Dark Energy Constant 72.9118%, 68.5760%, Cosmological Parameter 1.10616E-52 /m2, Age of Universe 13.784 BY, Hubble Parameter 67.832, 72.774 km/s/Mpc

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June 8, 2024

Keywords: Age of the universe, Cosmological constant, Dark energy, Hubble parameter, Planck length

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Abstract In previous studies, using our originative method, dark energy was calculated as 72.916%, cosmological constant as 1.10616E-52 /m2, and age of universe as 13.783 BY. In this study, regardless of our previous studies, from only physical formulas, dark energy ratio was calculated as 72.9118% and 68.5760% (= 1/2/72.9118%), cosmological constant as 1.10616E-52 /m2, age of universe as 13.784 BY, and Hubble parameter as 67.832, 72.774 km/s/Mpc. Dark energy ratio is absolute constant, cosmological constant is cosmological parameter such as Hubble parameter, and the universe is constant velocity expansion.

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1. Introduction

In previous study, dark energy ratio is absolute variable, cosmological constant is absolute constant, and the results over time were calculated very strangely, as shown in Fig. 29 of Ref. [1]. Author also concluded that the results contained a major error. This study was calculated without reference to the originative method of previous study, and it was proven that dark energy ratio is absolute constant and cosmological constant is absolute parameter. The accuracy of these results will be $\leq$0.01%.

2. New Calculation Method

2.1 Radius, Quantum matter : Event horizon = 1 : 2

In previous study [2], it was calculated that our universe is in a 4D quantum hole (hyper black hole). Fig. 1 is the shape of Quantum Hole, and our 3D universe is located between the 4D Event Horizon and 4D Quantum Matter. 4D quantum matter is a superconductor that floats the 3D universe in the empty space and expands it to the limit, and the 4D event horizon shrinks the 3D universe to the limit. This causes our 3D space to unfold in the between, and our 3D universe unfolds along the parallel lines of the two forces.

It is well known that the relationship between Planck length l_P and Schwarzschild radius r_s is 1 : 2. Since our 3D universe is in hyper black hole, l_{P3} : r_{s3} = 1 : 2 also is established. In Fig. 1, l_{P3} is the radius of 4D quantum matter, and r_{s3} is the radius of 4D event horizon.

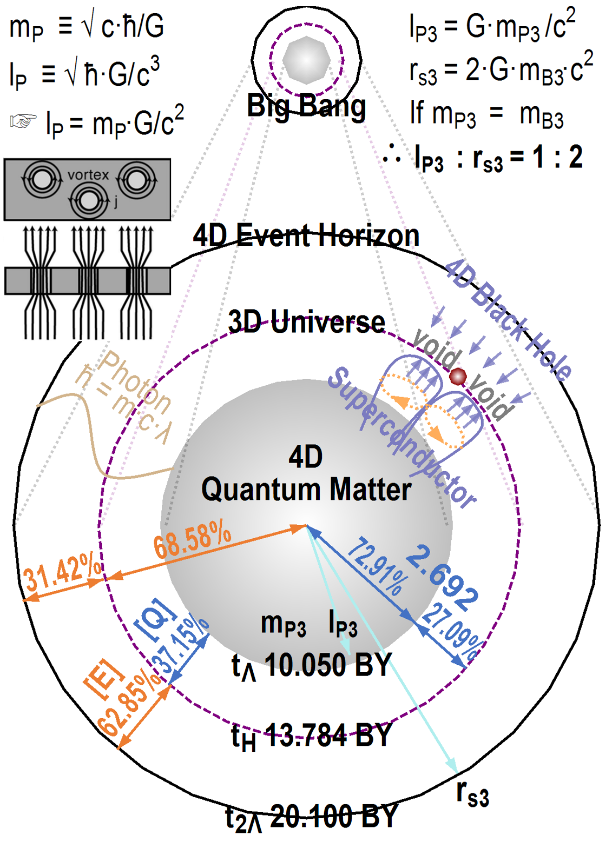


Fig. 1 Shape of Quantum Hole

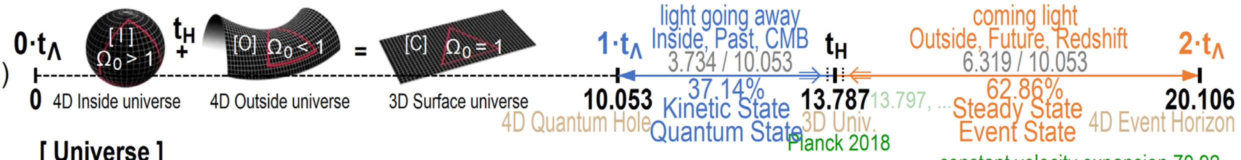
2.2 Radius of quantum matter: 10.053E9 LY

In section 5.23 of Ref. [1], the $l_P^2 \cdot \Lambda$ was calculated as 1E-121.533 (Physics 1E-121.539), and the cosmological constant problem is because the l_P is the value of 0D and Λ is the value of 3D. These are related to the dimensional neutrino masses, and applying the same dimension, it is proven that $l_{P3}^2 \cdot \Lambda_3$ = 1. Therefore, as shown in Fig. 2(a), the l_{P3} is

(a) l_{P3} : Planck length of our 3D universe $l_{P3}^2 \cdot \Lambda_3 = 1$ ☞ $l_{P3} = 1/\sqrt{\Lambda}$ ☞ $t_\Lambda = 1/c\sqrt{\Lambda}$ & $\Lambda = 1.1056E\text{-}52$ /m2 , 1.088E-52, ...
Planck 2018

Λ_3 : Cosmological constant of our 3D universe $t_\Lambda = 1/c\sqrt{\Lambda} = 1 / (2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 \cdot \sqrt{1.1056E\text{-}52})$ ∴ t_Λ = 10.053E9 LY

(b)



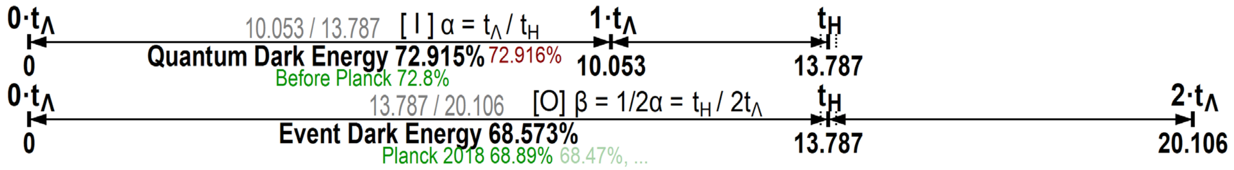
[Universe]

constant velocity expansion 70.92

(c) **Combined State = [I] · 37.14% + [O] · 62.86%** [C] Hubble = [I] CMB 67.66 · 37.14% + [O] Redshift 73 · 62.86% ≈ 71.0

(d) **Dark Energy Ratio** [I] $\alpha \equiv \Omega_Q = t_\Lambda / t_H$ [O] $1/\beta \equiv 1/\Omega_E = 2 \cdot t_\Lambda / t_H$ **[I] α × [O] β = 1 / 2** ①

Combined State Over Time = $[\,I\,] \cdot \dfrac{t_H - 1 \cdot t_\Lambda}{t_\Lambda} + [O] \cdot \dfrac{2 \cdot t_\Lambda - t_H}{t_\Lambda} = [\,I\,] \cdot (1/\alpha \overset{[Q]}{-} 1) + [O] \cdot (2 \overset{[E]}{-} 1/\alpha)$ ②



(e) Case 1) ② Combined Dark Energy $\Omega_C = \overset{[\,I\,]}{\alpha} \cdot (1/\alpha \overset{[Q]}{-} 1) + \overset{[O]}{1/2\alpha} \cdot (2 \overset{[E]}{-} 1/\alpha) = 1 - \alpha + 1/\alpha - 1/2\alpha^2$ ③ 70.19% forward

Case 2) ② Combined Dark Energy $\Omega_C = \underset{[\,I\,]}{\alpha} \cdot (2 \underset{[E]}{-} 1/\alpha) + \underset{[O]}{1/2\alpha} \cdot (1/\alpha \underset{[Q]}{-} 1) = 2\alpha - 1 + 1/2\alpha^2 - 1/2\alpha$ ④ 71.30% reverse

72.8%
$1/2\alpha$ = 72.82%
α = 68.66%
$1 = 3^2 \cdot \alpha^4 \cdot 1/2$
$1 = 3^2 \cdot t_\Lambda^4 / t_H^4 \cdot 1/2$

(f) $\Lambda^{[C]} = 3\left(\dfrac{H_0^{[\,I\,]}}{c_{[C]}}\right)^2 \Omega_\Lambda^{[O]}$ ⑤ Forward [C] 1.1056E-52 /m2 = $3 \cdot \left(\dfrac{[\,I\,]\ \text{CMB } 67.66 / 3.08568E19 /s}{[C]\ 2.9979E9 \text{ m/s}}\right)^2 \cdot [O]\ 68.89\%$ $\Lambda = 3\left(\dfrac{H_0}{c}\right)^2 \dfrac{1}{2\,\Omega_\Lambda}$ ⑥ Reverse ⑤x⑥ ☞ ⑦ $\Lambda^2 = 3^2 \cdot \dfrac{H_0^4}{c^4} \cdot \dfrac{1}{2}$

(g) Forward ⑤ **[C]** $\Lambda = 3 / c^2 \cdot H_C^2 \cdot \Omega_C \rightarrow 1 = 3 \cdot 1/c^2\Lambda \cdot H_C^2 \cdot \Omega_C = 3 \cdot t_\Lambda^2 \cdot 1/ t_H^2 \cdot \Omega_C = 3 \cdot \Omega_Q^2 \cdot \Omega_C$

forward Case 1) $1 = 3 \cdot \alpha^2 \cdot (1 - \alpha + 1/\alpha - 1/2\alpha^2)$ ③ ☞ $\alpha^3 - \alpha^2 - \alpha + 5/6 = 0$ ⑧ ☞ $\alpha \overset{}{\underset{?}{=}}$ **Ω_O = 68.5548%** **Ω_I = 72.9343%**
68.89% 68.47%, ... 72.8%

reverse Case 2) $1 = 3 \cdot \alpha^2 \cdot (2\alpha - 1 + 1/2\alpha^2 - 1/2\alpha)$ ④ ☞ $12\alpha^3 - 6\alpha^2 - 3\alpha + 1 = 0$ ⑨ ☞ $\alpha =$ **Ω_O = 68.7331%** **Ω_I = 72.7452%**

(h) Reverse ⑥ **[C]** $\Lambda = 3 / c^2 \cdot H_C^2 \cdot 1/2\Omega_C \rightarrow 1 = 3 \cdot 1/c^2\Lambda \cdot H_C^2 \cdot 1/2\Omega_C = 3 \cdot t_\Lambda^2 \cdot 1/ t_H^2 \cdot 1/2\Omega_C = 3 \cdot \Omega_Q^2 \cdot 1/2\Omega_C$

forward Case 1) $1 = 3 \cdot \alpha^2 \cdot 1/2(1 - \alpha + 1/\alpha - 1/2\alpha^2)$ ③ ☞ $3\alpha^4 + 2\alpha^3 - 2\alpha^2 - 2\alpha + 1 = 0$ ⑩ ☞ **Ω_O = 68.7600%** **Ω_I = 72.7167%**
68.89% 68.47%, ... 72.8%

reverse Case 2) $1 = 3 \cdot \alpha^2 \cdot 1/2(2\alpha - 1 + 1/2\alpha^2 - 1/2\alpha)$ ④ ☞ $3\alpha^4 - 4\alpha^3 + 2\alpha^2 + \alpha - 1 = 0$ ⑪ ☞ **Ω_O = 68.5869%** **Ω_I = 72.9002%**

(⑧72.9343 + ⑪72.9002) / 2 = 72.917% ? ⑧⑨⑩⑪ 72.82%

(i) ⑧ $\alpha^3 - \alpha^2 - \alpha + 5/6 \underset{?}{=}$ ⑪ $3\alpha^4 - 4\alpha^3 + 2\alpha^2 + \alpha - 1$ ☞ **$\Omega_E = t_H / 2t_\Lambda$ = 68.5764%** **$\Omega_Q = t_\Lambda / t_H$ = 72.9114%**
72.916% 0.006%

⑨ $12\alpha^3 - 6\alpha^2 - 3\alpha + 1 =$ ⑩ $3\alpha^4 + 2\alpha^3 - 2\alpha^2 - 2\alpha + 1$ ☞ **$\Omega_E = t_H / 2t_\Lambda$ = 68.7189%** **$\Omega_Q = t_\Lambda / t_H$ = 72.7602%**

(j) $\Lambda = 3 \cdot \dfrac{H_Q^2}{c^2} \cdot \Omega_E$ ⑫ ☞ $\Lambda = 2 \cdot \dfrac{H_C^2}{c^2} \cdot \dfrac{\Omega_E}{\Omega_Q}$ $\left(1 \overset{?}{+} \dfrac{3}{8\pi}\right) \cdot \Lambda = 3 \cdot \dfrac{H_C^2}{c^2} \cdot \Omega_C$ ⑬ ☞ $\Omega_C = \dfrac{2}{3} \cdot \left(1 + \dfrac{3}{8\pi}\right) \cdot \dfrac{\Omega_E}{\Omega_Q}$

(k) Forward ⑬ $(1 + 3/8\pi) \cdot \Lambda = 3 / c^2 \cdot H_C^2 \cdot \Omega_C \rightarrow 1 + 3/8\pi = 3 \cdot 1/c^2\Lambda \cdot H_C^2 \cdot \Omega_C = 3 \cdot t_\Lambda^2 \cdot 1/ t_H^2 \cdot \Omega_C = 3 \cdot \Omega_Q^2 \cdot \Omega_C$

forward Case 1) $1 + 3/8\pi = 3 \cdot \alpha^2 \cdot (1 - \alpha + 1/\alpha - 1/2\alpha^2)$ ③ ☞ $\alpha^3 - \alpha^2 - \alpha + 5/6 + 1/8\pi = 0$ ⑭ ☞ **Ω_Q = 72.9118% Ω_E = 68.5760%**
72.916% 0.006%

reverse Case 2) $1 + 3/8\pi = 3 \cdot \alpha^2 \cdot (2\alpha - 1 + 1/2\alpha^2 - 1/2\alpha)$ ④ ☞ $12\alpha^3 - 6\alpha^2 - 3\alpha + 1 - 3/4\pi = 0$ ☞ **Ω_Q = 72.4243% Ω_E = 69.0376%**

② $1/\Omega_Q - 1 =$ **[Q] = 37.1521%** $2 - 1/\Omega_Q =$ **[E] = 62.8479%**

☞ $\Omega_Q \cdot [Q] + \Omega_E \cdot [E] =$ **Ω_C = 70.1869%**

[Λ] Cosmological Parameter (O)
$1/c\sqrt{\Lambda} = t_\Lambda = 0.729118 \cdot t_H$

(l) ⑫ $c^2\Lambda = 1/t_\Lambda^2 = 1 / t_H^2 / \Omega_Q^2 = H_C^2 / \Omega_Q^2 = 3H_Q^2 / 2\Omega_Q$ ☞ $H_{cmb}^Q / H_{uni}^C = \sqrt{\tfrac{4}{3}\Omega_E} = 0.956215$ ☞ $H_{red}^E / H_{cmb}^Q = 1.072858$

② $H_{cmb}^Q \cdot [Q] + H_{red}^E \cdot [E] = H_{uni}^C$ ☞ $H_{red}^E / H_{uni}^C = 1.025883$ $(H_{red}^E / H_{uni}^C)^2 = 1.052436$

(m) $\left(\dfrac{l_{P0}^Q}{l_{P0}^E}\right)^2 \overset{?}{\underset{⑮}{=}} \dfrac{H_{red}^E}{H_{cmb}^Q} \cdot \left(\dfrac{\Omega_E}{\Omega_Q}\right)^{1/2} = 1.040470$ $l_{P0}^Q = 1.64864E\text{-}35\text{m}$ ☞ ② $l_{P0}^C = 1.62829E\text{-}35$ $\dfrac{r_p^Q}{r_p^E} = \dfrac{0.87506 \text{ fm}^{0.8751}}{0.84101 \text{ fm}_{0.8409}} = 1.04049 = \left(\dfrac{l_{P0}^Q}{l_{P0}^E}\right)^2$ 0.002%

$l_{P0}^E = 1.61626E\text{-}35\text{m}$ ∴ **Λ = 1.10616E-52 /m2**
1.1056, 1.088, ...

(n) **$t_\Lambda = 1/c\sqrt{\Lambda}$ = 10.050 BY** $\Omega_Q = 72.9118\% = t_\Lambda / t_H$ ∴ **t_H = 13.784 BY** $\dfrac{r_P^Q}{r_P^E} \cdot \dfrac{\tau_N^Q}{\tau_N^E} = \dfrac{0.87506 \text{ fm}}{0.84101 \text{ fm}} \cdot \dfrac{887.7\text{s}}{877.75\text{s}} = 1.05228$ beam bottle 0.015%
13.787, 13.797, ...

Hubble Tension 67.66 67.36, ... about 73

(o) $H_{uni}^C = 1 / t_H = 3.08568E19 / (13.784E9 \cdot 60 \cdot 60 \cdot 24 \cdot 365.2422)$ ☞ **H_{uni}^C = 70.938** **H_{cmb}^Q = 67.832** **H_{red}^E = 72.774**

(p) c_{uni}^C = 2.9979E8 m/s c_{cmb}^Q = 2.8667E8 m/s c_{red}^E = 3.0755E8 m/s ☞ **Planck unit parameters** Z 91.1876±0.0021 GeV

(q) Six-variables: e 510.998 950 keV, μ 105.658 375 MeV, p 938.272 089 MeV, α 1/137.035 999, αG 5.90 595E-39, Ω 72.9 117 607%

Fig. 2 Calculation of dark energy, cosmological constant, age of universe, and Hubble parameter

$1/\sqrt{\Lambda}$, and the cosmological constant Λ represents the radius of quantum matter in Fig. 1.

Since the cosmological constant Λ is known to be 1.1056E-52 /m2, the radius of 4D quantum matter t_{Λ} is calculated as 10.053E9 LY. Therefore, the radius of 4D event horizon $t_{2\Lambda}$ is twice 20.106E9 LY.

2.3 [Q]uantum state : [E]vent state = 37.14% : 62.86%

In the 3D universe of Fig. 1, looking inside of 4D direction, there is a spherical quantum matter, and let's call it quantum (kinetic) state. Looking outside of 4D direction, there is a saddle-shaped event horizon, and let's call it event (steady) state. Because of this, as shown in Fig. 2(b), our 3D universe is observed as a flat plane which is the sum of above two.

In Fig. 2(b), the left side of t_{H} is the force(⇒) pushed by superconductor, and the right side of t_{H} is the force(⇐) pushed by event horizon. Therefore, the characteristics of above two are different. The quantum (kinetic) state of left side is light going away, inside, past, and CMB, and the event (steady) state of right side is coming light, outside, future, and redshift. The age of universe t_{H} is known to be 13.787 BY, so the ratio of quantum state and event state is 37.14% (3.734/10.053) : 62.86% (6.319/10.053).

2.4 [C]ombined state = Universe

As shown in Fig. 2(c), the universe operates as the combination of [I]nside's [Q]uantum state and [O]utside's [E]vent state. If the universe is expanding at a constant velocity, the Hubble constant is 70.92 km/s/Mpc. The sum of 37.14% of CMB 67.66 and 62.86% of Redshift ≈73 is 71.0 km/s/Mpc, so it is understood that the universe is expanding at constant velocity.

2.5 Dark energy ratio: [I] x [O] = 1 / 2

In Fig. 1, looking inside of t_{H}, there is a quantum matter of t_{Λ}, so it is defined as $\alpha \equiv \Omega_{\mathrm{Q}} = t_{\Lambda}/t_{\mathrm{H}}$. Looking outside of t_{H}, there is an event horizon of $2t_{\Lambda}$, so it is defined as $1/\beta \equiv 1/\Omega_{\mathrm{E}} = 2t_{\Lambda}/t_{\mathrm{H}}$. As shown in Fig. 2(d), the [I] α × [O] β = 1/2 of Eq. ① is established. Let's remember this formula always. Therefore, the combined state over time is expressed as Eq. ② of α formula. This formula can also be expressed as β formula, and the result is the same of α formula.

In the integration of four fundamental forces of Table 2 in Ref. [2], the dark energy ratio was calculated as 72.916%. Substituting t_{H} 13.787 and t_{Λ} 10.053, the α is calculated as 72.915%, and the β is calculated as 68.573%. Before Planck value is 72.8%, Planck 2018 value is 68.89%, and the product of above two is 50.15% (=1/1.994). It is understood that both Before Planck and After Planck are correct.

The proton radius in hydrogen is 0.8751 fm and the muon is 0.8409 fm, the neutron lifetime in beam is 887.7s and in bottle is 877.75s, and the Hubble constant of 67.66 km/s/Mpc measured by CMB and about 73 km/s/Mpc measured by redshift are all correct.

2.6 Combined dark energy ratio

In Fig. 2(e), the inside dark energy ratio is [I] α, and the outside ratio is [O] β (=1/2α). Substituting into Eq. ②, the formula of Eq. ③ is expanded, and it is 'forward'. Substituting these alternately, Eq. ④ is expanded, and it is 'reverse'. Substituting the 72.915% into α, it is calculated as 70.19% and 71.30%. Here, 'reverse' does not fit our logic.

2.7 Relational expression of Λ, H_{0}, c, Ω_{Λ}

The cosmological constant Λ calculated from Fig. 1(f) of Ref [3] is in [C] state, and the speed of light c 2.99792E8 m/s from Table 1(4) of Ref [3] is calculated as in [C] state. Therefore, in Eq. ⑤ of Fig. 2(f), Λ 1.1056E-52 /m2 is [C], c 2.9979E9 m/s is [C], H_{0} 67.66 km/s/Mpc is [I], and Ω_{Λ} 68.89% is [O], and this formula is 'Forward'. From Eq. ①, α × β = 1/2, so Eq. ⑥ can be proposed, which is 'Reverse'. When ⑤ and ⑥ are multiplied, ⑦ is calculated, and 1/2α is calculated as 72.82%. The value of Before Planck is 72.8%.

2.8 Dark energy ratio = 68.5548%, 72.9343%

As shown in Fig. 2(g), substituting all [C] into Eq. ⑤ and expanding, and substituting Eq. ③ into Ω_{C}, Eq. ⑧ is derived, and this is 'Forward & forward'. From this, as shown in Fig. 3(a), α is calculated as 68.5548%. However, strangely, this value coincides with β. Anyway, Ω_{O} is calculated as 68.5548% and Ω_{I} is calculated as 72.9343%. Substituting all [C] into ⑤ and expanding, and substituting ④ into Ω_{C}, Eq. ⑨ is derived, and this is 'Forward & reverse'. From this, Ω_{O} is calculated as 68.7331% and Ω_{I} is calculated as 72.7452%. 'Forward & reverse' is not the correct answer because the directions of calculation are different each other.

The formula developed above is a general-purpose formula according to the passage of time, but Ω was calculated as a constant. This means that the dark energy ratio is absolutely constant regardless of time. In other words, as shown in Fig. 1, it has been confirmed that from Big Bang to present, all the ratios are absolute constants.

2.9 Dark energy ratio = 68.5869%, 72.9002%

As shown in Fig. 2(h), substituting all [C] into ⑥ and expanding, and substituting ③ into Ω_{C}, Eq. ⑩ is derived, and this is 'Reverse & forward'. From this, Ω_{O} is calculated as 68.7600% and Ω_{I} is calculated as 72.7167%. 'Reverse & forward' is not the correct answer because the directions of calculation are different each other. Substituting all [C] into ⑥ and expanding, and substituting ④ into Ω_{C}, Eq. ⑪ is derived, and this is 'Reverse & reverse'. From this, as shown in Fig. 3(a), Ω_{O} is calculated as 68.5869% and Ω_{I} is calculated as 72.9002%. 'Reverse and reverse' is not the correct answer, but the result is very close to the correct answer.

The average Ω_{I} of ⑧ ⑨ ⑩ ⑪ is calculated as 72.82%,

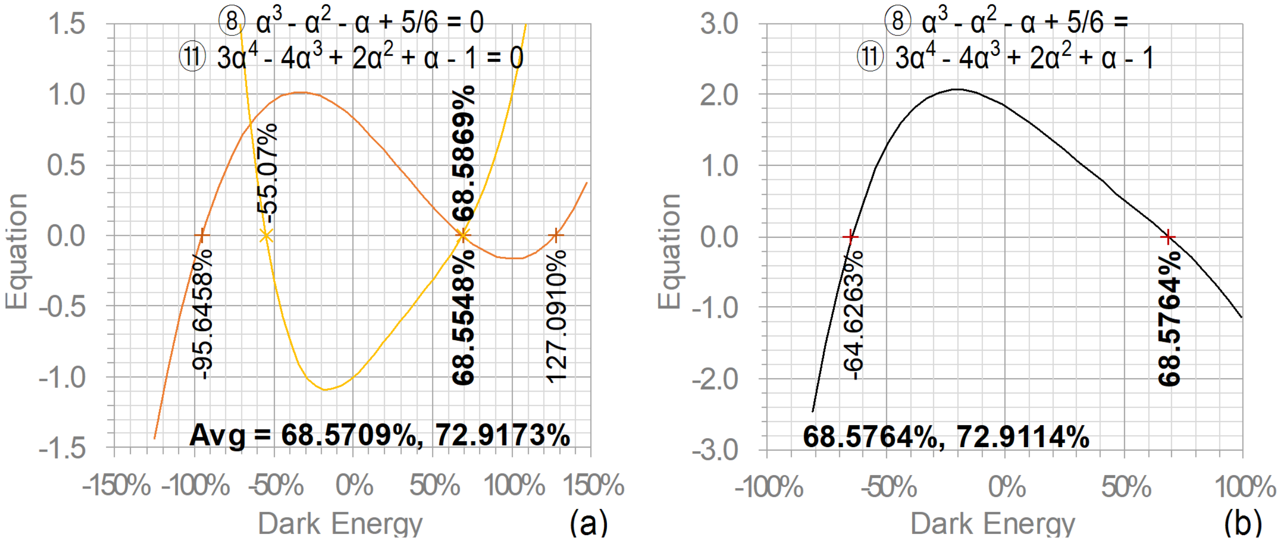


Fig. 3 Functions of Eqs. ⑧ & ⑪

and the value of Before Planck is 72.8%. The average Ω_I of ⑧ ⑪ is calculated as 72.917%, and the result of our previous study was 72.916%. Here, the reason for the average value is questionable.

2.10 Dark energy ratio = 68.5764%, 72.9114%

As shown in Fig. 2(i), if ⑧ and ⑪ are the same, 68.5764% and 72.9114% are calculated, as shown in Fig 3(b). The question is why they are the same.

2.11 Questions

There are several questions in the development of formula. In Eq. ⑤, H_0 is [I] and Ω_Λ is [O]. It is judged that there is an error in (g) and (h), which substituted all [C] in Eq. ⑤, but the results were calculated to be close to the correct answer.

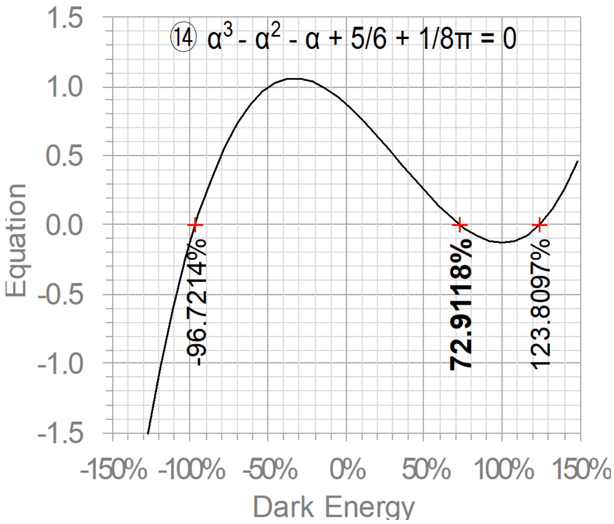


Fig. 4 Function of Eq. ⑭

3. Correct Formula and Result

3.1 Relational expression for [C]

As shown in Fig. 2(j), Eq. ⑫ is a physical formula. The relational expression for [C] is judged to be Eq. ⑬. Here, we have not yet figured out what 1+3/8π means.

3.2 Dark energy ratio = 72.9118%, 68.5760%

Expanding Eq. ⑬, Eq. ⑭ of Case 1) is derived. The formula is shown in Fig. 4, and Ω_Q is calculated as 72.9118%. Therefore, Ω_E is $1/2\Omega_Q$ = 68.5760%, and Ω_C is 70.1869%. This value is judged to be correct. Case 2) is 'reverse', which is the opposite of our logic.

3.3 Cosmological parameter Λ

In Fig. 2(d), the Ω_Q is t_Λ/t_H and was a variable over time. However, the result is a constant of 72.9118%. Therefore, $1/c\sqrt{\Lambda}$ is t_Λ, and t_Λ is $0.729118 \cdot t_H$. Since t_H is the flow of time, it is understood that the cosmological constant Λ is a parameter that changes with time. This means that the quantum matter in Fig. 1 grows at a constant velocity according to time flow.

3.4 Change of universe over time

In Fig. 29 of Ref. [1], dark energy ratio was absolute variable, cosmological constant was absolute constant, and the results over time were calculated very strangely. From these results, it was determined that the dark energy ratio Ω_Q is an absolute constant, and the cosmological constant Λ is an absolute parameter such as Hubble parameter. Dark energy ratio Ω affects gluon, photon, and graviton. Therefore, it can be understood that the universe is expanding at a constant velocity, and everything is perfectly stable.

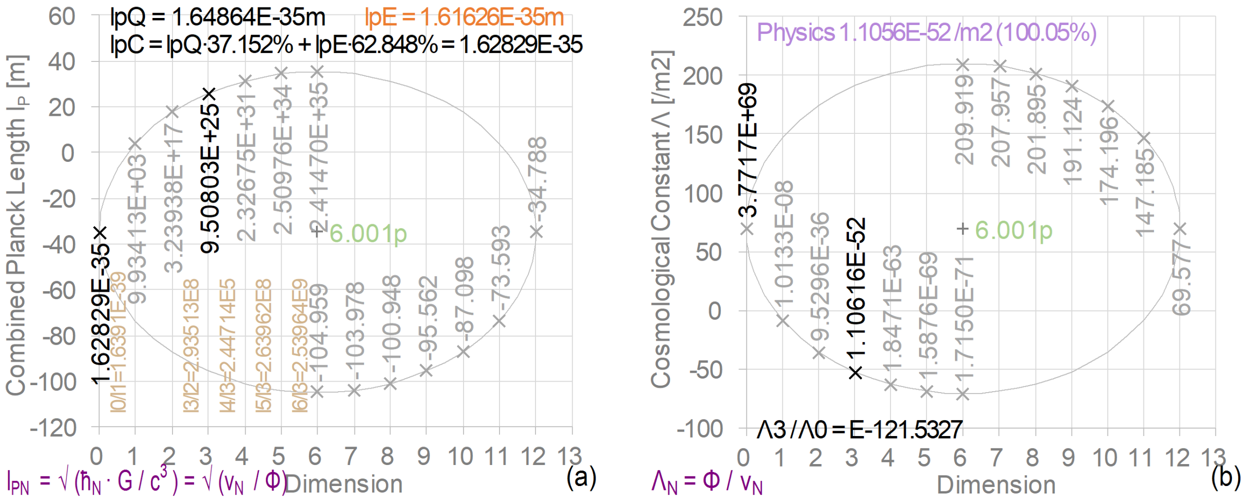


Fig. 5 6-dimensional Planck lengths and Cosmological parameters

3.5 Hubble parameter ratio

As shown in Fig. 2(l), expanding Eq. ⑫, H^Q_{cmb}/H^C_{uni} is derived into $\sqrt{4/3 \cdot \Omega_E}$, and this value is calculated as 0.956215. From Eq. ②, H^E_{red} / H^C_{uni} is calculated as 1.025883. Therefore, the value of H^E_{red}/H^Q_{cmb} is 1.072858.

3.6 Cosmological parameter Λ 1.10616E-52 /m2

In Fig. 2(m), the Planck length 1.61626E-35m of physics is the value of l^E_{P0}. Eq. ⑮ is proposed, and its value is 1.040470. From this, l^Q_{P0} is calculated as 1.64864E-35m, and l^C_{P0} is calculated as 1.62829E-35m from Eq. ②. From this, the 6-dimensional Planck lengths of Fig. 5(a) are calculated, and since Λ is $1/l_P^2$, the 6-dimensional cosmological parameters of Fig. 5(b) are calculated. The results of Fig. 5 are almost the same as those of Fig. 25 of Ref. [1].

In Fig. 22 of Ref. [1], the proton radius in hydrogen was calculated as r^Q_p 0.87506 fm, the proton radius in muon was calculated as r^E_p 0.84101 fm, and the ratio is 1.04049. The value of Eq. ⑮ is 1.040470, and the difference is 0.002%. Coupled with the lifetime time of neutrons in beam and in bottle, the value is 1.05228. Here, $(H^E_{red}/H^C_{uni})^2$ is 1.052436, and the difference is 0.015%. From the above results, it can be seen that all ratios are constants.

3.7 Age of universe 13.784 BY

As shown in Fig. 2(n), the age of the universe is calculated as 13.784 BY. The value suggested by physics is 13.787, and the difference is 0.02%.

3.8 Hubble parameter 67.832, 70.938, 72.774

As calculated in Fig. 2(o), H^C_{uni} is 70.938 km/s/Mpc, H^Q_{cmb} is 67.832 km/s/Mpc, and H^E_{red} is 72.774 km/s/Mpc.

3.9 Planck unit parameters

In Table 1(4) of Ref [3], the speed of light c 2.99792E8 m/s is calculated as in [C] state. The speed of CMB and redshift may be different with 2.99792E8 m/s. The physical value of Quantum Matter in Fig. 1 is the 3D value in Fig. 5, and the Planck units of physics is the value of 0D. In Fig. 5, the ellipse maintains its shape and moves at a constant speed up or down over time. That is, they are Planck unit parameters such as Hubble parameter.

3.10 six-variable calculation

As shown in Fig. 2(q), the results of previous studies were derived from six variables (Electron 510.998 950 keV, Muon 105.658 375 MeV, Proton 938.272 089 MeV, Fine-structure constant 1/137.035 999, Gravitational coupling constant 5.90 595E-39, Z boson 91.1876±0.0021 GeV). A more accurate calculation will be performed by substituting the dark energy ratio of 72.9 117 607% instead of Z boson.

4. Conclusions

Dark energy ratio is 72.9118% and 68.5760%, and these values would be the correct answer with zero error. The cosmological parameter is 1.10616E-52 /m2, the age of the universe is 13.784 BY, and Hubble parameter is 67.832 and 72.774 km/s/Mpc, and these values will have an error lower than 0.01%.

References

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