

ABOUT THE QUANTUM BEGINNING AND THE UNITY OF FORCES

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Abstract

The World is built on the Principle of opposite. However, the physics does not work in this direction. Here we will show the starting "plus-minus" material structure and its definitions, as follows: boundary mass m_0 – const (the atom of Democritus) ; boundary energy $E_0=h$ – const (the Plank's constant) ; linear size of the bipolar microcell R_r – const. ; linear density $\rho_r=m_0/R_r$ – const ; interaction force between the material "plus" beginning and the ideal "minus" beginning $F_r=c^2 \cdot \rho_r$ – const. ; gravitational constant $G=c^2/\rho_r$ (already with clear physical sense). These parameters ($E_0=h$, $m_0=h/c^2$, $\rho_r=c^2/G$, $R_r=h \cdot G/c^4$, $F_r=c^4/G$) form the quantum unit of the matter, respectively, of the Universe. Along with solving of this task, we also track the unified origin of the forces $F=a \cdot m$ и $F=G \cdot (m_1 \cdot m_2)/R^2$. In general all forces in Nature have their explanation as derivatives of the primary force $F_r=c^2 \cdot \rho_r$. In the end, we give to understand where it comes from the ability of matter to moves and develops itself.

Keywords: Principle of opposite, Plank and gravitational constants, unity of forces

The World is built on the Principle of opposite. The same implies start of the development of matter from an initial bipolar structure with concrete parameters, liable of determination. Logically and with confidence, we should foresee (because the World is material) that the one side of this structure is something material – a nucleus that cannot be any other format than a "particle"...ultimate, boundary (more indivisible) mass m_0 – const., with a linear size l_0 – const. The second side, in order to be an antipode, must be non-material – some disembodied ideal (lack of mass). The role of such an ideal phenomenon can only perform the so-called absolute emptiness, respectively a micro-section of it with a linear size l_r – const., dividing the masses m_0 .

The mass m_0 will appear the pluses, the male, the moving essence of the doubly beginning. And the micro-emptiness – the minuses, the female, the stationary essence (at the

quantum level the absolute peace of the micro-emptiness simply there is no way to declare for seeming). The male nature "plus" and the female nature "minus" should interact (attract) with force F_r - const., forming at each point of the space the same strain, primary microcells (ordered in power lines), with a linear size $R_r=l_0+l_r$ - const. (actually R_r is the distance between the centers of two adjacent masses m_0) and with a linear density $\rho_r=m_0/R_r$ - const. In this way each microcell appears charged with boundary (more indivisible) energy E_0 - const., corresponding to the mass m_0 , so that to be fulfilled the condition:

$$E_0/m_0=k - \text{const.}, \text{ where } k=d=c^2 \text{ is the energy charge coefficient} \quad (1)$$

Expression (1) represents the main ratio „ideal essence-material essence“ of matter. According to the Principle of Opposite, it will have two faces: the one will reflect the state of the microcell strenuous peace (coefficient $k=d$), and the other – the state of oscillatory motion of mass m_0 in the micro-emptiness (coefficient $k=c^2$, where c is the velocity of light). And since we have reason to think (according to the law of the energy of cyclical movements) that the energy E_0 and the Plank's constant h are of the same magnitude $E_0=h$ - const. [$\text{kg}\cdot\text{m}^2/\text{s}^2$], from relation (1) we define the boundary mass: $m_0=h/c^2$ - const (the atom of Democritus).

By virtue of their origin, the constants $E_0=h$, m_0 , c are global, with universal validity, while the constants marked with index "r" appear to be regional. From the definitions made, it is clear that the energy of the primary microcell may be either totally potential ($E_0=E_p=F_r\cdot R_r$ - strenuous rest) or totally kinetic ($E_k=m_0\cdot c^2$ - movement with the boundary velocity c), with possibility of transformation from the one state to the other and vice versa. That is, will is in force the following energetic dependence:

$$F_r\cdot R_r - m_0\cdot c^2 = 0 \text{ or } F_r\cdot R_r = m_0\cdot c^2 \quad (2)$$

Equation (2), on the one hand, explains the speed of light - $(F_r/\rho_r)^{1/2}=c$, and on the other hand, shows the unity of the forces:

$$F_r = c^2\cdot\rho_r \quad (3)$$

According to the initial definitions, this universal force must manifest in two opposing forms - dynamic and static. Indeed, directly from (3) the dependencies result:

$$F_r=a\cdot m_0 - \text{a prototype of the second law of dynamics} \quad (3a)$$

$$F_r=(c^2/\rho_r) \cdot \frac{m_0}{R_r} - \text{a prototype of the law for the force of gravity} \quad (3b)$$

The phrase in brackets of formula (3b) is obtained as a result of the conversion of (3) into (3b) and should be the gravitational constant:

$$G=c^2/\rho_r \quad [\text{m}^3/\text{kg}\cdot\text{s}^2] \quad (4)$$

Thus the strange dimension of the constant G acquires a clear sense. Furthermore, along with it, we disclose the roots and the primary essence of Newton's law for the gravitational force between masses m_1 and m_2 , with a distance R between their centers, namely:

$$F = G \cdot \frac{m_1 \cdot m_2}{R^2} = G \cdot \frac{m_1}{R} \cdot \frac{m_2}{R} = G \cdot \rho_1 \cdot \rho_2 \quad (5)$$

The form (5) of this law (where $m_1/R=\rho_1$ is the linear density of the distance R from the mass m_1 and $m_2/R=\rho_2$ is the linear density of the distance R of the mass m_2) gives categorical answers to the questions about the product of the masses $m_1 \cdot m_2$ (say, why a product, not an amount), about the square of the distance R^2 (Which apparently is not due to any mystical "particular properties of the space") and about the operation of the linear density rather than volume. In general, all forces in Nature have their logical explanation as derivatives of the primary force $F_r=c^2 \cdot \rho_r$. In the end, we give to understand where it comes from the ability of the matter of self-motion.

As regards the initial material-ideal structure remains still to do the conclusions:

$$\rho_r = m_0/R_r = c^2/G, \text{ respectively } R_r = G \cdot h/c^4, \text{ respectively } F_r = c^4/G \quad (6)$$

All these definitions ($E_0=h$, $m_0=h/c^2$, $\rho_r=c^2/G$, $R_r=h \cdot G/c^4$, $F_r=c^4/G$)¹ represent a description of the quantum unit of the Universe.

In conclusion again and again thick will emphasize that the Principle of opposite is also the Principle of determination, because the one opposite determines by the other. Another way of determination does not exist. Just of this determinative framework the mathematics is based... can not be compose an equation without presence of difference, of two opposite sides (for example, to arrive at the equations called Lorentz transformations, the author of Special theory reverses the identical inertial systems to the contrary, with the proviso that this is for convenience only). In this sense, from the macro to the micro structures of matter, everything is qualitatively and quantitatively defined up to the boundary h , m_0 . So the Principle of opposite is also the Principle of cognoscibility – from the macro to the micro structures of matter, everything is recognizable because there is a possibility of all-round determination. And when the theoretical thinking leads to indefiniteness, this means that some confusion is allowed, that the concept needs a correction, not a search for new ghostly explanations

Reference

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