

THE RELATIONSHIP RELATIVISM-QUANTUM MECHANICS

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Abstract

The Lorentz transformations have a solution different from that of the Special theory. On this basis, without prerequisites, follows the conclusion: $L'=L/b$; $t'=t/b$; $m'=m_c/b$ – moving viewpoint K' ; $L=L'.b$; $t=t'.b$; $m=m_c'.b$ – stationary viewpoint K ; ($b=(1-v^2/c^2)^{1/2}$ and $m_c=m'_c$). These dependences suggest that between the systems K and K' is in force similarity – Principle of similarity (Principle of difference in proportion). In summary, (parameters K')= κ (parameters K), where κ is a coefficient of similarity. It follows from here that the Principle of relativity will be in force only to isolated laboratory, because solely then in no way can be established whether κ is b or $1/b$. According to viewpoint K , with increasing the velocity v , **kilogram K'** decreases, from where are decreasing **meter K'** and **second K'** in the same degree. I.e., the scale of system K' alter simultaneously, in one direction and to the equal degree (in the Theory the changes are in different directions: **meter K'** is shortened, **second K'** is extended, **kilogram K'** increases). Here it is obligatory to test above dependencies for compatibility with "condition for preservation the form of laws". The result of the check is positive. To the same test, conclusions of the Theory fail, which is expected. Suffice it to mention only its monstrously outrage over reason with "the infinitely big mass in zero length" and the misapprehension: in dx'/dt' – dx' (meter K') tends to zero, dt' (second K') tends to infinity. The Planck's law $E=hf$ also fails. His coordination with the prescribed "condition for preservation the form of laws" leads to the conclusion that the Planck's constant h should represent a border discrete portion of energy E_0 , i.e. $h=E_0$. On the portion of energy h must correspond a portion of mass m_0 , according to the requirement E/m – const., respectively, $h=m_0c^2$. The quantity m_0 should represent a border discrete portion of mass – the indivisible atom of Democritus. The constants m_0 , h and c will be the mainly definitions of substance and matter field - the so-called "ether" (which is absolutely motionless according the experiments of: Bradley-1725, Michelson-Morley-1881, Fizeau-1851, Sagnac-1913 etc.). The ether forms the space and gives the relationship "relativism-quantum mechanics". Here I will mention only that the Gravitational constant is a combination of them and reports the linear density of matter (the linear density of ether, respectively, of space, respectively, of masses m_0).

Keywords : Lorentz transformations, Principle of similarity, Planck's constant, atom of Democritus

INTRODUCTION

It is by all means proven fact that the World is organized on the Principle of opposites. But the latter goes into a frank conflict with today's philosophical and physical conception "the movement is an only reality", without the presence of peace as its antipode (unlike classical views). I.e., the physics assumed a priori (and the philosophy trustfully follows it) that the inertial systems are absolutely identical, making an exception to the principle in question. This incompatibility requires a redefining the conclusions of relativism.

Because the World is arranged on the principle of opposites, in this way was formed and the condition of the Special Theory: "Inertial system $\mathbf{K}'(\mathbf{x}', \mathbf{t}')$ moves towards a stationary system $\mathbf{K}(\mathbf{x}, \mathbf{t})$ with velocity \mathbf{v} along the axes $\mathbf{X}'=\mathbf{X}$ ". Be assumed a priori that this opposition is simulated, as it does, there is not a scientific approach. Because only thanks to him is reaches to the Lorentz transformations. Because without this polarity (with text "systems \mathbf{K} and \mathbf{K}' are moving relative to each other ...") cannot be compiled equations, the mathematics does not work. But with the normal opposition to systems \mathbf{K} and \mathbf{K}' , the Lorentz transformations have a solution different from that of the Theory. For clarity of the upcoming analysis should specify: 1) the dialectics of the cognitive process, 2) the meaning of the basic physical quantities, 3) the solution of the relative mass and 4) the solution of the relative time.

EXPOSITION

1. Dialectics of the cognitive process

From a philosophical point of view, the principle of opposites raises the almighty dialectic. Namely, it dictates the course of the cognitive process. According to it, the motion to truth is realized in three phases of cognition in which the ideas of Special theory are appeared as the second intermediate, antithesis element – "opposite point of view". This actually is the transitional form – "negation for creating a contradiction". Nothing more.

The contradiction is solved in the next third phase of the scheme "negation of negation" – by closing the cognitive outline through a synthesis returning to the pre-relative positions. So the final resolution of the problem is obtained as an alloy between the truth of the classical thesis and the relative antithesis, and the incorrect fragments become irrelevant.

Precisely the described third stage of synthesis is a purpose of this article. It is time for the contemporary philosophy and physics to realize this dialectic of the process and the whole absurdity of the attempts to ignore it.

2. Fixation the meaning of the output quantities and concepts

Objective reality is a material, spatial and changeable. The physics covers this picture by introducing the quantities: mass – for its materiality, length – for its spatiality and time – for its mutability. But to this day is not aware of the logics of these basic concepts (the Theory disfigures their meaning).

In this respect, our treatment is categorical. At the base of the World stands a dualistic matter. It is both a source and object of its development, which is due to the force of attraction between the two opposing sides. This force provokes activity – ability to action, to automotion. [1]

Matter, in its turn, forms a power space. Moreover, development of the space starts the course of time. The basic physical quantities represent qualitative and quantitative definitions of this organization of Nature, namely:

2.1. The term **mass (m)** means a **quantity of matter**.

2.2. The term **energy (E)** means a **quantity of ability to action** of the mass.

2.3. The term **length (L)** means a **quantity of space**.

2.4. The term **time (t)** means a **quantity of time**.

2.5. By reason of its dualism, the matter is "charged" with energy, from where comes its mainly connection and ratio $E/m=k - \text{const}$. The parameter **k** has the meaning of **degree of saturation** the mass with energy (or **energetic capacity** of the mass). Accordingly, $k=c^2$, where the factor **c** is the speed of light. From the inviolable ratio $E/m - \text{const}$. follows:

2.5.1. This ratio is in force for any point in space.

2.5.2. Under no circumstances cannot have a mass without energy (only mass) and energy without mass (energy only).

2.5.3. Under no circumstances, the mass cannot be converted into energy and energy into mass.

2.5.4. Under no circumstances, the energy cannot be changed without changing the mass and vice versa.

2.5.5. The energy can be increases / decreases only by increasing / decreasing the mass.

2.5.6. The dualism of matter predetermines a dualism of the mass and energy.

2.5.7. The energetically processes do not present transmission / acceptance of energy, but only transforming of the energy (and the mass) from one state to another.

3. Specifying the solution of the relative mass

In contrast to the opinion of Theory the mass, as a quantity of matter, should be uncreated and indestructible. In particular, the mass m_c of an arbitrarily body (corpus – Lat.) should be constant, independent of any conditions and prerequisites. [2, p. 311-334]

But as a quantity of matter dualistic, it will consist of two opposing components dependent on the speed – potential mass m_p (potentialis – Lat.) and kinetic mass m_k (kinetikos – Gr.). More specifically, the mass (at rest) m'_c of moving body – system K' , will be constant. The same $m_c=m'_c$ in the stationary system K will consist of ingredients m_p (potential) with power characteristics and m_k (kinetic) with speed characteristics:

$$m_c=m_p+m_k - \text{const.} - \text{viewpoint } K \quad (3.1)$$

With increasing the velocity v (on the quantity of movement Q'), the m_p component decreases, and the m_k component grows and vice versa. Let us specify that what the Theory (Physics) called a changing mass of the body is actually the component m_p (the length L and the time t are its attributes), because the other (m_k) is not susceptible of measurement with power methods - through the gravity or acceleration(as weightless and no inert, it remains hidden).

Follows the relationship between m_p mass, gravitation and time: With increasing the velocity v (on the quantity of movement Q'), the m_p mass decreases (the kilogram decreases, becomes a lighter), the gravitation decreases (as an example: low gravitation - an emergence of dinosaurs), the second decreases (becomes a shorter) – the time speeds up his move.

And vice versa: With decreasing the velocity v (on the quantity of movement Q'), the m_p mass increases (the kilogram increases), the gravitation increases (dinosaurs disappear), the second increases (becomes a longer) – the time slows down his move.

We derive the m_p mass from the energetic equation:

$$m_p \cdot c^2 = m' \cdot c^2 - 1/2 m' \cdot v^2 \text{ or } m_p = m' \cdot b \text{ (i.e. } m = m' \cdot b \text{) wherever } b = (1 - v^2/c^2)^{1/2} \quad (3.2)$$

The opposite viewpoint $m' = m/b$ is obtained in the same way (either directly from 3.2). But because it is a mirror, here the coefficient is $1/b$. This, in short, as a principle, is the philosophy and physics on the masse. Dualism is everywhere. Where "is missing" (in the inertial systems) the things are not in order.

4. Specifying the solution of the relative time

Now we will show exactly where and how the Special Theory makes a mistake as regards the time. For this purpose, first we have to pay attention to the complete formulation that the Lorentz transformations are derived from, namely:

Inertial system $K'(x', t')$ is moving to the right towards a stationary system $K(x, t)$ with velocity v along the axes $X' \equiv X$. At the time of concurrence of the origins $O' \equiv O$, from this common center a light signal is radiated to the right along $X' \equiv X$. After a time t in K , respectively t' in K' , the front of the signal will have a coordinate x , respectively x' in K' . The ratios x'/x и t'/t are wanted (we replace $b = (1 - v^2/c^2)^{1/2}$).

We emphasize heavily that this is the only condition that leads to the dependencies:

$$x' = 1/b(x - vt) ; t' = 1/b(t - v \cdot x/c^2) - \text{viewpoint } K' \quad (4.1)$$

Let us explain: As seen from the scheme, for the juxtaposition (4.1) are needed two clocks, in K and K' , and the "light signal" event whose parameters x, x' and t, t' are registered (the other possibility is with three clocks – results from the first one, the signal is in implicit form).

As a second responsible moment, in order to no room for speculations, verbatim we will quote the text about the time from the original article (A. Einstein – On the Electrodynamics of Moving Bodies, 1905, part I, §4, <http://www.fourmilab.ch/etexts/einstein/specrel/www/>), where for convenience we will use the above designation of the systems only and we will also add some notes in italic. And here are the author's reasonings:

"Further, we imagine one of the clocks which are qualified to mark the time t when at rest relatively to the stationary system K , and the time t' when at rest relatively to the moving system, to be

located at the origin of the co-ordinates of \mathbf{K}' , and so adjusted that it marks the time \mathbf{t}' (*this design eliminates the light signal*). What is the rate of this clock, when viewed from the stationary system (*no way to establish with two clocks only*)?

Between the quantities \mathbf{x} , \mathbf{t} , \mathbf{t}' , which refer to the position of the clock, we have, evidently,

$$\mathbf{t}' = \mathbf{1}/\mathbf{b}(\mathbf{t} - \mathbf{v} \cdot \mathbf{x}/\mathbf{c}^2) \quad (\text{the formula is 4.1 – here } \mathbf{x} \text{ is the abscissa in } \mathbf{K} \text{ of the light signal})$$

$$\text{and } \mathbf{x} = \mathbf{v}\mathbf{t} \quad (\text{here } \mathbf{x} \text{ is the abscissa in } \mathbf{K} \text{ of the origin } \mathbf{O}')$$

Therefore, $\mathbf{t}' = \mathbf{t} \cdot \mathbf{b}$ whence it follows that the time marked by the clock (viewed in the stationary system) is slow... "

In a word, Einstein arrives at the conclusion $\mathbf{t}' = \mathbf{t} \cdot \mathbf{b}$, putting $\mathbf{x} = \mathbf{v}\mathbf{t}$ at the place of \mathbf{x} in relation (4.1). However, it is obvious that the two abscissas are not equivalent. Before us is a wrongful manipulation of formula (4.1). According to the initial treatment it compares the light signal's parameters \mathbf{x} , \mathbf{t} , \mathbf{t}' . While in the scenario of the quoted text this event is discarded. But with his falling off, drop out and the top speed \mathbf{c} , coordinate \mathbf{x}' and time \mathbf{t}' . Then, the times \mathbf{t}' and \mathbf{t} of which event does the author compare...and how does he compare them once formulas (4.1) do not make sense anymore?

In order to show even more clearly the whole untenability of his reasonings at this point we will adapt the problematic treatment to the initial one by replacing the light signal with a conditional one* whose velocity is \mathbf{v} . I.e., in system \mathbf{K}' the front of the signal does not leave the origin \mathbf{O}' and therefore it has a coordinate $\mathbf{x}' = \mathbf{0}$ and time $\mathbf{t}' = \mathbf{0}$. And in system \mathbf{K} , after the time \mathbf{t} , it will have a coordinate \mathbf{x} . So the situation is adjusted to transformations (4.1), with a result:

$$\mathbf{0} = \mathbf{x} - \mathbf{v}\mathbf{t}, \text{ respectively } \mathbf{x} = \mathbf{v}\mathbf{t} ; \mathbf{0} = \mathbf{t} - \mathbf{x}/\mathbf{v}, \text{ respectively } \mathbf{t} = \mathbf{x}/\mathbf{v} \quad (4.1^*)$$

Therefore, the author's idea of $\mathbf{x} = \mathbf{v}\mathbf{t}$ will be in force only when $\mathbf{x}' = \mathbf{0}$, $\mathbf{t}' = \mathbf{0}$, which makes the conception a classical one – the ongoing event in \mathbf{K} is the movement of \mathbf{K}' , ergo, the conditional signal with its front in \mathbf{O}' . Nothing more! In this case, one cannot draw a conclusion about the relation \mathbf{t}'/\mathbf{t} ...besides in the way of incorrect physical and mathematical operations (the light signal is the heart of the Theory).

While here, we are going to present a scientifically consistent approach to finding the required relations, based on strict adherence to the initial formulation, with solution to the end of the transformations derived from it. [3]

In short, because of displacement of the systems \mathbf{K} and \mathbf{K}' , reports \mathbf{x}' , \mathbf{t}' in \mathbf{K}' are mono-dimensional ($\mathbf{x}' = \mathbf{x}'_{\text{mon}}$, $\mathbf{t}' = \mathbf{t}'_{\text{mon}}$), while reports \mathbf{x} , \mathbf{t} in \mathbf{K} are formed as summary ($\mathbf{x} = \mathbf{x}_{\text{sum}}$, $\mathbf{t} = \mathbf{t}_{\text{sum}}$). I.e., the exact description of transformations (3.1) is:

$$\mathbf{x}'_{\text{mon}} = \mathbf{1}/\mathbf{b}(\mathbf{x}_{\text{sum}} - \mathbf{v}\mathbf{t}_{\text{sum}}) ; \mathbf{t}'_{\text{mon}} = \mathbf{1}/\mathbf{b}(\mathbf{t}_{\text{sum}} - \mathbf{v} \cdot \mathbf{x}_{\text{sum}}/\mathbf{c}^2) - \text{viewpoint } \mathbf{K}' \quad (4.1)$$

Now we must to solve the expressions in brackets. The coordinate \mathbf{x}_{sum} consists of mono-dimensional coordinate \mathbf{x}_{mon} (corresponding to \mathbf{x}'_{mon}) and the additional distance $\mathbf{v} \cdot \mathbf{t}_{\text{sum}} = \mathbf{OO}'$, i.e. $\mathbf{x}_{\text{sum}} = \mathbf{x}_{\text{mon}} + \mathbf{v} \cdot \mathbf{t}_{\text{sum}}$. The time \mathbf{t}_{sum} consists of mono-dimensional time \mathbf{t}_{mon} (corresponding to \mathbf{t}'_{mon}) and a

time supplement $v \cdot x_{\text{sum}}/c^2$ for distance OO' , i.e. $t_{\text{sum}}=t_{\text{mon}}+v \cdot x_{\text{sum}}/c^2$. The substitution of the summary quantities leads to the correct direct comparison:

$$x'_{\text{mon}}=x_{\text{mon}}/b ; t'_{\text{mon}}=t_{\text{mon}}/b \text{ (as a generalization } x'=x/b ; t'=t/b \text{) – viewpoint } \mathbf{K}' \quad (4.1)$$

$$x_{\text{mon}}=x'_{\text{mon}} \cdot b ; t_{\text{mon}}=t'_{\text{mon}} \cdot b \text{ (as a generalization } x=x' \cdot b ; t=t' \cdot b \text{) – viewpoint } \mathbf{K} \quad (4.2)$$

(the effect of the movement is reported without displacement of the systems ($O'=O$))

And let us repeat the conclusion: With the increasing velocity, second \mathbf{K}' is shortened and time \mathbf{K}' accelerates. With top speed c , mathematical properly dt' (second \mathbf{K}') tends to zero (as well as dx' - meter \mathbf{K}'). [4]

5. Principle of similarity

On the basis of specifications made, without prerequisites, follows the conclusion:

$$L'=L/b ; t'=t/b ; m'=m_r/b \text{ – viewpoint } \mathbf{K}' \quad (5.1)$$

$$L=L' \cdot b ; t=t' \cdot b ; m=m_r' \cdot b \text{ – viewpoint } \mathbf{K} \quad (5.2)$$

The combination equations (5.1)-(5.2) suggest that between the systems \mathbf{K} and \mathbf{K}' is in force similarity – Principle of similarity (principle of difference in proportion, dependent on the velocity v). This, in summary form, is given by the ratio:

$$(\text{parameters } \mathbf{K}')=\kappa(\text{parameters } \mathbf{K}), \text{ where } \kappa \text{ is a coefficient of similarity} \quad (5.3)$$

According to (5.2), with increasing the velocity v , **kilogram** \mathbf{K}' decreases, from where are decreasing **meter** \mathbf{K}' and **second** \mathbf{K}' in the same degree. I.e, the scale of system \mathbf{K}' alter simultaneously, in one direction and to the same degree (in the Theory the changes are in different directions: **meter** \mathbf{K}' is shortened, **second** \mathbf{K}' is extended, **kilogram** \mathbf{K}' increases). The scale of system \mathbf{K} do not change – there is missing a reason for it. But they seem growing, according to (5.1), as a mirror effect from decreasing of the scale \mathbf{K}' . Dependences (5.1)-(5.2) are confirmed by experiments on Michelson-Morley, Tolman-Lewis and others. [5]

6. Preservation the form of laws

Here again we will quote the article "On the Electrodynamics of Moving Bodies", 1905, part I, §2 – A. Einstein (<http://www.fourmilab.ch/etexts/einstein/specrel/www/>):

The laws by which the states of physical systems undergo change are not affected, whether these changes of state be referred to the one or the other of two systems of co-ordinates in uniform translatory motion.

In the veracity of this situation, there can be no doubt. It understands itself. Otherwise, what reality would have been one in which each system has its own laws?! Only, as it is known, the author moistures in the quoted text meaning of the valid Principle of absolute relativity (identity) in systems

and assigns on the last the role of Postulate (first), which an outside experimentally enterprise is questionable.

It is clear that dependences (5.1)-(5.2) must meet unconditionally of the cited requirement. That is, it is obligatory to test them for compatibility with "condition for preservation the form of laws". The check will do with the law of the gravitational pull. For this purpose, we build the following treatment: Inertial platform (system \mathbf{K}') moves on rails with velocity \mathbf{v} towards the stationary Earth (system \mathbf{K}). The rails are the axes $\mathbf{X}'=\mathbf{X}$. There is an appliance with masses \mathbf{m}_1 and \mathbf{m}_2 on the platform whose distance \mathbf{R} between the centers is parallel to the axes $\mathbf{X}'=\mathbf{X}$, ergo, to the direction of movement. Let the force of attraction between the masses gives an indication unit on the screen of the appliance.

Check the conclusions of Similarity of experience, positioned in \mathbf{K}' (on the platform).

Observation in \mathbf{K}' : $\mathbf{F}'=\mathbf{G}(\mathbf{m}'_1,\mathbf{m}'_2)/\mathbf{R}'^2=1$

Observation from \mathbf{K} , according to (5.2): $\mathbf{F}=\mathbf{G}(\mathbf{m}'_1,\mathbf{b}).(\mathbf{m}'_2,\mathbf{b})/(\mathbf{R}'^2.\mathbf{b}^2)=\mathbf{G}(\mathbf{m}'_1,\mathbf{m}'_2)/\mathbf{R}'^2=\mathbf{F}'=1$

Results: In both systems the law is the same (keeps its shape).

Now we transfer the appliance onto the stationary Earth under the same conditions.

Check the conclusions of Similarity of experience, positioned in \mathbf{K} (on the Earth).

Observation in \mathbf{K} : $\mathbf{F}=\mathbf{G}(\mathbf{m}_1,\mathbf{m}_2)/\mathbf{R}^2=1$

Observation from \mathbf{K}' , according to (5.1): $\mathbf{F}'=\mathbf{G}(\mathbf{m}_1/\mathbf{b}).(\mathbf{m}_2/\mathbf{b})/(\mathbf{R}^2/\mathbf{b}^2)=\mathbf{G}(\mathbf{m}_1,\mathbf{m}_2)/\mathbf{R}^2=\mathbf{F}=1$

Result: Again, in both systems the law is the same (keeps its shape).

To the same test conclusions of the Theory fail, which is expected. Suffice it to mention only its monstrously outrage over reason with "the infinitely big mass in zero length" and the misapprehension: in $\mathbf{dx}'/\mathbf{dt}' - \mathbf{dx}'$ (meter \mathbf{K}') tends to zero, \mathbf{dt}' (second \mathbf{K}') tends to infinity.

Actually, this outcome was clear without testing – we know that in similarity all proportions (laws) are preserved. In this connection, pay attention to the fact that Planck's law $\mathbf{E}=\mathbf{hf}$ (\mathbf{h} – const., \mathbf{f} – frequency, respectively, $\mathbf{f}=\mathbf{n}/\mathbf{t}$ – number of oscillations \mathbf{n} per unit of time \mathbf{t}), does not cover the "condition for preservation the form of laws ", namely: with $\mathbf{E}'=\mathbf{hn}/\mathbf{t}'$ in \mathbf{K}' , we have $\mathbf{E}=\mathbf{hn}/(\mathbf{t}'.\mathbf{b})$ in \mathbf{K} and vice versa – with $\mathbf{E}=\mathbf{h.n}/\mathbf{t}$ in \mathbf{K} , we have $\mathbf{E}'=\mathbf{h.n}/(\mathbf{t}/\mathbf{b})$ in \mathbf{K}' . I.e., the preservation does not happen. Then should suppose that the law in question is wrong? Its precise form is achieved with correction or so $\mathbf{E}/\mathbf{t}=\mathbf{hn}/\mathbf{t}$, or so $\mathbf{E}=\mathbf{hn}$.

7. Planck's constant

In principle, the energy \mathbf{E} is a quantity that never, nowhere does not depend on the time \mathbf{t} . In this sense, M. Planck's formula for the energy ($\mathbf{E}=\mathbf{f.h}$) is not correct!

The analysis of the periodic processes [6], such as actually are the electromagnetic waves, shows that their energy \mathbf{E} is equal to the constant energy of one cycle \mathbf{E}_0 (in the case $\mathbf{E}_0=\mathbf{h}$), multiplied by the number \mathbf{n} of cycles performed:

$$\mathbf{E}=\mathbf{E}_0 \cdot \mathbf{n}=\mathbf{h} \cdot \mathbf{n} \quad \text{wherever } \mathbf{E}_0=\mathbf{h} - \text{const.} \quad (7.1)$$

While the energy per unit time \mathbf{E}/t (or the power \mathbf{N}) of the periodic processes, ergo, of the electromagnetic waves, is equal to the energy \mathbf{h} of one cycle, multiplied by the number of cycles performed per time unit \mathbf{n}/t (or the frequency \mathbf{f} of oscillations):

$$\mathbf{N}=\mathbf{E}/t=\mathbf{h} \cdot (\mathbf{n}/t)=\mathbf{h} \cdot \mathbf{f} \quad (7.2)$$

Therefore, it is not the energy of electromagnetic waves, but their power is in proportion to the frequency. The Planck's constant \mathbf{h} represents a border discrete portion of energy.

8. Atom of Democritus

From the mainly connection and ratio of the matter will be in force dependence:

$$\mathbf{E}/\mathbf{m}=\mathbf{E}_p/\mathbf{m}_p=\mathbf{E}_\kappa/\mathbf{m}_\kappa=\mathbf{E}_0/\mathbf{m}_0=\mathbf{h}/\mathbf{m}_0 - \text{const. (or } \mathbf{E}_0=\mathbf{h}=\mathbf{m}_0\mathbf{c}^2 \text{ and } \mathbf{h}/\mathbf{c}^2=\mathbf{m}_0 - \text{const.)} \quad (8.1)$$

The constant \mathbf{m}_0 represents a border discrete portion of mass, "charged" with energy \mathbf{h} . The masses \mathbf{m}_0 should be the indivisible particles of the matter field (the so-called Ether) and of the objects from substance. I.e., the particle \mathbf{m}_0 will be the indivisible atom of Democritus, which builds the Universe. In this sense will have a mass \mathbf{m}_0 and energy \mathbf{h} in each point of the space. Another reality (another matter) does not exist. From the ratio $\mathbf{h}/\mathbf{m}_0 - \text{const.}$ comes the invariable speed of light. Precisely the particles \mathbf{m}_0 are that shine, being set in oscillation.

The constants \mathbf{m}_0 , \mathbf{h} and \mathbf{c} will be the mainly definitions of matter. Here I will mention only that the gravitational constant is a combination of them and reports the linear density of matter (the linear density of ether, respectively, of space, respectively, of masses \mathbf{m}_0).

CONCLUSION

Based on the extracted regularities, we can make some important conclusions. When the system \mathbf{K}' moves relative to a stationary system \mathbf{K} , both systems already becoming different amounts of motion $\mathbf{Q}'>\mathbf{Q}$. But the parameters \mathbf{m}' , \mathbf{l}' , \mathbf{t}' are changing simultaneously in one direction and to the same degree. So the identical (at standstill) systems stand in a respect of similarity. Therefore:

a) Preservation the form of laws – this is a natural law.

b) By no law cannot be found the inertial motion – this is a natural law.

c) By no way cannot be found the inertial motion – this is an assertion which (5.1), (5.2), a) and b) disprove. It is in force only for isolated laboratory. Solely then no way to ascertain whether κ from (5.3) is \mathbf{b} or $1/\mathbf{b}$. But systems \mathbf{K} and \mathbf{K}' are connected, whence we have the following equations:

$$(\text{parameters } \mathbf{K}')=1/\mathbf{b}(\text{parameters } \mathbf{K}) - \text{viewpoint } \mathbf{K}' \quad (9)$$

$$(\text{parameters } \mathbf{K})=\mathbf{b}(\text{parameters } \mathbf{K}') - \text{viewpoint } \mathbf{K} \quad (10)$$

This is the usual, ordinary, natural mathematics. The two sides of the equations are always opposite (in accordance with the Principle of opposites). Another mathematics we know no (because it does not exist).

All known experiments prove that the material environment called "ether" is absolutely motionless (the full and partial entrainment are naive notions). [2, p. 365-385] It consists of particles with m_0 mass and h energy. Thus, the ether gives the relationship "relativism-quantum mechanics".

Reference

- [1] Nikolov A. – For the driving force in nature and society (in Bulgarian)
http://alniko.log.bg/article.php?article_id=80360
- [2] Nikolov A. – To change of ideas in philosophy and physics, Sofia, 1999 (in Bulgarian)
- [3] Nikolov A. – Logical and mathematical reconsideration of the Lorentz transformations (in English),
<http://gsjournal.net/Science-Journals/Research%20Papers-Relativity%20Theory/Download/3372>
- [4] Nikolov A. – Removing the make-up (17), (18), (19) of the Special theory (in Bulgarian)
<http://alniko.log.bg/>
- [5] Nikolov A. – Working out of the Lorentz transformations from the Michelson-Morley experiment (in English)
<http://gsjournal.net/Science-Journals/Research%20Papers-Relativity%20Theory/Download/3488>
- [6] Nikolov A. – Physics of the matter field (in Bulgarian)
http://alniko.log.bg/article.php?article_id=97416