

The Universe is inside a 4D Black Hole

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November 20, 2022

Keywords: Black hole, Cosmological constant, Dark matter, Planck mass, Planck time

1. Calculation

1.1 Cosmological constant problem

In Fig. 6(a) of the previous study [1], the cosmological constant problem was proved. The cosmological constant Λ is the unit of quantization time t_{P3} of 3D universe.

1.2 Planck time on 3D universe

In Planck 2018, the cosmological constant Λ was given as $1.1056E-52 \text{ m}^2$. Therefore, the 3D Planck time $t_{P3} = 1/c\sqrt{\Lambda}$ is calculated as 10.053 BY.

1.3 Planck time dark matter

Currently, the mass of ordinary matter in the universe is estimated to be about $1.5E53 \text{ kg}$. Dark matter is 26.19% and ordinary matter is 4.92%. Therefore, the current dark mass of 13.787 BY is $7.985E53 \text{ kg}$. Fig. 1 was calculated at Fig. 25 of the previous study [1]. The Planck mass on 3D was calculated as $1.280E53 \text{ kg}$, and its Planck time was 10.050 BY. In previous study [1], it was proved that antiparticle is 2π times heavier than particle. Multiply the above value by 2π , its value is $8.045E53 \text{ kg}$. The error is 0.75%. The $7.985E53 \text{ kg}$ is the value of 13.787 BY, and $8.045E53 \text{ kg}$ is the value of

10.050 BY. 13.787 BY is wrong, and 10.050 BY is correct.

1.4 Current time dark matter

Multiply the above value by $13.78 / 10.05$, $10.951E53 \text{ kg}$ and $11.033E53 \text{ kg}$ are calculated. This value is the current dark mass.

1.5 Current time universe black hole

According to Schwarzschild black hole formula, the mass of the universe black hole at the current time is calculated as $8.780E52 \text{ kg}$ and $8.780E52 \text{ kg}$. Multiplying this value by 4π , $11.036E53 \text{ kg}$ and $11.033E53 \text{ kg}$ are calculated.

2. Conclusions

The mass $11.033E53 \text{ kg}$ of Dark Matter and the mass $11.033E53 \text{ kg}$ of Universe Black Hole are exactly the same values. This is also proved by physical formula. Therefore, it is proved that our universe is inside a 4D black hole and expand at constant velocity.

References

- [1] D. Kim, 2022, New Standard Model, <https://vixra.org/abs/2207.0003>

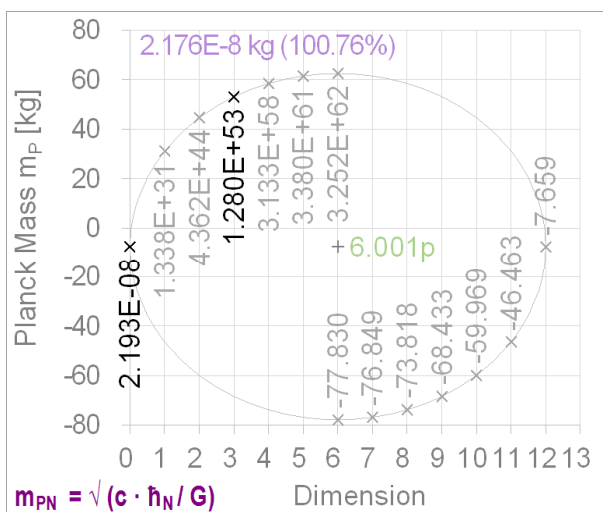


Fig. 1 Dimensional Planck mass

[Planck Time on 3D Universe]

Cosmological constant $\Lambda =$ Planck 2018 $1.1056E-52 \text{ m}^2$
 $t_{P3} = 1 / c\sqrt{\Lambda} = 1 / (2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 \cdot \sqrt{1.1056E-52}) = 10.053 \text{ BY}$

[Planck Time Dark Matter]

Current time Ordinary matter m_{P3} 13.787 (?) 1.5 E53 kg
 Dark Matter $1.5E53 \cdot 26.19\% / 4.92\% = 13.787 (X) 7.985E53 \text{ kg}$
 3D Planck Mass $2\pi \times 1.280E53 = 10.050 (O) 8.045E53 \text{ kg}$
 Error 0.75%

[Current Time Dark Matter]

Planck 2018 $7.985E53 \times 13.787 / 10.053 = 1.095E54 \text{ kg}$
 Our Calculation $8.045E53 \times 13.783 / 10.050 = 11.033E53 \text{ kg}$

[Current Time Black Hole] $r_H = 2 \cdot G \cdot m_B / c^2$

$r_H = 13.787E9 \cdot 2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 = 1.3043E26 \text{ m}$ $m_B = 8.782E52 \text{ kg}$
 $1.3043E26 = 2 \cdot 6.6743E-11 \cdot m_B / 2.9979E8^2$ $4\pi \cdot m_B = 11.036E53 \text{ kg}$
 $r_H = 13.783E9 \cdot 2.9979E8 \cdot 60 \cdot 60 \cdot 24 \cdot 365.24 = 1.3040E26 \text{ m}$ $m_B = 8.780E52 \text{ kg}$
 $1.3040E26 = 2 \cdot 6.6743E-11 \cdot m_B / 2.9979E8^2$ $4\pi \cdot m_B = 11.033E53 \text{ kg}$

※ Universe is inside a 4D black hole & constant velocity expansion
 $2\pi \cdot m_{P3} \cdot t_H / t_{P3} = 4\pi \cdot r_H \cdot c^2 / 2G$ & $r_H \cdot t_{P3} / t_H = 1 / \sqrt{\Lambda}$

Fig. 2 The Universe is inside a 4D black hole