

## About a mass: What is a mass of the atom of the matter?

Yusupov R. A.

free researcher, dialectical materialist

Virtual university, dialectical materialism, physics and cosmology laboratory

690018, Vladivostok, USSR

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Within the limits of a hypothesis of the author about model of a universe (YRA-model) the Universe is considered as the cosmological dilated material object having center, containing the material nucleus. The nucleus is the Singularity radiating the elementary clots of a matter, which we will name the atoms of the matter. This radiation occurs in the rhythm of the nature. As a matter of fact the Singularity as the central nucleus of the Universe represents the natural, material, quantum oscillator and the generator. An atom of the matter according to the author is the minimum carrier of a matter in the nature for our Universe. The atoms of the matter form the Universe and are its flesh. The atom of the matter is the minimum formation of the matter having the shape of a small blob (ball). Each atom of the matter comprises the same constant quantity of a matter. This is the minimum quantity of a matter in the nature. We will name this quantity of a matter as an elementary unit of the matter (EUM). It is the first basic characteristic of an atom of the matter. On the Planck's level, on the Planck's gauge of life there is a merging of form and content of an atom of the matter. It is necessary to speak about uniform essence of «the atom of the matter». The matter itself forms the atom of the matter in the form of the material blob (ball). The matter defines the content and the shape of the atom of the matter. As the blob (ball), an atom of the matter has diameter. Diameter is the second basic characteristic of an atom of the matter. Only two basic characteristics are inherent for the atom of the matter. Both characteristics have quite certain values. The matter, quantity of a matter in the atom of the matter makes a constant value  $EUM = UCN^{-1} \mu$ , where  $UCN = 1.21034 \cdot 10^{44}$  is a unique constant of the nature or a cosmological stationary value, and  $\mu$  is a unique unit of measure in the nature, the universal standard of the nature which we will name a "merilo" ( $\mu$ , criterion). The numerical value of a cosmological stationary value is equal to the numerical value of a physical quantity of the Planck's force  $F_{Pl} = c^4 \cdot G^{-1}$ , where  $c$  is the speed of light in vacuum, and  $G$  is the Newtonian constant of gravitation. It is simply to check up. The last physical quantities are taken in SI. The quantity  $F_{Pl}$  is an invariant of the nature for our Universe. As to unique unit of the nature a merilo ( $\mu$ , criterion) this unit represents a natural unit of the matter in the nature (NUM):  $1 \mu \equiv 1 \text{ NUM}$ , where  $\text{NUM} \equiv UCN \cdot EUM$ . All is extremely simple. The diameter of an atom of the matter according to the author is a variable depending on an age of the Universe or

the absolute (terrain clearance) natural time. The diameter of an atom of the matter decreases with the age of the Universe, it means that the interior density of a matter in an atom of the matter increases. According to the author, the formula for diameter of an atom of the matter is the following:  $EUL \equiv A^{-0.125} \cdot EUM^{0.75}$ , where A is the age of the Universe (terrain clearance universal time) in the so-called natural steps of the nature (NSN):  $NSN \equiv UCN \cdot ESN$ , where ESN is the elementary step of a rhythm of the nature. ESN is and makes one step of a rhythm of the pulsation of the Singularity as the oscillator and the generator. It is clear that duration of the elementary step of a rhythm of the nature (EUT) directly is related to the elementary unit of the matter:  $EUT \equiv EUM$ . It is the nature law. It is simple to output the following formula of diameter  $EUL \equiv A^{-0.125} \cdot UCN^{-0.75} \mu^{0.75}$ . It is clear that the diameter of an atom of the matter decreases with the age (A) of the Universe. So, an atom of the matter is quite characterized by the two basic characteristics. The mass of an atom of the matter will be the derivative characteristic, the derivative physical quantity. We must define mass of an atom of the matter by the following identity:  $MAM \equiv EUM/EUL$ . From here follows  $MAM \equiv A^{0.125} \cdot UCN^{-0.25} \mu^{0.25}$ . It is clear that the mass of an atom of the matter is incremented with the years by the Universe. Developing these standings further, we come to the following numerical expressions for the up-to-date age of the Universe. As it is known the up-to-date age of the Universe is equal to  $A = 2.245 + 20 \text{ NUT} = 1.638 + 18 \text{ s} = 51.917$  billion years. Therefore for the up-to-date age of the Universe equalities take place:  $EUL = 2.477 \cdot 10^{-36} \text{ m}$ ,  $MAM = 3.336 \cdot 10^{-09} \text{ kg}$ . Here it is meant that  $m \sim \mu^{0.75}$ ,  $\text{kg} \sim \mu^{0.25}$ . All it is not difficult for the understanding. The author is grateful to his grandson Maxim for joint nature walks, during which thought out ideas reflected in this article.