Treatise on the gravitation

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Speech in this article will talk about Newtonian constant of gravitation (NCG) and its counterpart in the author's article "Theory of the nature" (http://vixra.org/pdf/1509.0038v1.pdf in Russian). This counterpart is called the gravitational quantity of the universe (GQU). As it is known G=6.67384 -11 m^3 kg^{-1} s^{-2}. Used in the physics of the fundamental quantity of the NCG in no way determined by more fundamental values of nature. You can recall the Planck values and consider the following quantity:

$$\frac{l_{Pl}^3}{m_{Pl} \cdot t_{Pl}^2} = 6{,}67384 \cdot 10^{-11} m^3\, kg^{-1}\, s^{-2}. \qquad (1)$$

To the right is shown the value of this quantity in the SI. This value coincides with the value of the quantity NCG (G), above. But this value and its expression (1) is not the right part of the formula for determining the Newtonian constant of gravitation in the theory of modern physics (TMP). There is no a determining formula for the Newtonian constant of gravitation in modern physics. The expression in the formula (1) could be used as the right-hand side of the formula for determining the quantity of NCG (G), if the status of the Planck value would have been different. The Planck quantities in the physics have the status of theoretical assumptions. But they correspond to nothing in the nature. The physics uses the experimentally determined value of the Newtonian constant of gravitation. There is the determining formula for the gravitational physical quantity of the Universe (GQU) in the article «Theory of the nature».

The basis of the nature of the author's opinion is an atom of the matter. This is the minimum material object in the nature for our Universe. This is throbbing flesh of the Universe. An atom of the matter contains a minimum amount of matter. This is the elementary unit of the matter (EUM). This is the first main characteristic of an atom of the matter. According to the author, the matter should be determined as the basic physical quantity. It should be a natural unit of matter (NUM). It is also necessary to determine how the basic physical quantity the unique constant of the nature UCN = 1.21034 +44. This essentially turns the physics of face-to-nature and the physics becomes the materialistic physics. In this case, will have the equality (identity): EUM≡NUM / UCN. From one natural unit of matter it turns out UCN the atoms of the matter. It's

the law of nature. The natural unit of the matter is also the unique nature unity (UUN), the measure of all things and phenomena in the nature. It is called the merilo (criterion) and is denoted by $\mu^{4.}$ An atom of the matter has the shape of a ball. Hence, it has a diameter. The diameter of the atoms of the matter determines the minimum length of matter in the nature (EUL). This is the second main characteristic of an atom of the matter. According to the author, the diameter of the atom of the matter is defined as follows:

$$\mathrm{EUL} = \frac{\sqrt[4]{\mathrm{EUM}^3}}{\sqrt[8]{\mathrm{A}}} = \mathrm{A}^{-0,125} \cdot \mathrm{UCN}^{-0,75}\, \mu^3. \qquad (2)$$

In this formula, A - the age of the Universe in the natural step of the rhythm of the nature (NSN): NSN≡UCN · ESN, here the ESN – the elementary step of the rhythm of the nature. From the equation (2) implies that the diameter of particles of matter decreases with age of the Universe. Hence, the density of particles of matter (D) will be correspondingly increased.

If the EUL is the diameter of an atom of the matter, the EUL^4 is a 4-cube circumscribed around the atom of the matter. It is reasonable to assume that an atom of the matter is in the form of 4-ball. Between the volumes of the 4-ball (V_{ball}) and the 4-cube (V_{cube}) the relation takes place:

$$\mathrm{V_{ball}} = \mathrm{k} \cdot \mathrm{V_{cube}},$$

here $\mathrm{k} = \frac{\pi^2}{32}, \pi = 3{,}1415$ ....

The physical quantity of the matter's density (D) is defined by the expression:

$$\mathrm{D} = \frac{\mathrm{EUM}}{\mathrm{V_{ball}}} = \frac{\mathrm{EUM}}{\mathrm{k} \cdot \mathrm{V_{cube}}}.$$

It is the density of matter in the atom of the matter. Then the determining formula for the gravitational quantity of the universe (GQU) is as follows:

$$\mathrm{GQU} = \frac{1}{\mathrm{k} \cdot \mathrm{D} \cdot \mathrm{EUT}^2} = \frac{1}{\mathrm{k}} \cdot \frac{\mathrm{D}^{-1}}{\mathrm{EUT}^2}. \qquad (3)$$

It is clear that the value of D^{-1} is the matter's inverse density of the atom of the matter. The quantity of D^{-1}/EUT is a change in the matter's inverse density of the elementary unit of time EUT. The quantity D^{-1}/EUT^2 is the rate of change of matter's inverse density of the atom of matter per the elementary unit time. Formula (3) can be written as:

$$\mathrm{GQU} = \frac{\mathrm{EUL}^4}{\mathrm{EUM} \cdot \mathrm{EUT}^2} = \frac{\mathrm{EUL}^3}{\mathrm{MAM} \cdot \mathrm{EUT}^2}. \qquad (4)$$

Recall that MAM is the mass of the atom of the matter, which determines the following formula: MAM = EUM / EUL. The right part of the formula (4) similar to the expression of Planck quantities in (1). We know that have place the identity: EUT≡EUM. Hence formula (3) can be represented in the form:

$$\mathrm{GQU} = \frac{\mathrm{EUL}^4}{\mathrm{EUM}^3} = \frac{\mathrm{EUL}^4}{\mathrm{EUT}^3}.$$

Considering that

$$\mathrm{EUL}^4 = \mathrm{A}^{-0,5} \cdot \mathrm{UCN}^{-3}\mu^{12} \text{ and } \mathrm{EUM}^3 = \mathrm{UCN}^{-3}\mu^{12},$$

we get another formula for the gravitational quantity of the universe (GQU).:

$$\mathrm{GQU} = \mathrm{A}^{-0,5} = \frac{1}{\sqrt{\mathrm{A}}}.$$