

About the Information Contained in Constants

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Abstract

Constants are among the properties of matter. A formula (a) is developed. It represents information flow that has constants as properties.

Keywords: Information, Time, Constants

1. Definition of Symbols Used in Formulas

E_M = visible baryonic matter

E_d = dark energy

H = SHANNON's information entropy

H/t = Information flow = Dynamic Information

H_0 = HUBBLE's constant

t = time

t_u = age of the universe

t_p = PLANCK time

S_H = BEKENSTEIN-HAWKING entropy

T_h = HAWKING temperature

A_H = area of the black hole event horizon measures the information potentially contained in it

G = constant of gravitation

h = PLANCK's quantum of action, $\hbar = h / (2\pi)$

c = speed of light

2. Derivation of a Formula (a)

In my article "Calculation of Dark Energy and Dark Matter" [1] the formula (2.1) is derived:

$$E_M = c^5 / (8^{1/2} \cdot G \cdot H_0) = 5.61 \cdot 10^{69} \text{ J} \quad (2.1)$$

Formula (2.1) is deducted from the BEKENSTEIN-HAWKING entropy $S_H = kc^3 A_H / (4\hbar G)$ and HAWKING temperature $T_H = \hbar c^3 / (8\pi kGM)$.

By combining formula (2.1) and (1):

$$E = h \cdot \ln 2 \cdot H / t \quad (1)$$

you get

$$H = c^5 / (8^{1/2} \cdot \ln 2 \cdot hG \cdot H_0) \cdot t \quad (a)$$

3. Conclusion

A new formula (a) has been developed. It contains the information flow that appears as properties [2].

4. Application

This formula (a) can also be used in conversion to accurately calculate the value of the HUBBLE's constant.

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