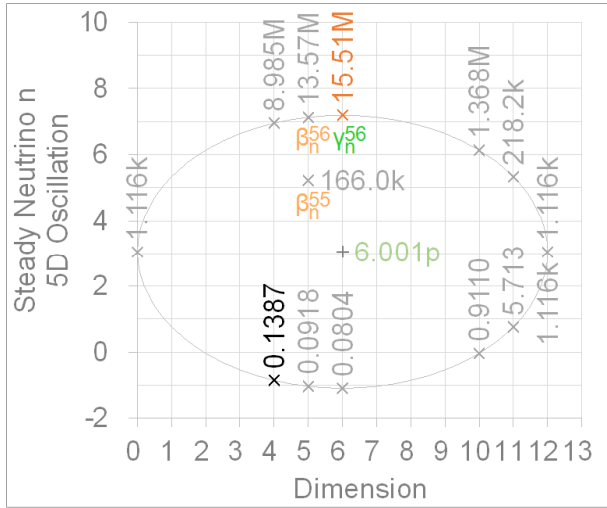
Fig. 4 Mass of neutrinos – Kinetic state



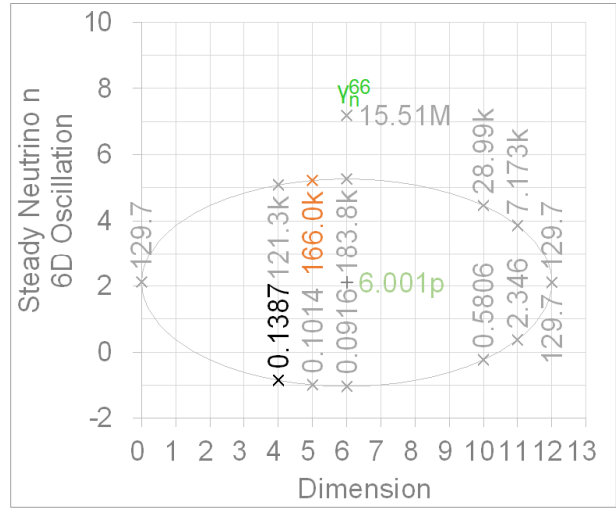
(a) Normal mass



(b) 4D oscillation mass



(c) 5D oscillation mass



(d) 6D oscillation mass

| Steady | Normal | | | Oscillation 4D | | | Oscillation 5D | | | Oscillation 6D | | |
|----------|----------|------|-----|----------------|---------|---------|----------------|----------|----------|----------------|----------|----------|
| high 6 | 7.19064 | | | 7.13386 | 7.17674 | 7.19064 | 6.95354 | 7.13260 | 7.19064 | 7.19064 | | |
| middle 5 | 5.22019 | | | 5.26308 | 5.22019 | 5.20629 | 5.22019 | | | 5.08399 | 5.22019 | 5.26435 |
| low 4 | -0.85787 | | | -0.85787 | | | -0.85787 | -1.03692 | -1.09497 | -0.85787 | -0.99407 | -1.03822 |
| Neutrino | electron | muon | tau | electron | muon | tau | electron | muon | tau | electron | muon | tau |
| high 6 | | | | 6.93810 | 6.74714 | 6.19847 | 6.13614 | 5.33879 | 3.04784 | | | |
| middle 5 | | | | 5.45884 | 5.64980 | 6.19847 | | | | 4.46223 | 3.85571 | 2.11306 |
| low 4 | | | | | | | -0.04047 | 0.75688 | 3.04784 | -0.23610 | 0.37042 | 2.11306 |

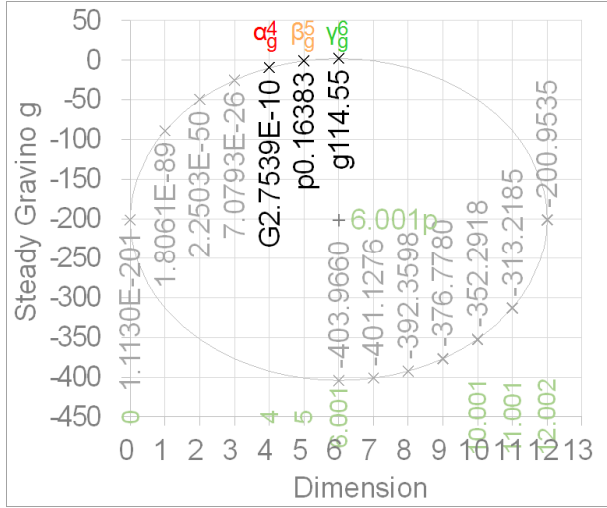
$$\alpha_N^{456} = (\alpha_n^{44} + \alpha_n^{45} + \alpha_n^{46}) / 3 = (-0.85786 + 5.26308 + 7.13386) / 3 = 3.84636 \quad \mathbf{7.02031 \text{ keV}}$$

$$\beta_N^{56} = (\beta_n^{55} + \beta_n^{56} + \beta_n^{45} + \beta_n^{46}) / 4 = (5.22019 + 7.13259 + 7.17674 + 5.22019) / 4 = 6.18743 \quad \mathbf{1.53968 \text{ MeV}}$$

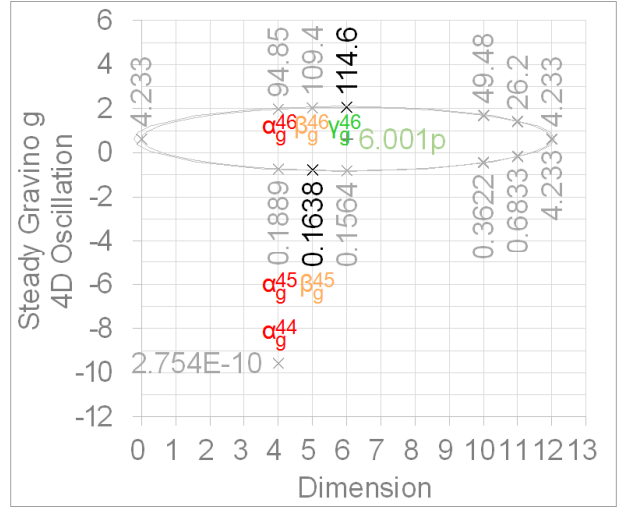
$$\gamma_N^6 = (\gamma_n^{66} + \gamma_n^{56} + \gamma_n^{46}) / 3 = (7.19064 + 7.19064 + 7.19064) / 3 = 7.19064 \quad \mathbf{15.5111 \text{ MeV}}$$

(e) Log values

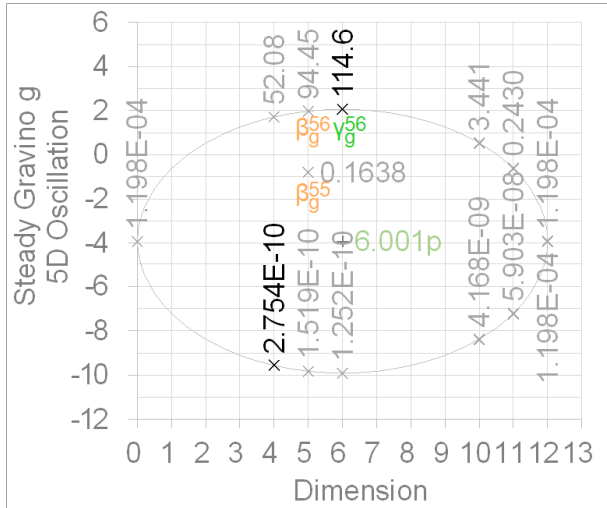
Fig. 6 Mass of neutrinos – Steady state



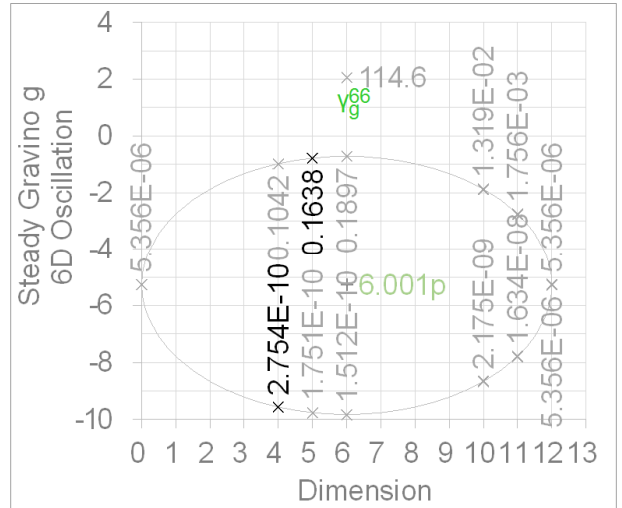
(a) Normal mass



(b) 4D oscillation mass



(c) 5D oscillation mass



(d) 6D oscillation mass

| Steady | Normal | | | Oscillation 4D | | | Oscillation 5D | | | Oscillation 6D | | | |
|----------|----------|--------|-------|----------------|----------|----------|----------------|----------|----------|----------------|----------|----------|----------|
| high | 6 | | | 2.05900 | 1.97702 | 2.03893 | 2.05900 | 1.71671 | 1.97520 | 2.05900 | | | 2.05900 |
| middle | 5 | | | -0.78560 | -0.72369 | -0.78560 | -0.80567 | | -0.78560 | | -0.98222 | -0.78560 | -0.72185 |
| low | 4 | | | -9.56005 | | -9.56005 | | -9.56005 | -9.81854 | -9.90234 | -9.56005 | -9.75667 | -9.82042 |
| Graviton | graviton | photon | gluon | graviton | photon | gluon | graviton | photon | gluon | graviton | photon | gluon | |
| high | 6 | | | 1.69442 | 1.41874 | 0.62667 | 0.53670 | -0.61439 | -3.92167 | | | | |
| middle | 5 | | | -0.44108 | -0.16541 | 0.62667 | | | | | -1.87981 | -2.75540 | -5.27113 |
| low | 4 | | | | | | -8.38004 | -7.22895 | -3.92167 | -8.66245 | -7.78687 | -5.27113 | |

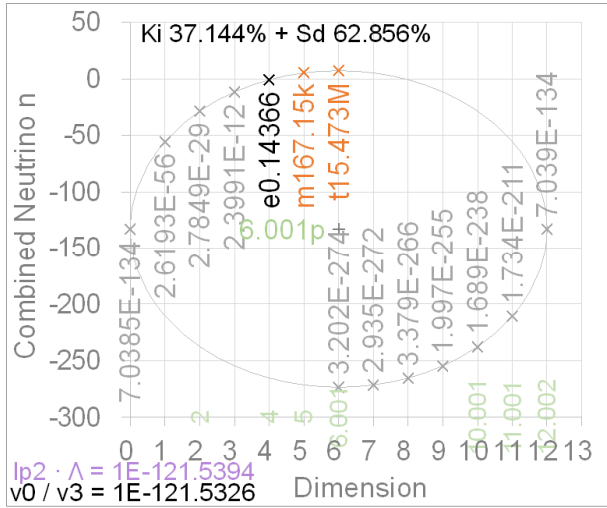
$$\alpha_g^{456} = (\alpha_g^{44} + \alpha_g^{45} + \alpha_g^{46}) / 3 = (-9.56005 + -0.72369 + 1.97702) / 3 = -2.76890 \quad \mathbf{1.70253 \text{ meV}}$$

$$\beta_g^{56} = (\beta_g^{55} + \beta_g^{56} + \beta_g^{45} + \beta_g^{46}) / 4 = (-0.78560 + 1.97520 + 2.03893 + -0.78560) / 4 = 0.61073 \quad \mathbf{4.08069 \text{ eV}}$$

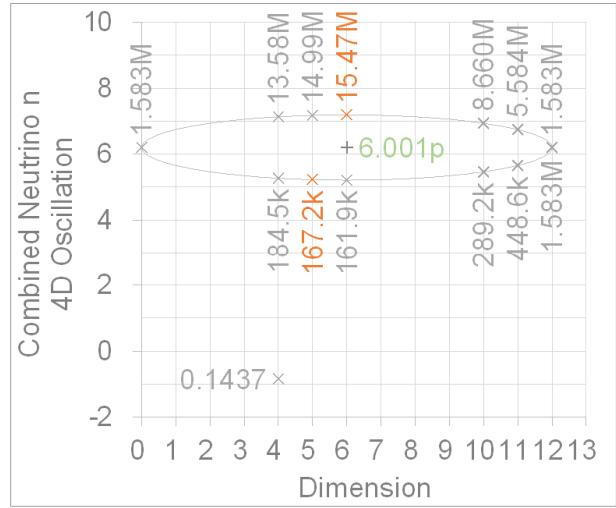
$$\gamma_g^6 = (\gamma_g^{66} + \gamma_g^{56} + \gamma_g^{46}) / 3 = (2.05900 + 2.05900 + 2.05900) / 3 = 2.05900 \quad \mathbf{114.551 \text{ eV}}$$

(e) Log values

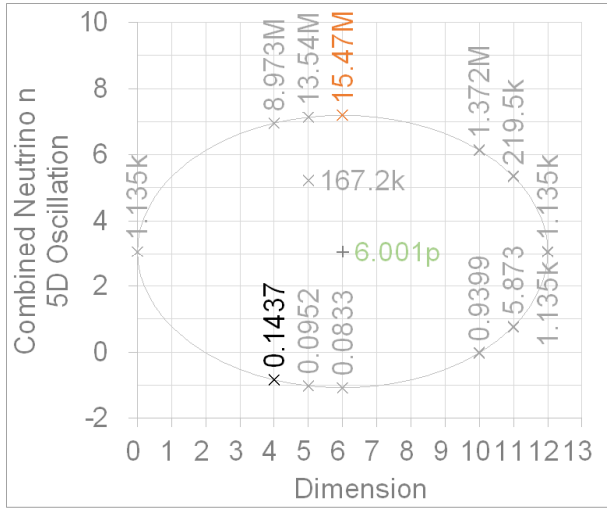
Fig. 7 Mass of graviton, photon, gluon – Steady state



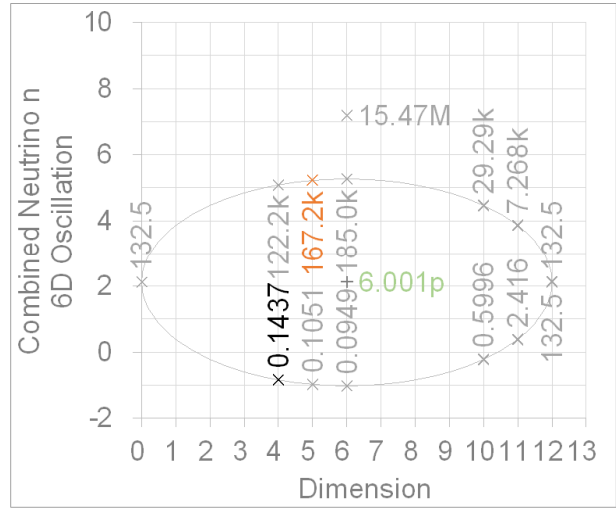
(a) Normal mass



(b) 4D oscillation mass



(c) 5D oscillation mass



(d) 6D oscillation mass

| Steady | Normal | | | Oscillation 4D | | | Oscillation 5D | | | Oscillation 6D | | |
|----------|----------|------|-----|----------------|---------|---------|----------------|----------|----------|----------------|----------|----------|
| high 6 | 7.18957 | | | 7.13290 | 7.17570 | 7.18957 | 6.95294 | 7.13164 | 7.18957 | 7.18957 | | |
| middle 5 | 5.22311 | | | 5.26590 | 5.22311 | 5.20923 | 5.22311 | | | 5.08718 | 5.22311 | 5.26717 |
| low 4 | -0.84265 | | | -0.84265 | | | -0.84265 | -1.02134 | -1.07928 | -0.84265 | -0.97858 | -1.02264 |
| Neutrino | electron | muon | tau | electron | muon | tau | electron | muon | tau | electron | muon | tau |
| high 6 | | | | 6.93754 | 6.74696 | 6.19940 | 6.13721 | 5.34146 | 3.05515 | | | |
| middle 5 | | | | 5.46127 | 5.65184 | 6.19940 | | | | 4.46668 | 3.86139 | 2.12227 |
| low 4 | | | | | | | -0.02691 | 0.76883 | 3.05515 | -0.22215 | 0.38315 | 2.12227 |

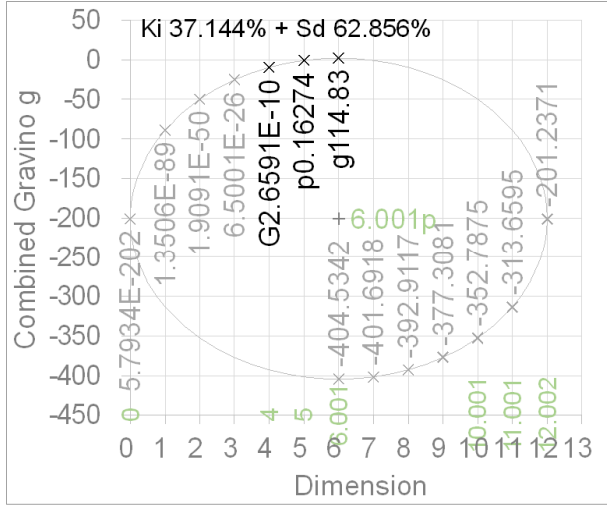
$$\alpha_N^{456} = (\alpha_n^{44} + \alpha_n^{45} + \alpha_n^{46}) / 3 = (-0.84265 + 5.26590 + 7.13290) / 3 = 3.85205 \quad \mathbf{7.11298 \text{ keV}}$$

$$\beta_N^{56} = (\beta_n^{55} + \beta_n^{56} + \beta_n^{45} + \beta_n^{46}) / 4 = (5.22311 + 7.13164 + 7.17570 + 5.22311) / 4 = 6.18839 \quad \mathbf{1.54308 \text{ MeV}}$$

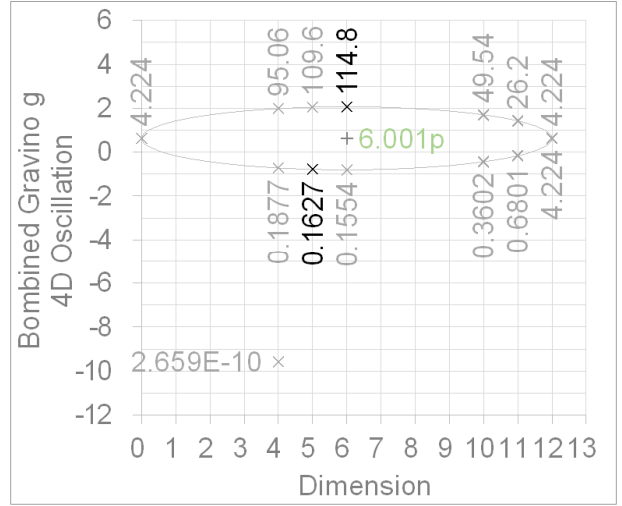
$$\gamma_N^6 = (\gamma_n^{66} + \gamma_n^{56} + \gamma_n^{46}) / 3 = (7.18957 + 7.18957 + 7.18957) / 3 = 7.18957 \quad \mathbf{15.4728 \text{ MeV}}$$

(e) Log values

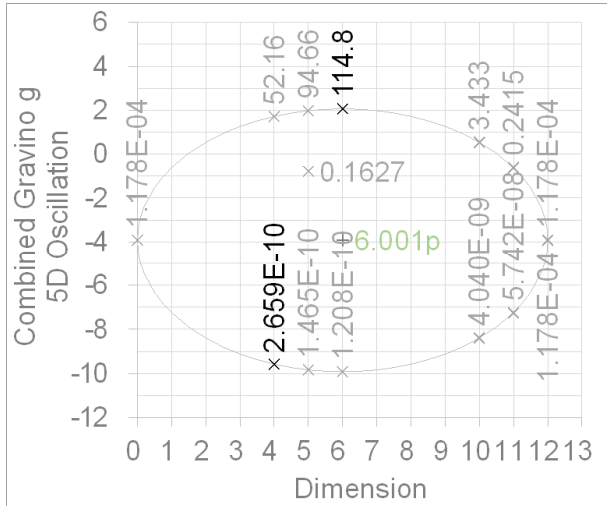
Fig. 8 Mass of neutrinos – Combined state



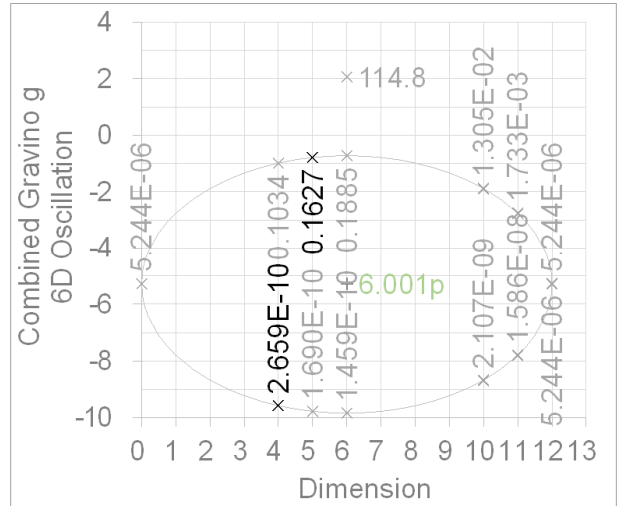
(a) Normal mass



(b) 4D oscillation mass



(c) 5D oscillation mass



(d) 6D oscillation mass

| Steady | Normal | | | Oscillation 4D | | | Oscillation 5D | | | Oscillation 6D | | |
|------------------|-----------|--------|-------|----------------|----------|----------|----------------|----------|----------|----------------------------|----------|----------|
| high 6 | 2.05900 | | | 1.97702 | 2.03893 | 2.05900 | 1.71671 | 1.97520 | 2.05900 | 2.05900 | | |
| middle 5 | -0.78560 | | | -0.72369 | -0.78560 | -0.80567 | -0.78560 | | | -0.98222 | -0.78560 | -0.72185 |
| low 4 | -9.56005 | | | -9.56005 | | | -9.56005 | -9.81854 | -9.90234 | -9.56005 | | |
| Gravitino | gravitino | photon | gluon | gravitino | photon | gluon | gravitino | photon | gluon | gravitino | photon | gluon |
| high 6 | | | | 1.69442 | 1.41874 | 0.62667 | 0.53670 | -0.61439 | -3.92167 | | | |
| middle 5 | | | | -0.44108 | -0.16541 | 0.62667 | | | | -1.87981 | -2.75540 | -5.27113 |
| low 4 | | | | | | | -8.38004 | -7.22895 | -3.92167 | -8.66245 -7.78687 -5.27113 | | |

$$\alpha_g^{456} = (\alpha_g^{44} + \alpha_g^{45} + \alpha_g^{46}) / 3 = (-9.57526 + -0.72652 + 1.97798) / 3 = -2.77460 \quad \mathbf{1.68035 \text{ meV}}$$

$$\beta_g^{56} = (\beta_g^{55} + \beta_g^{56} + \beta_g^{45} + \beta_g^{46}) / 4 = (-0.78851 + 1.97615 + 2.03998 + -0.78851) / 4 = 0.60978 \quad \mathbf{4.07171 \text{ eV}}$$

$$\gamma_g^6 = (\gamma_g^{66} + \gamma_g^{56} + \gamma_g^{46}) / 3 = (2.06007 + 2.06007 + 2.06007) / 3 = 2.06007 \quad \mathbf{114.835 \text{ eV}}$$

(e) Log values

Fig. 9 Mass of gravitino, photon, gluon – Combined state

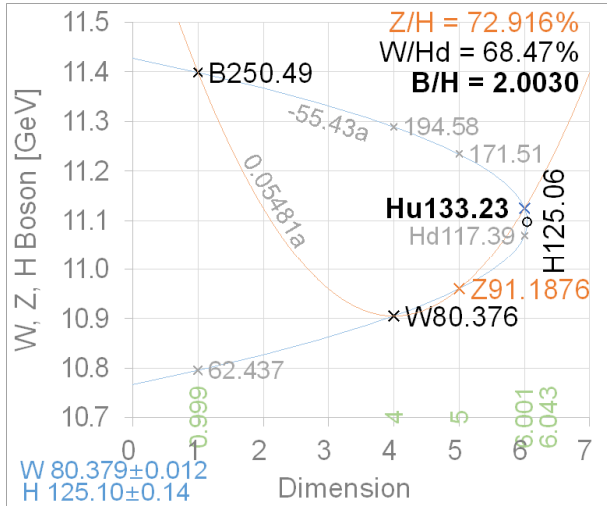


Fig. 10 Calculation of W and H boson

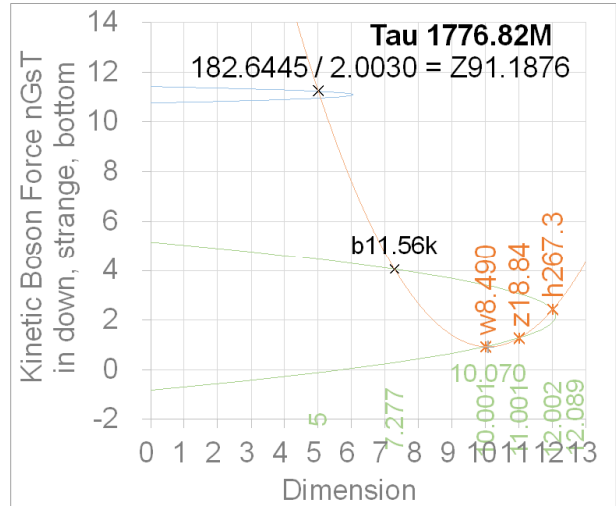


Fig. 11 Collapse of quarks

2.9 Three generation dark forces

There is dark time, not dark energy, and it causes the three generation dark forces. The red arrow is 4D dark force, the orange arrow is 5D dark force, and the green arrow is 6D dark force. They are calculated from the four forces in Fig. 15. At the chart, 2.6922 is calculated. The value of 2.6922 / (1 + 2.6922) is 72.916% and the value of 1 / 2.6922 is 37.144%. These values are very important.

2.10 Weak, Electromagnetic, Strong forces, Time

Gravino is a word coined by author, and it means graviton, photon, and gluon. The shapes of forces in Fig. 2 are shown in Fig. 3(b). Force is the combination particle of one normal neutrino and one oscillating gravino. They are always kinetic state particle forces. Weak force causes gravity. Here, weak force acts on quantum space, but gravitational force acts toward 4D empty space. Three generation dark forces are affecting above particle forces. The result is the four fundamental physical forces. The first-generation dark force is dark energy, from which current time is calculated.

2.11 Electron, Muon, Tau

The shapes of electron, muon, and tau in Fig. 2 are shown in Fig. 3(d). They are the combination particle of oscillating neutrinos and oscillating gravinos.

2.12 Fermion and Boson

Fermion particles located on the left side of Figs. 4-9 make up our universe, and boson particles located on the right side are hidden in quarks. When the masses of fermion particles are known, the masses of boson particles are calculated with

the super-gauge symmetry of the elliptic equation. The fermion branes constitute dimensional multiverse with a size close to infinity, and the boson branes are a near-zero universe hidden in quarks. After 10^{111} years, this reverse.

2.13 W, Z, H Bosons

The shapes of W, Z, and H bosons are equal to Fig. 3(a). Here, the masses of the normal bosons are calculated from super-gauge symmetry of oscillating fermions. When Z boson is 91.1876 GeV, from Fig. 10, W and H bosons are calculated as 80.376 GeV and 125.06 GeV. In Fig. 11, the w, z, h bosons are hidden in quarks. When the quark collapses, a boson pops out into the 5D quantum space of our world. It is Z boson. Fig. 8.2 of the previous study [1] was changed to above Fig. 11.

2.14 Down, Strange, Bottom

In Fig. 12, the shell of down, strange, and bottom quarks

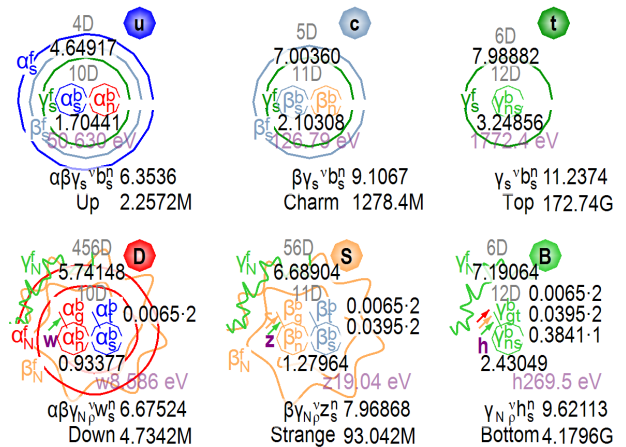


Fig. 12 Shape of quarks

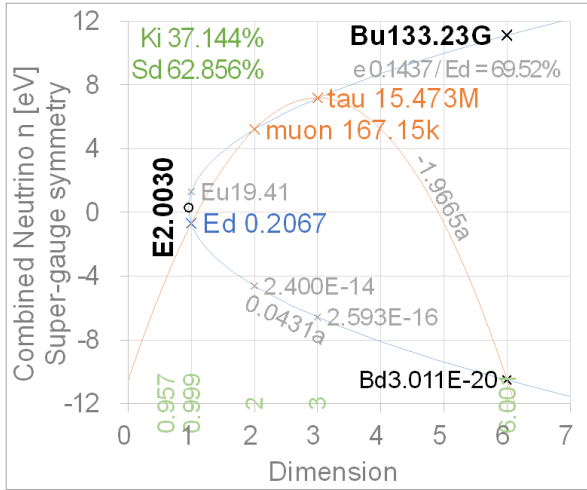


Fig. 13 Supergauge symmetry of combined Neutrinos

is the oscillating neutrinos of steady state, and the inside is the particle and anti-particle normal neutrino and gravino bosons of combined state. The boson particle in quark is lowercase w, z, or h with very little mass of Fig. 11. When the quark collapse, the w, z, h boson of the combined state change to kinetic state of Fig. 11 (See Table 3), and they transform into uppercase W, Z, or H with very large mass. The color of down, strange, and bottom is red. Therefore, they are matter.

2.15 Up, Charm, Top

In Fig. 12, the shell of up, charm, and top quarks is the normal anti-neutrinos of steady state, and the inside is the particle and antiparticle normal neutrino bosons of steady state. The boson mass of lowercase b is located in quark. When a quark collapse, it transforms into uppercase B with large mass. The color of up, charm, top is blue. Therefore, they are anti-matter.

3. New Interpretation

3.1 Too many input constants

As shown in Fig. 2, a total of 10 variables are needed to solve the problem. Here, 4 variables are resolved internally. Therefore, the total independent variables are 6. If six exact values are given, everything is calculated accurately as shown in Fig. 21. In Fig. 3(a), the n + g mass in kinetic state and the n + g mass in steady state are the same. From this, two masses are calculated internally. In Ref. [1], the following calculations are not explained. In the W Z H mass of Fig. 10, the value of B/H is 2.0030 and the value of Hu is 133.23 GeV. Fig. 13 shows the combined state mass of Fig. 8(a). Two internal variables can be calculated from the E 2.0030 and the

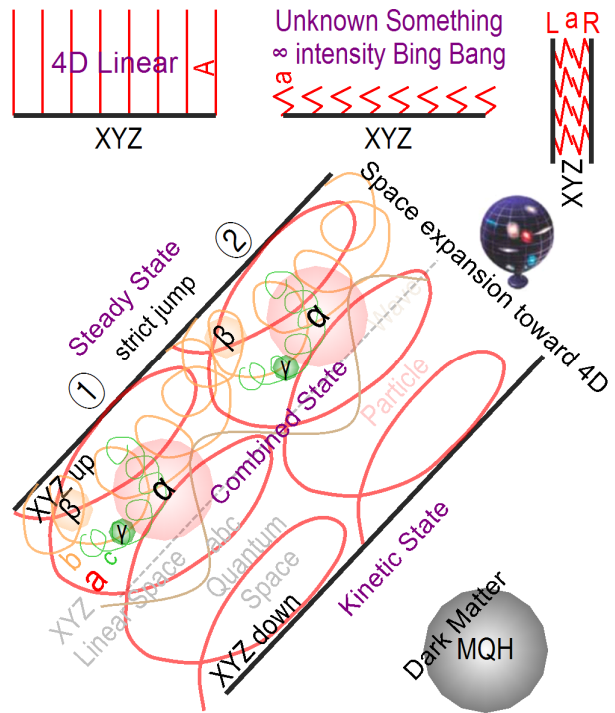


Fig. 14 Shape of quantum space of universe

Bu 133.23 GeV.

3.2 Why are particles three generations?

As shown in Fig. 14, all particles are classified into three generations because three generation quantum spaces of a, b, and c dimensions exist. The calculated quantum dimensions are 4D, 5D and 6.00107D.

3.3 What is Gravity?

Gravity is easily calculated from Fig. 15. (a) is the relative mass of the force particles, and (b) is the physical force affected by the dark force. Strong force is on 6D, electromagnetic force is on 5D, weak force is on 4D, and gravitational force is on 0D. The 0D is empty, not quantum space. The 3D position is the space that we usually perceive.

3.4 What is the origin of mass?

As shown in Fig. 14, the compressive strength of three generation quantum space imparts a mass to quantum particle. That is, quantum particles do not have proper mass. In

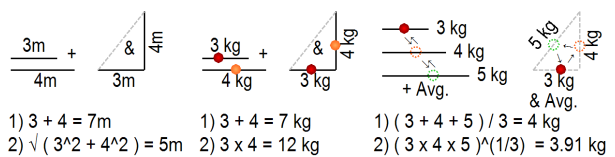
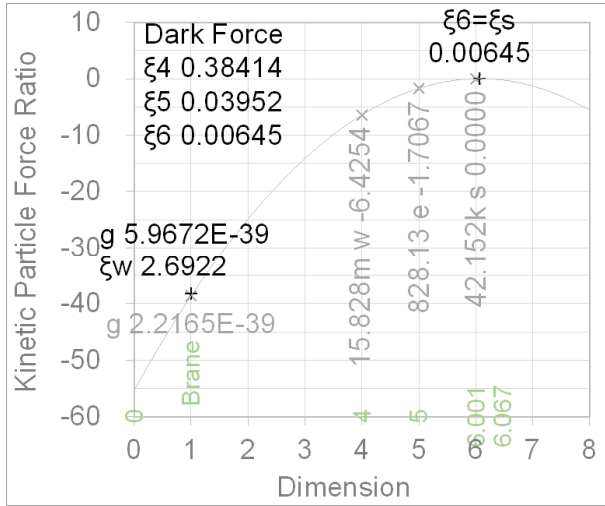
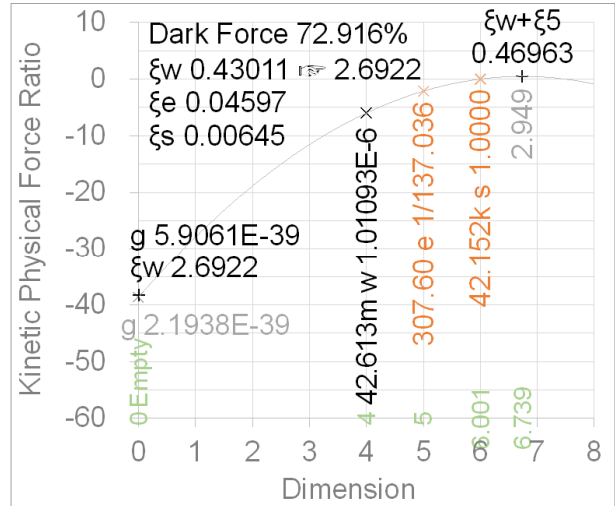


Fig. 16 Calculation of quantum particle mass



(a) Particle force mass



(b) Physical Forces Affected by Dark Forces

Fig. 15 Unification of four fundamental forces

Fig. 16, the combination of 3 kg and 4 kg in quantum space is not addition 7 kg but multiplication 12 kg. In muon of Fig 2 or Fig. 3(d), the value of 4.8852 MeV x 21.628 eV is the muon mass of 105.658 MeV. There is a photon in the shape of muon. This is the cause of muon g-2 problem.

3.5 Is the mass of neutrino 0 eV?

There masses are calculated in Fig. 4, 6, 8(a).

3.6 Is the mass of gravino 0 eV?

There masses are calculated in Fig. 5, 7, 9(a).

3.7 What is Oscillation?

Three generation neutrinos and three generation gravinos constantly jump through three generation quantum space of Fig. 14. Due to this, their masses always change to three generation masses. This is oscillation phenomenon. The oscillating masses are calculated in Figs. 4-9(b-c).

3.8 Does antineutrino also oscillate?

In Fig. 12, the red neutrino has oscillation, and the blue anti-neutrino has no oscillation.

3.9 Why is everything a particle?

The origin of particle is an extremely compressed universal brane. Part of brane breaks and turns into particle. Therefore, a particle is a very long line. When the line is placed in quantum space, it turns into a particle that has heavy mass.

3.10 Is particle correct? Is wave correct?

From the quantum space abc of Fig. 14, when the particle appears on our space XYZ, it turns into a wave line that has almost close 0 eV. This is because the compressive strength of our linear space is almost 0 eV. The mass of photon located in quantum space is 0.1609 eV. However, when it appears on our space, it turns into light with almost close 0 eV. See Fig. 3. Not particle, not wave, open particle is the correct answer.

3.11 Do hypothetical particles exist?

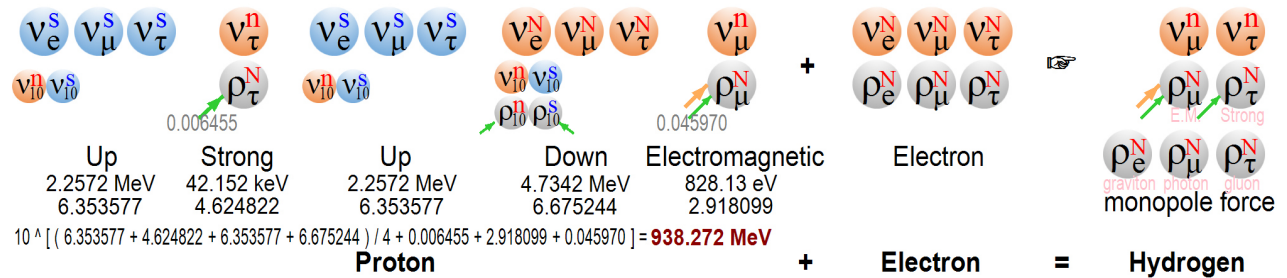


Fig. 17 The number of particles and antiparticles in Hydrogen

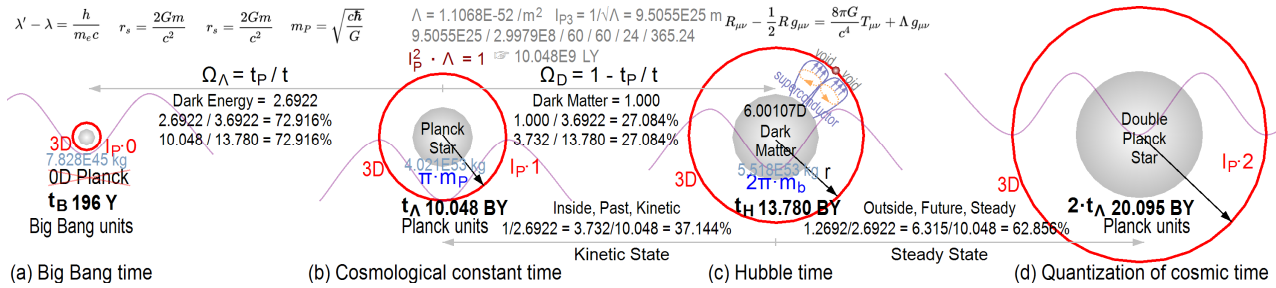


Fig. 18 Dark energy and dark matter

All particles are a combination of six fundamental particles. The mass of all particles can be calculated with the values in Figs. 4-9 and the dark forces in Fig. 15.

3.12 Is super-symmetry correct?

In Fig. 4, the left side of ellipse is the real fermion universe, and the right side is the imaginary boson universe. The upper part is a positive universe, and the lower part is a negative universe. They have perfect super-gauge symmetry.

3.13 Will proton decay?

The three generation quantum spaces of Fig. 14 dominate everything. If quantum space were forever stable, proton would not decay by themselves.

3.14 Where is antimatter?

In Fig. 12, down, strange, and bottom are matter, and up, charm, and top are anti-matter. That is, they exist exactly in equal numbers in the universe. Fig. 17 is hydrogen. The red particles and blue antiparticles are equal numbers, and only the red monopole force particles remain. The force particles cause various chemical reactions.

3.15 What is consciousness?

In Fig. 17, there is only the red forces. The red and blue forces must be equal numbers. Where is the blue force? There is no blue force in inanimate objects.

3.16 Where is Dark Matter?

In Fig. 18, the object inside of the 3D universe is dark matter or Planck star. The object is composed of antiparticles, and antiparticle is 2π times more massive than particle. That is, dark matter cannot be observed in space.

3.17 Is Bing Bang theory correct?

In Fig. 18, (a) is Big Bang time, (b) is cosmological constant time, (c) is Hubble time, and (d) is double cosmological constant time. The standard for the interpretation of the universe is not Planck time $5.4E-44$ seconds, but the cosmological constant time of 10.048 billion years. Big bang theory

adopts the value on 0D in Fig. 3. The Big Bang, past, present, and future of our universe are all in 3D.

3.18 Why is it inconsistent with Λ CDM model?

Planck length l_P is $1.61626E-35$ m, and the cosmological constant Λ in Planck 2018 data is $1.1056E-52 / m^2$. Therefore, the value of $l_P^2 \cdot \Lambda$ is $1E-121.5394$. In Fig. 8(a), the value of v_0/v_3 is $1E-121.5326$. This means that l_P is 0D value and Λ is 3D value. It can be understood that there are N-D Planck length l_{PN} and N-D cosmological constant Λ_N .

3.19 What is dark energy?

The value of $l_{P3}^2 \cdot \Lambda_3$ is $v_3/v_3 = 1$. Therefore, the 3D Planck time t_{P3} is $1/c \cdot \sqrt{\Lambda_3} = 1 / (2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 \cdot \sqrt{\Lambda_3}) = 10.053$ BY. In Fig. 18(b), the calculated value of this paper is 10.048 BY. In Plank 2018 data, the current time is 13.787 BY. The value of $10.053 / (13.787 - 10.053)$ is 2.6923. In Fig. 15(b), the calculated value of this paper is 2.6922. The value of $10.053 / 13.787$ is 72.915%, and this value is not dark energy but time ratio. In Plank 2018 data, the ratio of dark energy, dark matter, and ordinary matter is 68.89% : 26.19% : 4.92%. In Fig.18, our universe is an absolute 4D sphere. Its overall shape has nothing to do with the amount of ordinary matter.

3.20 What is the origin of force?

The shapes of force are drawn in Fig. 3(b). From Fig. 15(a), electromagnetic force is $10^{\wedge} -1.7067 / 2.6922 = 1/137.036$, and weak force is $10^{\wedge} -6.4254 \times 2.6922 = 1.01093E6$. When plotting log parabola, the value of 0D is $2.1938E-39$, and multiplying 2.6922, the value is calculated as $5.9061E-39$. The 2.6922 is equally affecting above three forces. The 2.6922 is $10.048 / (13.780 - 10.048)$. Here 10.048 BY is constant and 13.780 is time flow variable. When time is around 10.048 BY, its value becomes infinity. This is very difficult to understand.

3.21 Arrow of time

In Fig. 4(a), our universe is on 3D. The change goes towards 2D. The reverse is impossible.

3.22 Dimensionless physical constant

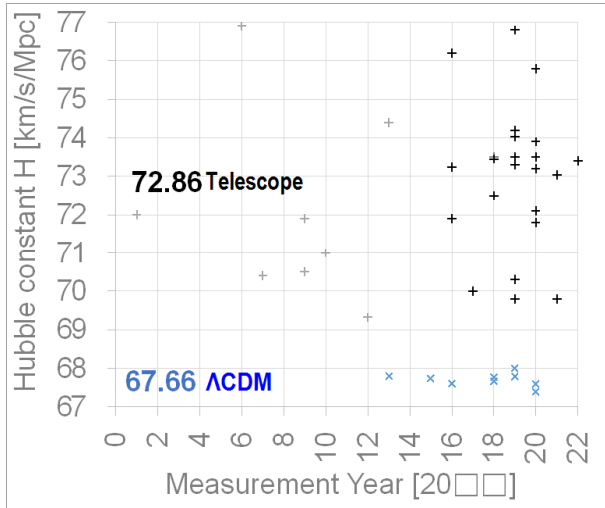


Fig. 19 Combined Hubble Constant

Planck 2018 Λ 1.10560E-52 13.787 BY

1 Mpc = 3.08568E19 km

$3.08568E19 / (60 \cdot 60 \cdot 24 \cdot 365.24) / 13.787 \text{ BY} = \mathbf{H 70.92}$

$1 / c\sqrt{\Lambda} = 1 / (2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 \cdot \sqrt{\Lambda}) = 10.053 \text{ BY}$

$10.053 \text{ BY} / 13.787 \text{ BY} = 72.915\%$

Kinetic State $(13.787 - 10.053) / 10.053 = 37.143\%$

Steady State $(10.053 \cdot 2 - 13.787) / 10.053 = 62.857\%$

$67.66 \cdot \text{KS } 37.143\% + 72.86 \cdot \text{SS } 62.857\% = \mathbf{H 70.93}$

As calculated above, the magnitude of forces can change according to time flow.

3.23 Fine-tuned universe

Everything is calculated from 6 input variables. It is the dark matter in Fig. 18 that fine-tunes our universe.

3.24 Planck particle, Cosmic inflation

In Fig. 18, (b) is the 3D cosmological constant time, which is 3D Planck unit. Planck particles calculated in physics do not exist in our universe. Big Bang must be reinterpreted.

3.25 Supermassive black hole

The universe of 2D physics is spread out in it.

3.26 Galaxy rotation problem

Supermassive black hole is rotating galactic space and swallowing it. Against swallowing is Newton's law. The rotating galactic space is compressed such as convex lens, and it causes gravitational lensing.

3.27 Void, Filament, Supercluster, Great wall

As shown in Fig. 18(c), universe is a supergiant monopole superconductor. This forms the peculiar structure of galaxies.

3.28 Distinction between past and future

In Fig. 18(c), the left side is the past of kinetic state, and the right side is the future of steady state. (c) itself is the mixture of past 37.144% and future 62.856%. This is present.

3.29 Generation of hydrogen

Particles that did not exist are being generated in galaxies.

All universes are open system.

3.30 Parallel universe, Holographic universe, Etc.

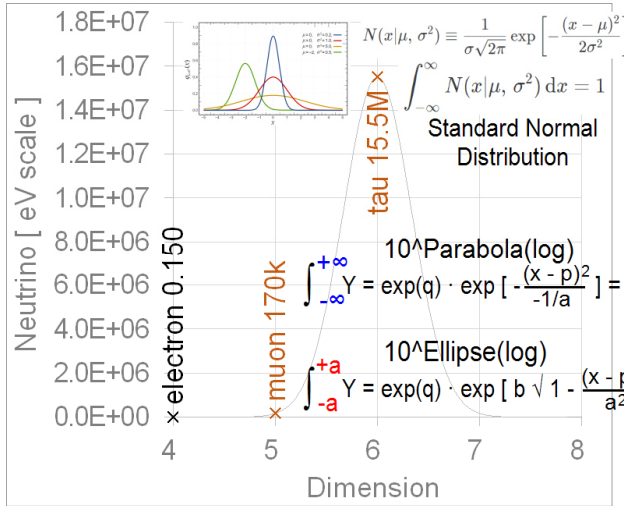
In Fig. 3(a), our universe is located on 3D. After countless times, our universe turns into unimaginable strange universe. In Fig. 18, (a) is integer 0, (b) is integer 1, and (d) is integer 2. That is, integers continue to occur every 10.048 BY. What does that integer mean?

3.31 Hubble Tension

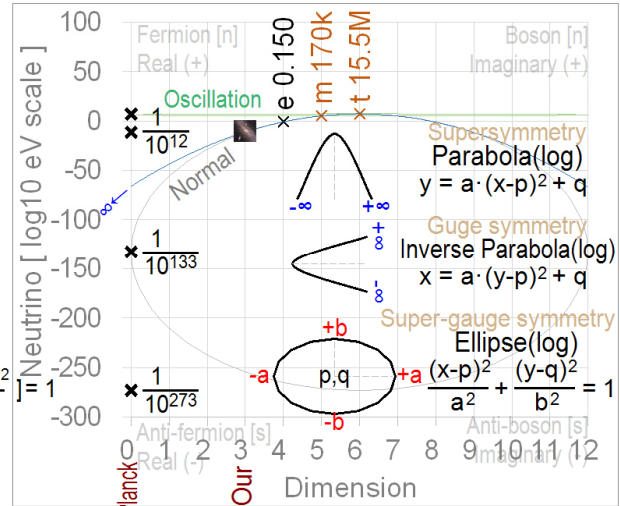
In Planck 2018 Result, as shown in Fig. 19, the cosmological constant Λ and the universe age are given as 1.10560E-52 /m² and 13.787 BY. From the universe age, in case of constant velocity expansion universe, H is calculated as 70.92 km/s/Mpc = $3.08568E19 / (60 \cdot 60 \cdot 24 \cdot 365.24) / 13.787 \text{ BY}$. The cosmological constant time $1 / c\sqrt{\Lambda}$ is calculated as 10.053 BY = $1 / (2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 \cdot \sqrt{1.10560E-52})$. The kinetic state time is calculated as 37.143% = $(13.787 - 10.053) / 10.053$, and the steady state time is calculated as 62.857% = $(10.053 \cdot 2 - 13.787) / 10.053$. The H of Λ CDM is 67.66 km/s/Mpc, and the average H of astronomical observations since 2016 is about 72.86 km/s/Mpc. Therefore, the combined Hubble constant is calculated as 70.93 km/s/Mpc = $67.66 \cdot 37.143\% + 72.86 \cdot 62.857\%$. Assuming the correct answer is about 72.9 km/s/Mpc, it is suggested that all previous Hubble constant be reinterpreted.

3.32 Expansion velocity of the universe

The constant velocity expansion H is 70.92 km/s/Mpc, and the combined H is 70.93 km/s/Mpc. This means that the universe is expanding at constant velocity, and it is the speed of light toward 4D direction as shown in Fig. 18.



(a) Mass scale of neutrinos



(b) Log mass scale of neutrinos

Fig. 20 Characteristics of log-elliptic equation

4. Logarithmic Elliptic Equation

4.1 Normal distribution equation

Normal distribution diagram and equation are shown in the upper of Fig. 20(a).

4.2 Log-parabolic equation

As shown in the left middle of (a), the value of log-parabolic equation is the normal distribution equation.

4.3 Value scale and Log scale

(a) is value scale, and (b) is log scale. They are the same.

4.4 Log-elliptic equation

Log-elliptic equation is drawn in (b).

4.5 Dirac delta function

If the log-ellipse of (b) is again plotted as values, it is (a). That is, log-ellipse satisfies Dirac delta function.

4.6 Super symmetry

In (b), the left and right sides of elliptic equation are symmetrical. The left side is fermion real number universe, and the right side is boson imaginary number universe.

4.7 Gauge symmetry

In (b), the upper and lower sides of elliptic equation are symmetrical. The upper is particle positive universe, and the lower is anti-particle negative universe.

4.8 Renormalization

In (b), the left side of parabola towards $-\infty$, and the right side towards $+\infty$. Eventually, the extreme value become exactly 0 eV. The left end of the ellipse is $-a$ (0D) and the right end is $+a$ (12D).

4.9 Spontaneous symmetry breaking

In (b), elliptic equation has vertices at $-a$ and $q-b$.

4.10 Hierarchical problem

In (b), The minimum value of the ellipse is $1/E^{273}$. This is an extremely small value, but not 0 eV.

4.11 Fine-tuning universe

In (b), the lower part of parabola and the right side of inverse parabola cannot be calculated. However, ellipse can calculate all area.

4.12 Anthropic principle

In (b), our universe is located on upper 3D. Therefore, it can be understood that 6D multiverses exist. The 6D12D universes of down ellipse are the super-gauge symmetry of 0D6D universes of upper ellipse.

5. Result of calculation

5.1 Six input conditions

In Fig. 2, there are a total of 10 independent variables, but

4 are calculated from internal equations. Therefore, there are 6 independent variables. The following six input conditions were substituted. Electromagnetic force $1/137.036$, gravitational force $5.90615E-39$, proton 938.272 MeV, electron 510.999 keV, muon 105.658 MeV, Z boson 91.1876 GeV.

5.2 Neutrinos and Gravinos

From the six-variable root finding, the masses of neutrinos and gravinos are calculated as Figs. 4-9(a). In Fig. 4(a), the kinetic neutrino mass is 0.15 eV. In (b-d), the average value of 0.1524 , 0.1524 , 0.1012 , 0.0886 , 0.1524 , 0.01116 , and 0.1009 is 0.12 eV. However, 0.12 eV is a meaningless value.

5.3 Oscillation phenomenon

The oscillation masses are calculated as Figs. 4-9(b-d).

5.4 Four forces

See Fig. 2. Strong force particle mass is 42.152 keV = $(15.408M \cdot 115.32)^{1/2}$, electromagnetic force particle mass is 828.13 eV = $(169.06k \cdot 4.0566)^{1/2}$, and weak force particle mass is 15.828 meV = $(0.15244 \cdot 1.6435m)^{1/2}$. Electromagnetic coupling constant is $1 / 137.036 = 828.13 / 42.152k / 2.6922$. Weak force coupling constant is $1.01093E-6 = 15.828m / 42.152k \cdot 2.6922$. See log-parabolic line of Fig. 15(b). The value on 0D is calculated as $2.1938E-39$. Gravitational force coupling constant is calculated as $5.9061E-39 = 2.1938E-39 \cdot 2.6922$. There is 2.6922 connected to all forces. The log value is 0.38414 .

5.5 Three generation dark forces ξ

See Fig. 15. ξ_6 is 0.00645 , ξ_W is $0.38414 = \xi_4 + \xi_5 + \xi_6$, and $\xi_W + \xi_5$ is 0.46963 . Therefore, ξ_4 , ξ_5 , ξ_6 is 0.38414 , 0.03952 , 0.00645 . Therefore, ξ_E is $0.04597 = \xi_5 + \xi_6$, and ξ_S is $0.00645 = \xi_6$. Three generation dark forces of ξ_W , ξ_E , and ξ_S are influencing the masses of weak, electromagnetic, and strong force particles.

5.6 Electron, Muon, Tau

See Fig. 2. Electron mass is 510.999 keV = $(7.27258 \text{ keV} \cdot 1.54884 \text{ MeV} \cdot 15.4082 \text{ MeV})^{1/3} \times (1.64348 \text{ meV} \cdot 4.05657 \text{ eV} \cdot 115.316 \text{ eV})^{1/3}$. Muon mass is 105.658 MeV = $(1.54884 \text{ MeV} \cdot 15.4082 \text{ MeV})^{1/2} \times (4.05657 \text{ eV} \cdot 115.316 \text{ eV})^{1/2}$. Tau mass is 1176.82 MeV = $(15.4082 \text{ MeV})^{1/1} \times (115.316 \text{ eV})^{1/1}$.

5.7 Muon g-2 problem

In Table 1, the standard model calculation of g-factor is ...3604 or ...3620, and the measured value is ...4122. In Fig. 2, the mass of muon 105.658 MeV is the product of neutrinos 4.88517 MeV and gravinos 21.6284 eV. The ratio of the above two is 0.00004427 . Therefore, the g-factor is calculated as ...4120 or ...4136. In Fig. 2, electron and gluon in

Table 1 Muon g-2 problem

| Case | Term | Muon | Equation |
|-----------------|----------|----------------------------|-----------------------------|
| Standard Model | g-factor | 2.0023318 3604 | g_S |
| | a-value | 0.0011659 1802 1810 | $a_S = (g_S - 2)/2$ |
| Experiment | g-factor | 2.0023318 4122 | g_E |
| | a-value | 0.0011659 2061 | $a_E = (g_E - 2)/2$ |
| Our Calculation | Muon | 105.658 MeV | m_μ Given |
| | Neutrino | 4.88517 MeV | $m_N = \text{Fig. 2}$ |
| | Gravino | 21.6284 eV | $m_G = \text{Fig. 2}$ |
| | Ratio | 0.0004427% | $r = m_G / m_N$ |
| | a-value | 0.0011659 2060 2068 | $a_E = a_S \cdot (2 + r)/2$ |
| | g-factor | 2.0023318 4120 4136 | $g_E = 2 + 2 \cdot a_E$ |

muon affect the magnetic field as 0.0004427% . The same logic occurs at electron and tau.

5.8 Proton mass

Proton mass is calculated in Fig. 17. If the dark forces of ξ_S 0.006455 and ξ_E 0.045970 are excluded, the mass is calculated as 88.6% of proton mass.

5.9 Proton radius puzzle

Hydrogen radius is 52.918 pm, weak force is $1.01093E-6$, and electromagnetic force is $1/137.036$. From the below equation, one proton radius and one quark radius are calculated as R_p 0.87506 pm and R_q 0.4401 am.

$$1.01093E-6 \cdot 52.918 \text{ pm} = 1/137.036 \cdot 8\pi/3 \cdot R_p$$

$$1/137.036 \cdot 0.8751 \text{ pm} = 1 \cdot 8\pi/3 \cdot Q \rightarrow R_q = Q / \sqrt{3}$$

Extending this logic, the acting radius of gravity is calculated as 12.70 BY. Above is the relationship between kinetic state force and kinetic state radius. The proton radius 0.8414 fm is the radius at which the force is steady state. To calculate this, the hydrogen radius when the force stops is needed. Anyway, 0.8445 fm and 0.425 am were calculated. However, they are not exact values.

5.10 W Z H bosons

W and H boson masses are easily calculated in Fig. 10.

5.11 Up, Charm, Top

In Table 2, the masses of up, charm, and top quarks are calculated. The shell of quark is steady state fermion particle on 4D 5D 6D, and the inside of quark is steady state boson

Table 2 Mass calculation of Up, Charm, Top quark

| Term | Reference | Kinetic State | | | Steady State | | | Unit | Symbol | | |
|---------------|-----------|---------------|---------|---------|----------------|----------------|----------------|------|-------------------------|--------------------|---------------------|
| Dimension | | 4D | 5D | 6.001D | 4D | 5D | 6.001D | - | | | |
| n Neutrino | Fig. 6(a) | 0.15244 | 169.06k | 15.408M | 0.13872 | 166.03k | 15.511M | eV | α_n^f | β_n^f | γ_n^f |
| s Neutrino | | 0.95782 | 1062.2k | 96.813M | 0.87160 | 1043.2k | 97.459M | eV | $s = n \cdot 2\pi$ | | |
| | | -0.0187 | 6.0262 | 7.9859 | -0.0597 | 6.0184 | 7.9888 | log | α_s^f | β_s^f | γ_s^f |
| Shell Fermion | (1) | 4.6645 | 7.0061 | 7.9859 | 4.6492 | 7.0036 | 7.988 | log | $\alpha\beta\gamma_s^f$ | $\beta\gamma_s^f$ | γ_s^f |
| | | 46.18k | 10.14M | 96.81M | 44.58k | 10.08M | 97.46M | eV | | | |
| Dimension | | 10.001D | 11.001D | 12.002D | 10.001D | 11.001D | 12.002D | - | | | |
| n Neutrino | Fig. 6(c) | 0.9909 | 6.1525 | 1168.2 | 0.9110 | 5.7133 | 1116.4 | eV | m_{n5}^{10} | m_{n5}^{11} | m_{n5}^{12} |
| ns Neutrino | (2) | 52.804 | 131.57 | 1813.0 | 50.630 | 126.79 | 1772.4 | eV | m_{ns5}^{10} | m_{ns5}^{11} | m_{ns5}^{12} |
| Inside Boson | | 1.7227 | 2.1192 | 3.2584 | 1.7044 | 2.1031 | 3.2486 | log | α_{ns5}^{10} | β_{ns5}^{11} | γ_{ns5}^{12} |
| Quarks | | Up | Charm | Top | Up | Charm | Top | | | | |
| Shell+Inside | | 6.3871 | 9.1252 | 11.2443 | 6.3536 | 9.1067 | 11.2374 | log | q_u | q_c | q_t |
| | | 2.4386M | 1334.3M | 175.53G | 2.2572M | 1278.4M | 172.74G | eV | m_u | m_c | m_t |

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

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

Table 3 Mass calculation of Down, Strange, Bottom

| Term | Reference | Kinetic State | | | Steady State | | | Unit | Symbol | | |
|-------------|-------------|---------------|---------------|---------------|----------------|----------------|----------------|------|-----------------------------|----------------------|----------------------|
| FERMION | Dimension | 4D | 5D | 6.001D | 4D | 5D | 6.001D | | | | |
| Oscillating | Fig. 6(e) | 3.8617 | 6.1900 | 7.1878 | 3.8464 | 6.1874 | 7.1906 | log | α_N^{456} | β_N^{56} | γ_N^6 |
| Shell | (1) | 5.7465 | 6.6889 | 7.1878 | 5.7415 | 6.6890 | 7.1906 | log | $\alpha\beta\gamma_N^{456}$ | $\beta\gamma_N^{56}$ | γ_N^6 |
| | | 557.80k | 4.8852M | 15.408M | 551.41k | 4.8869M | 15.511M | eV | m_d^s | m_s^s | m_b^s |
| BOSON | Dimension | 10.001D | 11.001D | 12.002D | 10.001D | 11.001D | 12.002D | | | | |
| n | Fig. 8(b) | 292.0k | 452.2k | 1.588M | 289.2k | 448.6k | 1.583M | eV | m_{n4}^{10} | m_{n4}^{11} | m_{n4}^{12} |
| ns | (2) | 28.66k | 35.67k | 66.86k | 28.53k | 35.53k | 66.73k | eV | m_{ns4}^{10} | m_{ns4}^{11} | m_{ns4}^{12} |
| | | 4.4573 | 4.5523 | 4.8251 | 4.4553 | 4.5506 | 4.8243 | log | α_{ns4}^{10} | β_{ns4}^{11} | γ_{ns4}^{12} |
| g | Fig. 9(d) | 1.995E-09 | 1.510E-08 | 5.059E-06 | 2.107E-9 | 1.586E-8 | 5.244E-6 | eV | m_{g6}^{10} | m_{g6}^{11} | m_{g6}^{12} |
| gt | (2) | 2.369E-03 | 6.517E-03 | 1.193E-01 | 2.435E-3 | 6.681E-3 | 1.215E-1 | eV | m_{gt6}^{10} | m_{gt6}^{11} | m_{gt6}^{12} |
| | | -2.6254 | -2.1859 | -0.9233 | -2.6136 | -2.1752 | -0.9155 | log | α_{gt6}^{10} | β_{gt6}^{11} | γ_{gt6}^{12} |
| Inside | (ns+gt)/2 | 0.9160 | 1.1832 | 1.9509 | 0.9209 | 1.1877 | 1.9544 | log | α_{ngst}^{10} | β_{ngst}^{11} | γ_{ngst}^{12} |
| Dark | Fig. 15(a) | 0.0065 | 0.0395 | 0.3841 | 0.0065 | 0.0395 | 0.3841 | log | ξ_6 | ξ_5 | ξ_4 |
| | (3) | 0.0129 | 0.0919 | 0.4761 | 0.0129 | 0.0919 | 0.4761 | log | ξ_{10} | ξ_{11} | ξ_{12} |
| Force | Inside+Dark | 0.9289 | 1.2751 | 2.4270 | 0.9338 | 1.2796 | 2.4305 | log | f_{10} | f_{11} | f_{12} |
| | | w8.490 | z18.84 | h267.3 | w8.586 | z19.04 | h269.5 | eV | m_d^w | m_s^z | m_b^h |
| QUARK | Sum | Down | Strange | Bottom | Down | Strange | Bottom | | | | |
| | Shell+Force | 6.67537 | 7.96400 | 9.61475 | 6.6752 | 7.9687 | 9.6211 | log | q_d | q_s | q_b |
| | | 4.7356M | 92.046M | 4.1186G | 4.7342M | 93.043M | 4.1796G | eV | m_d | m_s | m_b |

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

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

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

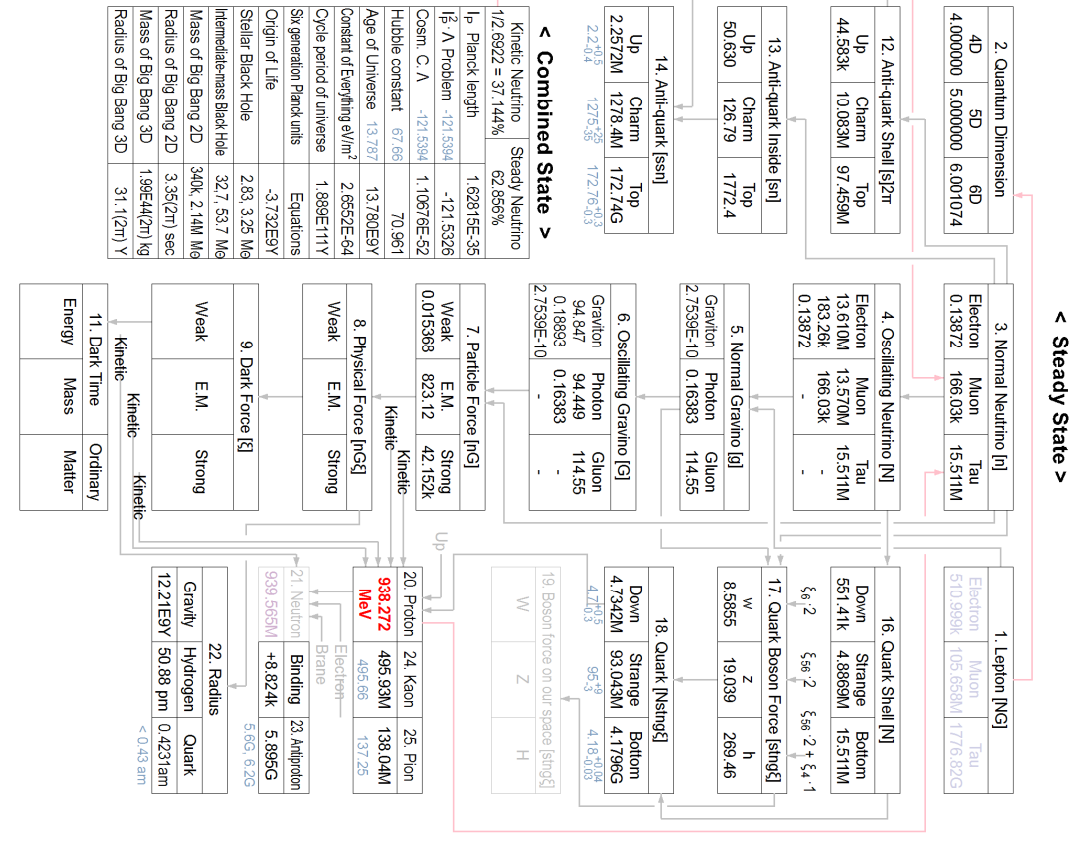
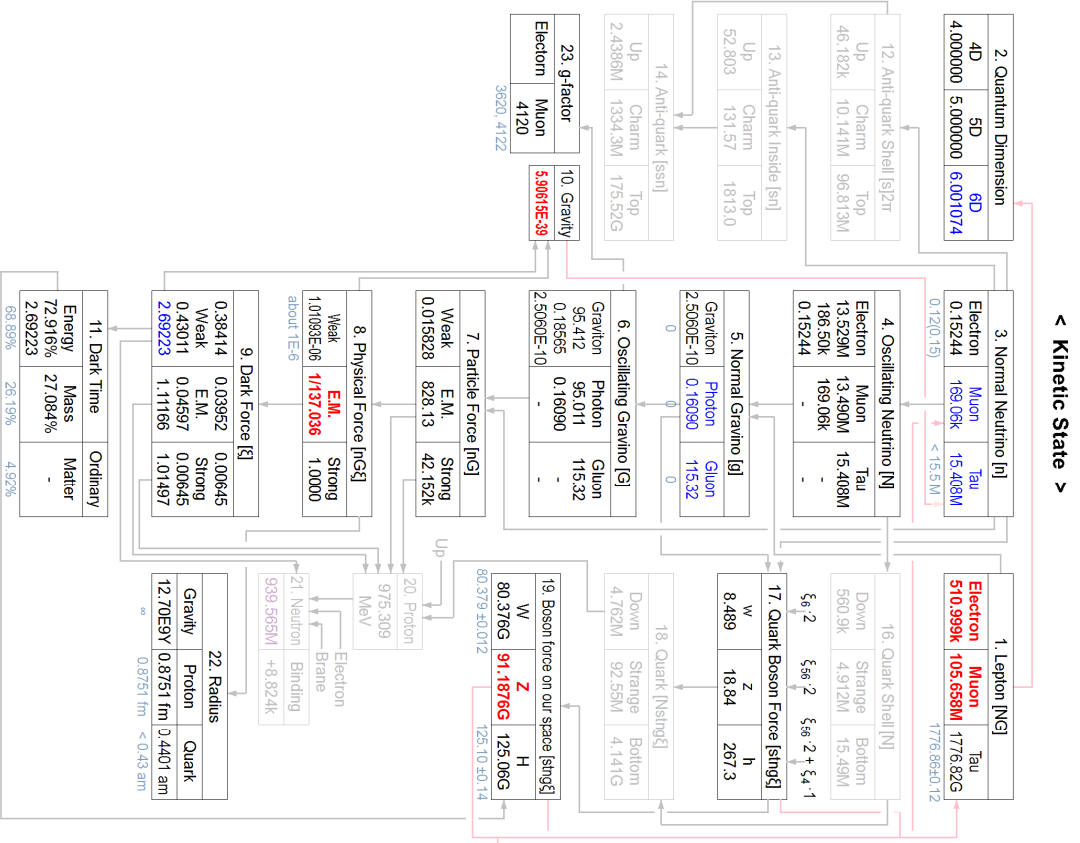


Fig. 21 Calculation Flow

Table 4 Calculation according to the change of dimension

| Case | Unit | Physics | 1) | 2) | 3) | 4) | 5) |
|---------------|----------|--|------------|--------------------|------------|------------|------------|
| ΔD | | | -0.00044 | 0.0010739 | 0.00243 | -0.00134 | 0.00046 |
| 4D | | | 4.00000 | 4.0000000 | 4.00000 | 3.99866 | 4.00046 |
| 5D | | | 5.00000 | 5.0000000 | 5.00243 | 5.00000 | 5.00046 |
| 6D | | | 6.00000 | 6.0010739 | 6.00243 | 6.00000 | 6.00046 |
| p left | | | 5.99956 | 6.0010739 | 6.00243 | 6.00000 | 6.00000 |
| p right | | | 6.00044 | 6.0010739 | 6.00243 | 6.00000 | 6.00000 |
| 10D | | | 10.00000 | 10.0010739 | 10.00243 | 9.99866 | 10.00046 |
| 11D | | | 11.00000 | 11.0010739 | 11.00487 | 11.00000 | 11.00046 |
| 12D | | | 12.00000 | 12.0021479 | 12.00487 | 12.00000 | 12.00000 |
| Kinetic n4 | eV | 0.12(0.15) | 0.14311 | 0.15244(0.120) | 0.13606 | 0.13608 | 0.14456 |
| Kinetic n5 | keV | <170 | 162.90 | 169.06 | 167.07 | 161.85 | 164.30 |
| Kinetic n6 | MeV | <15.5 | 14.838 | 15.408 | 15.406 | 14.871 | 14.958 |
| Kinetic g4 | eV | 0 | 2.648E-10 | 2.506E-10 | 2.756E-10 | 2.772E-10 | 2.622E-10 |
| Kinetic g5 | eV | 0 | 0.16895 | 0.16090 | 0.16738 | 0.17129 | 0.16752 |
| Kinetic g6 | eV | 0 | 119.26 | 115.32 | 114.25 | 118.71 | 118.30 |
| Steady n4 | eV | - | 0.13425 | 0.13872 | 0.13677 | 0.13456 | 0.13466 |
| Steady n5 | keV | - | 168.01 | 166.03 | 167.94 | 168.63 | 167.64 |
| Steady n6 | MeV | - | 15.780 | 15.511 | 15.486 | 15.757 | 15.719 |
| Steady g4 | eV | - | 2.823E-10 | 2.754E-10 | 2.742E-10 | 2.803E-10 | 2.814E-10 |
| Steady g5 | eV | - | 0.16381 | 0.16383 | 0.16651 | 0.16440 | 0.16418 |
| Steady g6 | eV | - | 112.14 | 114.55 | 113.66 | 112.04 | 112.57 |
| Tau | MeV | 1776.86±0.12 | 1769.59 | 1776.82 | 1760.17 | 1765.35 | 1769.52 |
| Weak Force | - | ≈1E-6 | 1.0085E-6 | 1.0109E-6 | 9.8632E-7 | 9.9396E-7 | 1.0093E-6 |
| Proton Radius | fm | 0.8751, 0.8414 | 0.8730 | 0.8751, ≈0.84 | 0.8538 | 0.8604 | 0.8737 |
| Quark Radius | am | < 0.43 | 0.4390 | 0.4401, ≈0.43 | 0.4294 | 0.4327 | 0.4394 |
| Dark Energy | % | 68.89 | 73.00 | 72.92 | 73.05 | 73.00 | 73.00 |
| W | GeV | 80.379±0.012 | 80.401 | 80.376 | 80.397 | 80.390 | 80.403 |
| H | GeV | 125.10±0.14 | 124.92 | 125.06 | 124.84 | 124.91 | 124.91 |
| Cos.C.Problem | - | -121.539 | -121.940 | -121.533 | -121.739 | -121.844 | -121.923 |
| Cosmo. C. | /m2 | 1.1056E-52 | 4.3372E-53 | 1.1068E-52 | 6.9465E-53 | 5.4414E-53 | 4.5031E-53 |
| Hubble C. | km/s/Mpc | 67.66, ≈73 | 44.472 | 70.961 | 56.317 | 49.817 | 45.317 |
| Current Time | B.Y. | 13.787 | 21.987 | 13.780 | 17.363 | 19.628 | 21.577 |
| Up | MeV | 2.2 ^{+0.5} _{-0.4} | 2.2249 | 2.2572 | 2.2375 | 2.2277 | 2.2264 |
| Charm | MeV | 1275 ⁺²⁵ ₋₃₅ | 1284.0 | 1278.4 | 1279.0 | 1286.1 | 1282.1 |
| Top | GeV | 172.76±0.3 | 175.02 | 172.74 | 171.74 | 174.76 | 174.31 |
| Down | MeV | 4.7 ^{+0.5} _{-0.3} | 4.816 | 4.734 | 4.773 | 4.829 | 4.801 |
| Strange | MeV | 95 ⁺⁹ ₋₃ | 95.54 | 93.04, 95, 96, 102 | 94.42 | 95.73 | 95.23 |
| Bottom | GeV | 4.18 ^{+0.04} _{-0.03} | 4.301 | 4.180 | 4.239 | 4.305 | 4.284 |
| Antiproton | GeV | 5.6, 6.2 | 5.895 | 5.895 | 5.895 | 5.895 | 5.895 |
| Kaon | MeV | 493.67, 497.65 | 491.91 | 495.93 | 493.17 | 491.69 | 492.20 |
| Pion | MeV | 134.97, 139.57 | 137.10 | 138.04 | 137.57 | 137.06 | 137.19 |

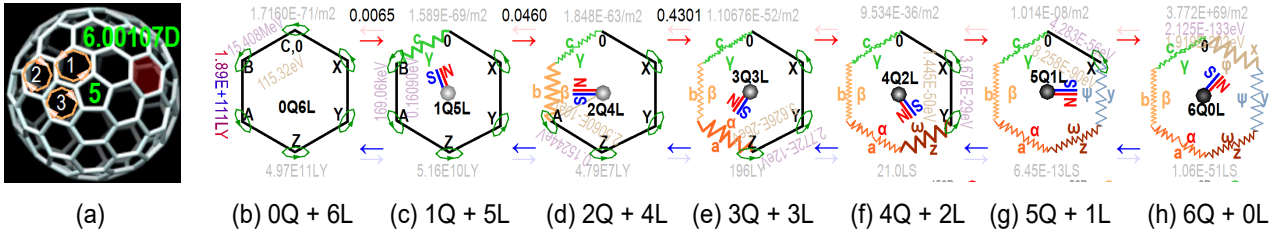


Fig. 22 Change of six-dimensional universe

particle on 10D 11D 12D. If the shapes of Fig. 2 and Fig. 12 are understood, the calculation of Table 2 will be easy.

5.12 Down, Strange, Bottom

In Table 3, the masses of down, strange, and bottom quarks are calculated. The shell of quark is steady state fermion particle on 4D 5D 6D, and the inside of quark is combined state boson particle on 10D 11D 12D. When quark decays, the combined state boson is changed to kinetic state boson, and it goes to 5D along the log-parabola in Fig. 11.

5.13 Cosmological constant problem

The present universe is the mixture of 37.144% kinetic state and 62.856% steady state. The mass of the neutrino in the combined state is calculated in Fig. 8(a). The value of $\nu_0/\nu_3 = 1E-121.5326$. The cosmological constant problem is $1E-121.5394$.

5.14 Planck length l_p

Planck length is $1.61626E-35$ m. This is considered the steady state length. The kinetic state Planck length would be $1.64827E-35 = 1.61626E-35 \times (0.87506 \text{ fm} / 0.84140 \text{ fm})^{1/2}$. Therefore, the Planck length of the mixture with 37.144% and 62.856% is $l_p = 1.62815E-35$. This value needs to be verified.

5.15 Cosmological constant Λ

The $l_p^2 \cdot \Lambda$ is $1E-121.5326$. Therefore, the Λ is calculated as $1.10675E-52$. The value of $1 / c\sqrt{\Lambda}$ is $10.048 \text{ BY} = 1 / (2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.2422 \cdot \sqrt{\Lambda})$.

5.16 Current Time

$10.048 \text{ BY} / 72.916\%$ is 13.780 BY . If the Planck length is $1.61626E-35\text{m}$, the current time is calculated as 13.679 BY .

5.17 Hubble constant H

$977.813 / 13.780$ is 70.96 km/s/Mpc .

5.18 Calculation flow

Figs. 12.1 and 2 of the previous study [1] were calculated

with muon neutrino 170.00 keV and tau 17768.6 GeV as input conditions. In this paper, two conditions were added: B/H 2.0030 and Hu 133.23 GeV in Fig. 10 are the same as E and Bu in Fig. 13. The new calculation results are shown in Fig. 21. The blue values are 6 independent variables, and the red values are 6 input conditions.

6. Dimension 6.00107

6.1 Dimension 6.00000D

If the calculation is performed again with 6D, the tau mass is calculated as 1771.71 MeV . This has an error of 0.29% from the measured value of $1776.86 \pm 0.12 \text{ MeV}$.

6.2 Calculation according to dimension change

However, why 4D, 5D, 6.00107D? It may be 4.00XXXD, 5D, 6D, or 4.00XXX, 5.00XXX, 6D, and so on. That is, combinations of various dimensions occur. In Table 4, the result values according to the change of dimension are presented. There are various combinations, but about 5 representatives are presented. ΔD is the calculated offset dimension value. p left means the midpoint of the left ellipse, and p right means the midpoint of the right ellipse. 4D to 12D are the input values of dimensional combination.

6.3 Correct answer 6.00107D

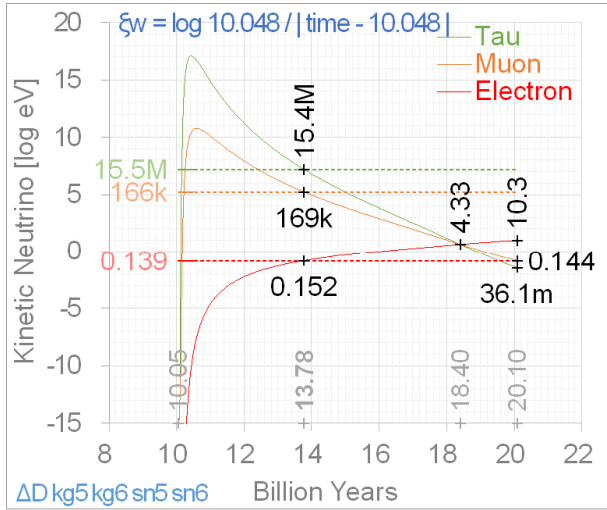
In Table 4, the minimum error is Case 2) of 4D, 5D, and 6.00107D. This is determined at the cosmological constant (Hubble constant, current time).

6.4 What does 6.00107D mean?

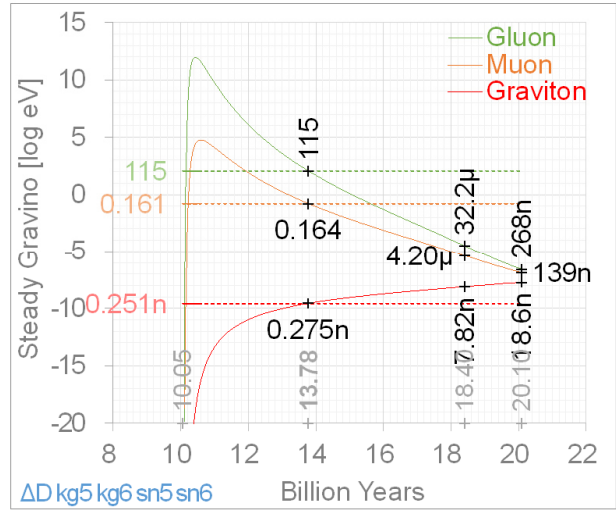
From 6.00107D, the shape of universe can be inferred. Six-dimensional space exists, and a strange phenomenon occurred in 6D as much as 0.00107D. Since this value is not a special number, it changes according to time flow. However, since 6D space changes are nearly infinitely slower than our 3D space, it can be treated as a constant.

6.5 Our universe

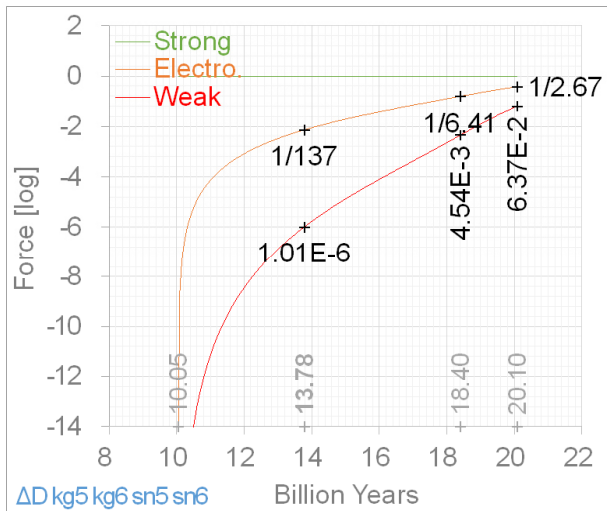
As shown in Fig. 22(e), the space of our universe consists



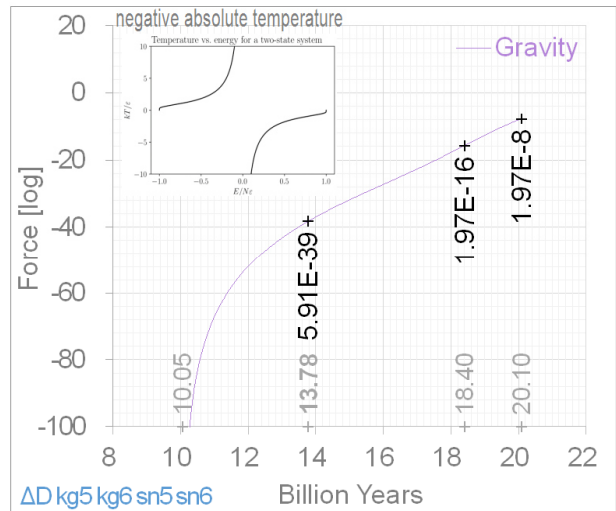
(a) Mass of kinetic state neutrinos



(b) Mass of steady state gravinos



(c) Strong, electromagnetic, weak forces



(d) Gravitational force

Fig. 23 Change of universe according to time flow

of three quantum spaces and three linear spaces. Our universe (e) changes from (d) to (f). This is the reason of the law of increasing entropy.

6.6 Dimensional multi-universe

Fig. 22 is dimensional multi-universe. (b) is one. (c) are born a few. (d) are born a lot. (e) are born very much. Therefore, (h) can be said to be an almost infinite number. The universe of (f) is spread out in the supermassive black hole at the center of galaxy.

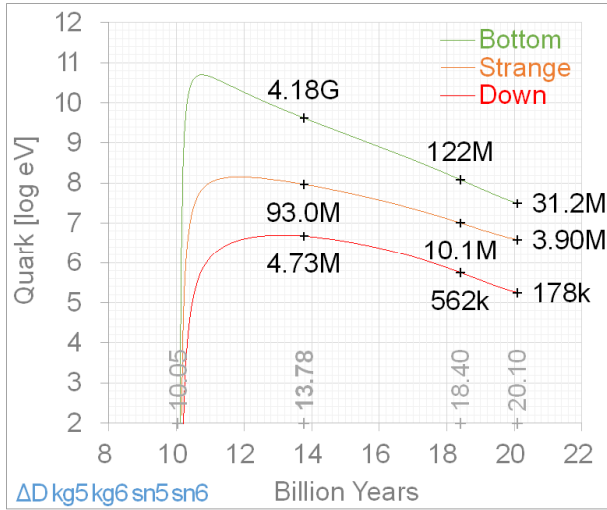
6.7 Origin universe

Our universe (e) begins at (d) and ends at (f). However, in whole Fig. 22, since this rotates, there is no beginning and no ending. Here, (b) is the maximum universe and (h) is the

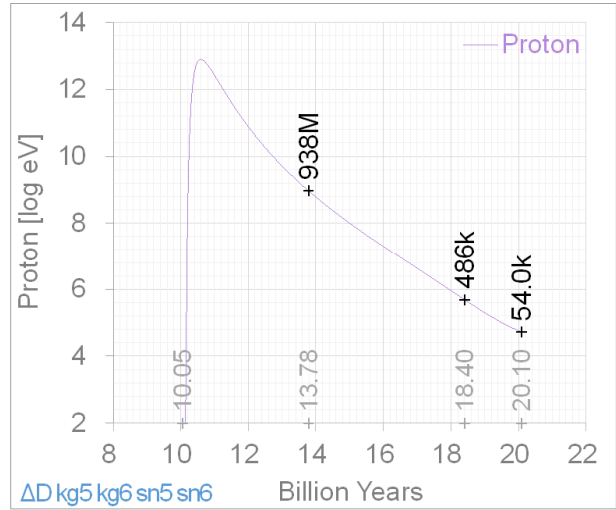
minimum universe. The Planck unit system is the universe (h). Our universe is (e). The cosmological constant problem is the difference between (e) and (h). The beginning of the origin universe does not exist, but it can be called (b).

6.8 Super origin universe

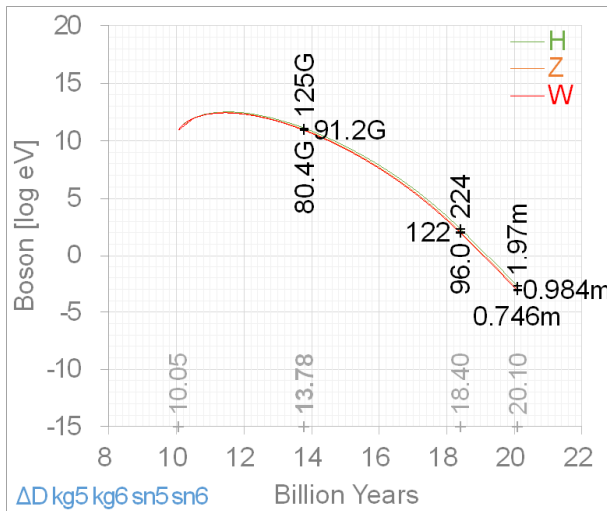
The origin universe (b) is not 6D but 6.00107D. This means that something outside of (b) is affecting as much as 0.00107D. (a) is a super origin universe. To the beginning and ending of that do not exist, it must be a sphere such as (a). One of hexagons in (a) is (b). Let's assume that a super origin universe occurred. Universes of unknown dimensions compete for power with each other. As time passes, all become six-dimensional universe that is fair to all. If everything turned into perfect 6D universes, then everything will no



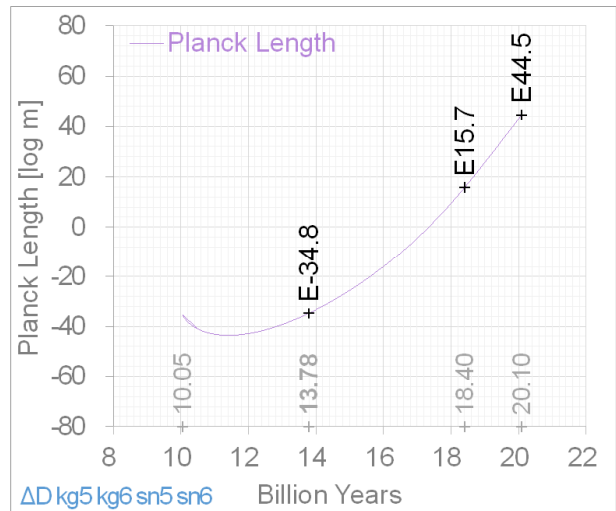
(e) Mass of down, strange, bottom quarks



(f) Mass of proton



(g) Mass of W, Z, H bosons



(h) Planck length

Fig. 23 Change of universe according to time flow

longer change. However, if (a) is a super-sphere, a five-dimensional universe must exist. It forever changes the super origin universe. Therefore, it can be understood that the universe of exactly 6D cannot exist.

6.9 Origin of particles

The outer shell of sphere (a) is fermion, and the inner particle is boson. They are unique brane in (b). 6D particles are born in (c), 5D particles are born in (d), and 4D particles are born in (e). This is the origin of particles. After $1.89E111$ LY / 2 passes, the outside brane and the inside brane are turned into inside and outside. This is represented by thin color arrows. Fig. 22 is connected to the logarithmic ellipse of Fig. 4(a).

7. Universe change according to time flow

7.1 Total of 6 input variables

As explained in Fig. 2 and Fig. 21, if only 6 input variables are given, our universe is analyzed.

7.2 Time flow → Change of dark force

In Fig. 18, the current dark force ξ_w is $2.6922 = 10.048 / (13.780 - 10.048)$. Therefore, the dark force according to time flow is $10.048 / (\text{time} - 10.048)$. When time is near 10.048 BY, the dark force becomes infinity. It is an incomprehensible phenomenon.

7.3 Five absolute constants

Five absolute constants are required to perform calculations according to time flow. The cosmological constant is absolute constant. It is clear that the cosmological constant is absolute constant. However, it is included as 10.048 BY in the time variable. There are various combinations of five absolute constants. In this paper, ΔD 0.00107, photon kg5 0.16090 eV of kinetic state, gluon kg6 115.32 eV of kinetic state, muon neutrino sn5 166.03 keV, and tau neutrino sn6 15.511 MeV were calculated as five constants.

7.4 Changes according to time flow

The changes of the universe are shown in Fig. 23. Its characteristics are that the values towards $-\infty$ at 10.048 BY and the neutrino masses are reversed at 18.40 BY in (a). At 13.78 BY in (a), the masses of kinetic state and steady state are almost identical. However, it is completely different at other times. It may be wrong. In (h), it is found that the calculated Planck length is wrong. Therefore, Fig. 23 is judged to be incorrect. What are the five absolute constants that do not change according to time flow? Various combinations were tried, but none of them yielded valid results.

7.5 Negative absolute temperature

In any combination, because of the dark force ξ_w formula, all values are directed towards $-\infty$ at 10.048 BY. Is this a possible phenomenon? Absolute temperature is 0K. It has been experimentally proven that there is negative absolute temperature, which is expressed as T/K: $+0 \rightarrow +\infty \rightarrow -\infty \rightarrow -0$. The above phenomenon is thought to occur at the cosmic age of 10.048 BY.

7.6 Birth of life

10.048 BY is 3.73 billion years ago. First fossils of life on Earth were proven 3.5 billion years ago, and fossils of life have been discovered 3.7 billion years ago. Is this a coincidence? Is it inevitable?

7.7 Reversal of neutrino masses

At 18.40 BY in (a), a reversal of the neutrino masses occurs. This is a phenomenon that the downward ellipse is compressed and suddenly upward. This may be a phenomenon that the neutral ns ellipse is separated into monopole n ellipse and monopole s ellipse when 18.40 BY.

7.8 Planck unit system

Cosmological constant Λ will be absolute constant, which is the time value of 10.048 BY in Fig. 18. (1) The ΔD of 0.00107 will be absolute constant from the logic of Fig. 22. (2) Planck length l_p will be absolute constant in Fig. 8(a). (3) Electromagnetic coupling constant f_e will be absolute constant because it is related to Planck charge. (4) Gravitational coupling constant f_g will be absolute constant because it is related to Planck units. (5) Proton mass m_p will be absolute constant because it is related to electromagnetic and gravitational coupling constant. All calculations in this paper were performed in Excel. Numerical analysis coding is required to perform the above conditions. When it is observed that the masses of particles change according to time flow, the calculation of the universe change according to time flow will be proven.

8. Conclusions

The language of physics should be drawing. After the drawing for phenomenon is shown correctly, mathematical formulas suitable for the drawing must be derived. The representative drawing example is standard model. The combination of quantum masses is multiplication, not addition. There is no quantum mechanics theory that can calculate the elementary school arithmetic. The key word in this paper is ellipse. From the hint of ellipse, any person can discover the results of this paper.

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