THE MASS DISTRIBUTION AND PROBLEM OF SUBSTANCE STRUCTURE

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The mass distribution principle, as the directional one for the studying of the substance structure and time-space has been suggested. The physical meaning of the confirmations about the existence of zero mass for the substance particles has been considered. The meaning about of the non-existence of zero masses for all substance states has been said.

The metaphysical conceptions in physics are the sources of the development and stagnation. If we come back to the old times, we will see that physical thought was operated by the different ideas and categories in the relation to home attributes and this or that quality, which was considered as the main one, took place on each progress step. The experimental physics doesn't love this theme, and especially metaphysics (physic philosophy), which on its opinion doesn't bring any definite practical profit, and demand the enormous efforts. Doubly theoretical physics is related to it with big interest. However, this interest often transfers into frank disliking, because of the filling of fatal despair. From this moment the errors from the one conception to another one and vice versa are begun on eternally locked circle.

In the given paper we attempted to short the boundaries for such errors, though we know, that relations, given to the consideration, won't have the significant influence on practicing physics, at least in such form, we mean that these formulas aren't working. Moreover, we note, that we have the doubt that given approach is the disputable.

Whet is the "first": substance or the space? This eternal question is enough sore point for the physics and philosophy in all times, and nowadays it is also actual one. There are always two points of view about the relation of space and time to the substance in history of physics-philosophy. The first from them we can call the substantial conception. In it the space and time were treated as independent essences, existing with the substance and independently from it. Demokrit and Newton were agreed with this conception. Accordingly, the relation between the space, time and substance was introduced as the relation between three types of independent substations. This was led to the conclusion about the independence of properties of space and time on the character of the material processes, flowing in them. Second conception can be called the relational one. Its followers understand the space and time not as the independent essences, but as the systems of the relations, created by the interacted material objects. Outside this interaction system the space and time were presented as common forms of coordination of material objects and their states. Correspondingly, the dependence of the properties of the space and time on the interaction character of material systems was allowed. The relational approach is character for the conception of space and time of Aristotel, Leybniza, Halilei and Puankare.

On the assumption of the relativism positions, i.e. accepting the primary substance as the reasons and the source of space and time, accepting the mass as universal and invariant substance metrics [1,2], we conclude: outside the substance the space-time and metrics aren't defined. As it is seen from the expression: $M \neq R \bullet T = 0$ is the de-escalation, the space and time are empty outside the substance, where M is substance mass, the equality to zero we accept for the substance absent, R substance metrics, T is time. The substance mass distribution dictates and creates the metrics of the space and space itself: $\Delta R = \Delta M \bullet^{-1} \Delta T$ - substance distribution in time creates the space.

Process: $\Delta T = \Delta M \bullet^{-1} \Delta R$ of this redistribution gives the physical meaning to the time conception and creates the last.

If we imagine the space substance as homogenous and isotropic ones, i.e. absolutely homogeneous in all directions and to put the observer into it, then he can't define the extension and time motion and each time moment won't differ from the previous one. But if the shift in substance distribution to the side of nonhomogeneous takes place in the one of these time moments in the result of medium fluctuation, i.e. the mass distribution appears and consequently, time moments will be different, thus if substance redistribution (mass distribution) designates as ΔM, then:

$$R = \frac{M}{\Delta M} \tag{1}$$

$$T = \frac{\Delta M}{M} \tag{2}$$

The expressions (1) and (2) are substation relations,

If $\Delta M = 0$ then, $$R = \lim_{\Delta M \to 0} \frac{M}{\Delta M} = \infty \tag{3}$$

and $$T = \lim_{\Delta M \to 0} \frac{\Delta M}{M} = 0 \tag{4}$$

The formulas (3) and (4) are conditions of absolutely homogeneous (isotropic) substance of the space (there is no planets, Galaxies and other bodies in Universe).

For the modern picture of Universe at the condition, that it is locked system:

If $\Delta M \neq 0$ and always $\Delta M < M$, i.e. $0 < \Delta M < M$, then:

$$R = \frac{M}{\Delta M} > 1 \quad (5) \quad \text{and} \quad T = \frac{\Delta M}{M} < 1 \tag{6}$$

The formulas (5) and (6) are the conditions of stationary state of Universe in present (there are planets, black holes, stars and Galaxies).

In the case, if Universe is the open system, then at the condition: $\Delta M \geq M$,

$$R = \frac{M}{\Delta M} \leq 1 \quad (7) \quad \text{and} \quad T = \frac{\Delta M}{M} \geq 1 \tag{8}$$

The expressions (7) and (8) are accessible and can be considered as condition point of Universe divarication.

In the case, if we take the local region of modern Universe and consider it as open system (in the relation to Universe), then if $\Delta m = m$ (i.e. either pressing of the substance

into the point (into object) or the explosion takes place), where m is substance mass of local region, and Δm is substance mass distribution of local region. Then

$$r=\frac{m}{\Delta m}=1 \quad (9) \quad \text{and} \quad t=\frac{\Delta m}{m}=1. \quad (10)$$

Here r and t are metrics and time of local region.

The conditions (9) and (10) are conditions of the creation of massive object or its existence.

$$\text{If } \Delta m>m; \quad \text{then} \quad R=\lim_{\Delta m\to\infty}\frac{m}{\Delta m}=0 \quad (11)$$

and

$$T=\lim_{\Delta m\to\infty}\frac{\Delta m}{m}=\infty \quad (12)$$

The expressions (9), (10), (11) and (12) are conditions of region divarication (for example, explosion of supernova (star)). For example, for the condition of black hole: $T=\infty$, $R=0$, that doesn't disagree to the conclusions of common theory of relativity in approximation.

The substance discontinuity is the one from the evident properties of it. Nowadays, the science operates by two types of substance: substances and fields, to which the vacuum can be summed in the capacity of the third one on our opinion. The discontinuity properties have been established for the thirst two substance types (supposing the universality of this substance quality), that allow to consider it profitable for the vacuum also.

In the end of 19 century M. Plank [3] introduced the so-called Plank mass $m_P\approx1{,}2\cdot10^{19}$ GeV/s^2. Though, nowadays Plank mass is considered as fundamental physic value, characterizing the energetic scale of the superunity theory of all interactions, including the gravitational and is accepted as transfer mass, after which substance transfers in field state.

We propose, that for each type of the substance there is its own transfer mass m_P, after which the one substance type transfers into another one.

For the relativist body the conception of gravitational mass isn't useable. There is no point to talk about gravitational photon mass, if for the vertically fallen photon this value is less in two times, than for the flying horizontally one. The mass of the system of two photons, the E energy of which is $2E$, if they fly in opposite directions and it is equal to zero if they fly in one direction. It is strange, that in spite of the fact, that mass nonadditivity doesn't lead to disagreements; we had the situation, when the system from two photons looses such qualitative characteristic as mass one at the peer angles between two flying photons, at the one direction. We suppose, that the confirmation: $m=0$ is physically empty and has formal character.

Analyzing the above mentioned, as the confirmation of official science [4], let's give the following discussions. Each massive object, whichever less mass it has, will have the gravitational field. However, the modern conception about graviton, as about elementary particle leads us to the conclusion, that this field of the quite essential type, the quantum of which doesn't have common physical properties. Let's suggest, that quantum of gravitational field would have the characteristics of common physical mass, then we close to the opinion of some physics, according to which, if graviton would have the mass, then it would create the gravitational field.

From it it's followed, that either graviton doesn't have the mass, or there is mass without gravitation (we understand the mass only as the quantity of some substance in the given case), but having other physical properties.

This transfer mass doesn't have by own gravitational field, but has other (another) physical properties, probably by the primary field from which the other fields and substance types are created at the change of m_n value.

The set of authors say the thought, that the substance of the gravitation field is the vacuum substance [5]. Such approach makes the graviton the vacuum quantum and takes the excess difficulty of the question. In the capacity of the example, it is possible to suppose, that the main criterion of the difference, for example, quantum of electromagnetic field from the gravitational quantum is the qualitative characteristic on mass.

Topological physics bases on the conception of substance reflection in space and then the geometric characteristics become the basis ones for the flux of the laws and regularities. We have another question, how this or that image forms. In order to answer on this question the applied formulas with taking under the consideration of above mentioned expressions (1) and (2) are needed.

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KÜTLƏ PAYLANMASI VƏ MATERİYANIN QURULUŞUNUN PROBLEMLƏRİ

Bu məqalədə materiyanın strukturunu öyrənmək məqsədi ilə kütlənin paylanması prinsipi təklif olunmuşdur. Materiyanın metrikası nəzərdən keçirilmiş və onun zərrəciklərinin kütləsinin sıfra bərabər qiymət almasının fiziki mənası araşdırılmışdır.

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РАЗНОМАССНОСТЬ И ПРОБЛЕМА СТРУКТУРЫ МАТЕРИИ

Предложен принцип разномассности, как направляющий для изучения структуры материи и пространства-времени. Рассмотрен физический смысл утверждений о наличии нулевой массы для частиц материи. Высказано мнение о несуществовании нулевых масс для всех состояний материи.

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