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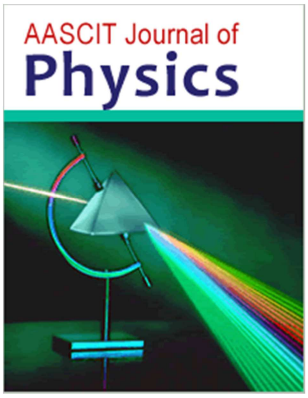

Material Space Motion Time - New Ideas and the Practical Results

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Abstract
In the article are examined the problems, connected with the determination of such concepts as space, material, time. Is introduced the concept of the point of united place, which is only in the space. The concept of clustering space, which presents the space in the form is introduced of clusters with the intended sizes. It is shown that the time is not primary value, which are the length, mass and force, but it depends on the parameters indicated. Is introduced the new system of units, in which the time is expressed through the mass and the length. The concept of the global of counting and global time is introduced. Are given the conversions of electromagnetic pour on upon transfer from the global of counting into the inertial system.

1. Introduction

The universe is filled with different forms of material, and this material is found in the continuous motion. Specifically, with the motion of matter is connected the introduction of the concept of time. But in the existing scientific literature there is no clear physical definition of such concepts as material and space. There is no clear determination and concept of time. Moreover, many researchers are inclined to consider that this time the same physical substance as material and space; therefore during the geometrization of space the time consider as one of the coordinates, whose scale can depend on the speed of the motion of frame of reference. The special theory of relativity is built on these principles. In connection with this approach the time is introduced as the primary physical parameter, which enters into all existing systems of units. In this case is not considered the fact that for measuring the time necessarily in the required order the attraction of other physical quantities, such as mass, the length and force. Therefore natural question arises, and it is not possible whether to express time through physical the quantities indicated. Actually, the concept of length is inseparably connected with the space metrics can be introduced as the distance between two material objects, or as wavelength, which is extended in the free space. The materiality of the material objects surrounding us does not cause doubt. The concept of force we also encounter in our daily life, undergoing gravity force, and also when we observe the acceleration of bodies, under the action of force. This article is dedicated to the examination of matters under discussion.

2. Material and the Space

In order to introduce what or concept necessary to, first of all, describe its properties of the within the framework existing concepts. In nature we observe two forms of material. First of all, these are the atoms, of which consist the bodies, which is conventionally designated as material. Into the structure of atoms enter the smaller formations, which is conventionally designated as nucleons. Atoms possess sizes, and one of the basic its of space consists in the fact that at its one and the same point it is not possible to simultaneously place two atoms. By this is determined the uniqueness of the point indicated, which in the space is only in its kind. We will call this property of the point of space the property of united place. From this property escapes the concept of time, which indicates that at the point of united place cannot simultaneously be located two different material bodies, but to occupy this place they can only in the specific sequence. This sequence introduces the concept of time [1,2].

There is another form of material, which includes different fields and electromagnetic waves. The properties of this material are differed from the already examined material tel. Of this material is inherent the property of the interference, with which the fields interfere (they are added) according to the specific laws. Wave fields are characterized by that property, that they are found in the constant motion, but interfering, they also can form structures fixed in the space, which are the standing waves. Permanent fields also interfere according to the specific laws and can destroy (to compensate) each other. An example is point, which is found on the line, which connects two similar dawn or two identical material bodies. If point is exist equidistantlyed from both objects, then fields at this point are read also on the object, located at the point indicated, they do not act.

Introducing the concept of united place, we are thus achieved clustering space, making with his discrete, and this discretion has its parameters. By the unitary unit, which determines clustering space, we will call unitary cluster. Practical of the realization of clustering is determined by the technical capabilities of measuring the sizes of material objects and by the shortest wavelengths, which are known to us. A classical radius of electron composes 2.8×10^{-15} m. In proton a radius still less composes 9×10^{-16} m. The spectrum of the wavelengths of X-radiation varies in the limits of 10^{-8} - 10^{-12} m. Simplest is the cubic clustering, when unitary clusters are represented in the form the cube, whose edge they correspond to the lengths indicated. With this approach the point of united place is the center of the cube indicated. The minimally resolvable volume of this cluster and the minimally resolvable distance between the points of united place, is determined by the resolution of the means of the measurement of length.

We will consider one of the possible lines, which contain the minimum number of such points, the distance between two points of united place. We will call this line straight line. For the introduction of the concept of plane it is necessary to have three points of the united place, connected by straight lines. We will call the surface, stretched between such lines and which has a smallest possible quantity of points of united place flat surface. For the introduction of the concept of plane it is necessary to have three points of the united place, connected by straight lines. If we put on straight lines the planes indicated, then they will limit the volume (we will call this volume geometric figure), in which there will be located specific quantity of points of united place. The summary volume of the clusters, entering the limited volume will represent the volume geometric of the figure in question. For the idea of figures with the complex geometric form it is necessary to isolate more than four points of united place in the space.

For the introduction of the concept of angle let us introduce the concept of circle. We will around count the line, located on the plane, whose points are exist equidistant from the selected point of united place. We will call this point the center of circle. We will consider that two not coinciding straight lines, which emanate of one point of united place form angle. If these lines proceed from the center of circle and are located in the plane, on which the circle is located, then these straight lines interesect the line of circle. We will call distance between centers of circle and points of intersection of lines with the circle a radius of circle. The length of the section of circle, located between the points of intersection, expressed in the lengths of a radius, we will consider the measure of the angle, located between radii. Radian is the unit of the measurement of angles. This is that case, when the length of the section between the points of intersection is equal to the length of a radius.

3. Motion and the Time

We will call the displacement of body with the minimal sizes between the points of united place simple motion. This motion can be rectilinear, if body is moved between the points of united place, located on the straight line and by curvilinear, if the condition indicated is not satisfied. The motion of body cannot arise spontaneously, and satisfaction of the specified conditions is required for the appearance of this motion. So that the body would begin to move to it necessary the action from the side of other bodies, which is called force. In the existing systems of units the equation of motion is written as follows

$$\vec{F} = m\vec{a}$$

where $\vec{F}$ is force, which acts on the body, m is the mass of body, $\vec{a}$ is the acceleration of body.

In this case the acceleration is defined as the second derivative of way by the time

$$\vec{a} = \frac{d^2\vec{x}}{dt^2}$$

In order to use this relationship, the system of units, which introduces mass length and time, is used as the primary units. But, if for the introduction of length and mass there are physical bases, since these are the actually observed physical quantities, there are no such bases for the introduction to time, since the time is not actually observed. The actually observed physical quantities are mass length and force; therefore let us attempt to express time through these values. But for this it is necessary to select the units of length, force and mass. As the units of length and mass we can select the already existing units (in the system of SI this is meter and kilogram). For the selection of the unit of force we will use the law of universal gravitation. We will consider that there are two identical masses M, whose centers are located at a distance $2R$. In this case we will consider that the linear dimensions of the masses considerably less than the distance between them. In accordance with the law of universal gravitation the force, which acts between such masses, will compose

$$F = \frac{M^2}{4R^2} \tag{3.1}$$

In this relationship we specially lowered the gravitational constant, which is introduced in other systems of units, and which contains second, since. We attempt to build the new system of units, which does not contain time.

The time, which will be required by the mass M in order under the action of the force indicated to cover a distance R, it is determined by the relationship [1,2]

$$t = \pm 2\sqrt{\frac{2R^3}{M}} \tag{3.2}$$

This value let us accept for the unit of time. Its value is determined by specific physical quantities and their properties taking into account the law of universal gravitation. Exponential is the fact that in the data the time can be both positive and negative value. is known that time reversal, i.e., sign change of time does not change the form of equations of motion. This means that for any possible motion of system can be achieved the time-reversed motion, when system consecutively passes to the reverse order of the states, symmetrical to states, passed in the previous motion. In this posing of the question naturally to assume that, when in the system it occurs no changes, then time for this system not at all flows. When in the system some reversible changes occur, i.e., it after a certain evolution returns reversibly to its initial state, the time flows first in one, and then in other direction, reversing the sign since in this case the concept of time used to in application to this concrete system, it is possible to introduce the proper time of system, i.e. to assume that in each separately undertaken system there is its proper time. States symmetrical on the time are characterized by opposite directions of the speeds (pulses) of particles and magnetic field. Temporary invariance leads to specific ratios between the probabilities of direct and reverse reactions, to the prohibition of some states of the polarization of particles in the reactions, to the equality to zero electrical dipole moment of elementary particles. It follows from the general principles of the quantum field theory that all processes in nature are symmetrical relative to the work of three operations: the time reversal, three-dimensional inversion and charge conjugation.

Using the examined method of introduction to time it is possible to build hours.

If are located two identical masses M, located at a distance $2R$, then, in accordance with the law of universal gravitation, the force of their attraction determines the dependence:

If the masses indicated revolve around the overall center of masses and acts the principle of the equivalence of gravitational and inert mass, then the equality will be carried out:

$$T = \pm 4\pi\sqrt{\frac{R^3}{M}} \tag{3.3}$$

where T is period of revolution of masses around the overall center.

It is evident that this relationship is differed from relationship (3.2) only in terms of coefficient.

In order to transfer this value into seconds, should be used by a coefficient. For its obtaining the law of universal gravitation (3.1) and the values, entering relationship (3.3) one should write down in one of the systems of units. In the system SI the value T, calculated in seconds, will be equal

$$T' = \pm 4\pi\sqrt{\frac{R^3}{GM}}$$

Consequently, conversion factor will be equal

$$K = \frac{T'_H}{T_H} = \sqrt{G} \tag{3.4}$$

where gravitational constant G is determined in the system SI.

If we calculate the coefficient K, then it will be evident that the newly introduced unit of time is approximately five orders more than second. This, of course, is not very convenient, but in order to avoid these inconveniences, it is possible to introduce dimensionless coefficient (3.4) into relationship (3.3). Then the time, measured by the hours examined will be calculated in seconds.

Since time now has its own dimensionality, passage to the electrical systems of units also does not compose labor, simply into the appropriate dimensionality of ones it is necessary to put the new dimensionality of time with the selected dimensionless conversion factor. If we for measuring the electrical units use to Gauss a system and to express in it time in the units of mass and length, then all electrical and magnetic units will be also expressed in the units of mass and length.

It should also be noted that the adoption of this innovation can lead to serious reconstruction of our views.

4. Frame of References, Their Selection and Conversion Pour

Since in the universe each point of united place is unique and only in its kind, it is possible to introduce the united global of counting, attached to these points. Also it is possible to introduce the united global time, measured by the hours of the construction indicated, located in the environment of any given point of united place.

With respect to the global of counting it is possible to introduce the inertial reference systems, which move in what or direction with the constant velocity. The conversion of Galileo will act with respect to such systems, which can be used for converting the electromagnetic pour on upon transfer from the global of counting into the inertial system. With such conversions should be used substantional derivative [3-8].

For finding the conversions for the noninertial revolving frame of references should be used calculation of quaternions.

Let us show based on example, as it is possible to obtain the conversions of electromagnetic pour on upon transfer from the global of counting into the inertial system.

The laws of induction have symmetrical form [3-12]:

$$\begin{aligned} \oint \vec{E}'dl' &= -\int \frac{\partial \vec{B}}{\partial t} d\vec{s} + \oint \left[\vec{v} \times \vec{B}\right] dl' \\ \oint \vec{H}'dl' &= \int \frac{\partial \vec{D}}{\partial t} d\vec{s} - \oint \left[\vec{v} \times \vec{D}\right] dl' \end{aligned} \tag{4.1}$$

or

$$\begin{aligned} rot\vec{E}' &= -\frac{\partial \vec{B}}{\partial t} + rot\left[\vec{v} \times \vec{B}\right] \\ rot\vec{H}' &= \frac{\partial \vec{D}}{dt} - rot\left[\vec{v} \times \vec{D}\right] \end{aligned} \tag{4.2}$$

For the constants fields on these relationships they take the form:

$$\begin{aligned} \vec{E}' &= \left[\vec{v} \times \vec{B}\right] \\ \vec{H}' &= -\left[\vec{v} \times \vec{D}\right] \end{aligned} \tag{4.3}$$

In relationships (4.1-4.3), which assume the validity of the Galileo conversions, prime and not prime values present fields and elements in moving and fixed IS respectively. It must be noted, that conversions (4.3) earlier could be obtained only from Lorenz conversions.

The relationships (4.1-4.3), which present the laws of induction, do not give information about how arose fields in initial fixed IS. They describe only laws governing the propagation and conversion fields on in the case of motion with respect to the already existing fields.

The relationship (4.3) attest to the fact that in the case of relative motion of frame of references, between the fields $\vec{E}$ and $\vec{H}$ there is a cross coupling, i.e., motion in the fields $\vec{H}$ leads to the appearance fields on $\vec{E}$ and vice versa. From these relationships escape the additional consequences, which were for the first time examined in the work [3].

The electric field $E = \dfrac{g}{2\pi\varepsilon r}$ outside the charged long rod with a linear density g decreases as $\dfrac{1}{r}$, where r is distance from the central axis of the rod to the observation point.

If we in parallel to the axis of rod in the field E begin to move with the speed Δv another IS, then in it will appear the additional magnetic field $\Delta H = \varepsilon E \Delta v$. If we now with respect to already moving IS begin to move third frame of reference with the speed Δv, then already due to the motion in the field ΔH will appear additive to the electric field $\Delta E = \mu\varepsilon E\left(\Delta v\right)^2$. This process can be continued and further, as a result of which can be obtained the number, which gives the value of the electric field $E'_v\left(r\right)$ in moving IS with reaching of the speed $v = n\Delta v$, when $\Delta v \to 0$, and $n \to \infty$. In the final analysis in moving IS the value of dynamic electric field will prove to be more than in the initial and to be determined by the relationship:

$$E'\left(r, v_\perp\right) = \frac{gch\dfrac{v_\perp}{c}}{2\pi\varepsilon r} = Ech\frac{v_\perp}{c}$$

If speech goes about the electric field of the single charge e, then its electric field will be determined by the relationship:

$$E'\left(r, v_\perp\right) = \frac{ech\dfrac{v_\perp}{c}}{4\pi\varepsilon r^2}$$

where $v_\perp$ is normal component of charge rate to the vector, which connects the moving charge and observation point.

Expression for the scalar potential, created by the moving charge, for this case will be written down as follows:

$$\varphi'(r, v_\perp) = \frac{ech\dfrac{v_\perp}{c}}{4\pi\varepsilon r} = \varphi(r)ch\frac{v_\perp}{c} \tag{4.4}$$

where $\varphi(r)$ is scalar potential of fixed charge. The potential $\varphi'(r, v_\perp)$ can be named scalar- vector, since. it depends not only on the absolute value of charge, but also on speed and direction of its motion with respect to the observation point. Maximum value this potential has in the direction normal to the motion of charge itself. Moreover, if charge rate changes, which is connected with its acceleration, then can be calculated the electric fields, induced by the accelerated charge.

During the motion in the magnetic field, using the already examined method, we obtain:

$$H'(v_\perp) = Hch\frac{v_\perp}{c}$$

where $v_\perp$ is speed normal to the direction of the magnetic field.

If we apply the obtained results to the electromagnetic wave and to designate components fields on parallel speeds IS as $E_\uparrow$, $H_\uparrow$, and $E_\perp$, $H_\perp$ as components normal to it, then with the conversion fields on components, parallel to speed will not change, but components, normal to the direction of speed are converted according to the rule

$$\vec{E}'_{\perp} = \vec{E}_{\perp} ch\ \frac{v}{c} + \frac{v}{c}\vec{v}\times\vec{B}_{\perp} sh\frac{v}{c},$$
$$\vec{B}'_{\perp} = \vec{B}_{\perp} ch\ \frac{v}{c} - \frac{1}{vc}\vec{v}\times\vec{E}_{\perp} sh\frac{v}{c}, \qquad (4.5)$$

where $c=\sqrt{\dfrac{1}{\mu_0\varepsilon_0}}$ is speed of light.

Conversions fields (4.5) they were for the first time obtained in the work [2].

However, the iteration technique, utilized for obtaining the given relationships, it is not possible to consider strict, since its convergence is not explained

Let us give a stricter conclusion in the matrix form even let us show that the form of conversions is wholly determined by the type of the utilized law of addition of velocities - classical or relativistic.

Let us examine the totality IS of such, that IS K_1 moves with the speed Δv relative to IS K, IS K_2 moves with the same speed Δv relative to K_1 , etc. If the module of the speed Δv is small (in comparison with the speed of light c), then for the transverse components fields on in IS K_1, K_2,…. we have:

$$\begin{aligned}
\vec{E}_{1\perp} &= \vec{E}_{\perp} + \Delta\vec{v}\times\vec{B}_{\perp} & \vec{B}_{1\perp} &= \vec{B}_{\perp} - \Delta\vec{v}\times\vec{E}_{\perp}/c^2\\
\vec{E}_{2\perp} &= \vec{E}_{1\perp} + \Delta\vec{v}\times\vec{B}_{1\perp} & \vec{B}_{2\perp} &= \vec{B}_{1\perp} - \Delta\vec{v}\times\vec{E}_{1\perp}/c^2
\end{aligned} \qquad (4.6)$$

Upon transfer to each following IS of field are obtained increases in $\Delta\vec{E}$ and $\Delta\vec{B}$

$$\Delta\vec{E} = \Delta\vec{v}\times\vec{B}_{\perp}, \qquad \Delta\vec{B} = -\Delta\vec{v}\times\vec{E}_{\perp}/c^2 \qquad (4.7)$$

where of the field $\vec{E}_{\perp}$ and $\vec{B}_{\perp}$ relate to current IS. Directing Cartesian axis x along $\Delta\vec{v}$, let us rewrite (4.7) in the components of the vector

$$\Delta E_y = -B_z\Delta v, \qquad \Delta E = B_y\Delta v, \qquad \Delta B_y = E_z\Delta v/c^2 \qquad (4.8)$$

Relationship (4.8) can be represented in the matrix form

$$\Delta U = AU\Delta v \qquad \begin{pmatrix} 0 & 0 & 0 & -1\\ 0 & 0 & 1 & 0\\ 0 & 1/c^2 & 0 & 1\\ 1/c^2 & 0 & 0 & 0 \end{pmatrix} \qquad U=\begin{pmatrix} E_y\\ E_z\\ B_y\\ B_z \end{pmatrix}$$

If one assumes that the speed of system is summarized for the classical law of addition of velocities, i.e. the speed of final IS $K'=K_N$ relative to the initial system K is $v=N\Delta v$, then we will obtain the matrix system of the differential equations of

$$\frac{dU(v)}{dv} = AU(v) \qquad (4.9)$$

with the matrix of the system v independent of the speed A . The solution of system is expressed as the matrix exponential curve $\exp(vA)$:

$$U' \equiv U(v) = \exp(vA)U, \qquad U=U(0), \qquad (4.10)$$

here U is matrix column fields on in the system K , and U' is matrix column fields on in the system K'. Substituting (4.10) into system (4.9), we are convinced, that U' is actually the solution of system (4.9):

$$\frac{dU(v)}{dv} = \frac{d\left[\exp(vA)\right]}{dv}U = A\exp(vA)U = AU(v)$$

It remains to find this exponential curve by its expansion in the series:

$$\exp(va) = E + vA + \frac{1}{2!}v^2A^2 + \frac{1}{3!}v^3A^3 + \frac{1}{4!}v^4A^4 + ...$$

where E is unit matrix with the size 4×4 . For this it is convenient to write down the matrix A in the unit type form

$$A=\begin{pmatrix} 0 & -\alpha\\ \alpha/c^2 & 0\end{pmatrix}, \qquad \alpha=\begin{pmatrix} 0 & 1\\ -1 & 0\end{pmatrix}, \qquad 0=\begin{pmatrix} 0 & 0\\ 0 & 0\end{pmatrix}.$$

then

$$A^2=\begin{pmatrix} \alpha^2/c^2 & 0\\ 0 & -\alpha/c^2\end{pmatrix}, \; A^3=\begin{pmatrix} 0 & \alpha^3/c^2\\ -\alpha^3/c^4 & 0\end{pmatrix},$$

$$A^4=\begin{pmatrix} \alpha^4/c^4 & 0\\ 0 & \alpha^4/c^4\end{pmatrix}, \; A^5=\begin{pmatrix} 0 & \alpha^5/c^4\\ \alpha^5/c^6 & 0\end{pmatrix}.$$

And the elements of matrix exponential curve take the form

$$\left[\exp(vA)\right]_{11} = \left[\exp(vA)\right]_{22} = I - \frac{v^2}{2!c^2} + \frac{v^4}{4!c^4} - ....,$$

$$\left[\exp(vA)\right]_{21} = -c^2\left[\exp(vA)\right]_{12} = \frac{\alpha}{c}\left(\frac{v}{c}I - \frac{v^3}{3!c^3} + \frac{v^5}{5!c^5} - .....\right),$$

where I is the unit matrix 2×2 . It is not difficult to see that $-\alpha^2 = \alpha^4 = -\alpha^6 = \alpha^8 = ... = I$, therefore we finally obtain

$$\exp(vA) = \begin{pmatrix} Ich\ v/c & -c\alpha sh\ v/c\\ \left(\alpha sh\ v/c\right)/c & Ich\ v/c\end{pmatrix} =$$

$$\begin{pmatrix} ch\ v/c & 0 & 0 & -csh\ v/c\\ 0 & ch\ v/c & csh\ v/c & 0\\ 0 & \left(ch\ v/c\right)/c & ch\ v/c & 0\\ -\left(sh\ v/c\right)/c & 0 & 0 & ch\ v/c \end{pmatrix}$$

Now we return to (4.10) and substituting there $\exp(vA)$, we find

$$E'_y = E_y ch\ v/c - cB_z sh\ v/c, \qquad E'_z = E_z ch\ v/c + cB_y sh\ v/c,$$
$$B'_y = B_y ch\ v/c + \left(E_z / c\right) sh\ v/c, \quad B'_z = B_z ch\ v/c - \left(E_y / c\right) sh\ v/c,$$

Or in the vector record

$$\vec{E}'_\perp = \vec{E}_\perp ch\ \frac{v}{c} + \frac{v}{c}\vec{v}\times\vec{B}_\perp sh\frac{v}{c}, \qquad \vec{B}'_\perp = \vec{B}_\perp ch\ \frac{v}{c} - \frac{1}{vc}\vec{v}\times\vec{E}_\perp sh\frac{v}{c}, \tag{4.11}$$

This is conversions (4.5)

Regular question arises, why differ the conversions examined, indeed with the low speeds $\Delta\vec{v}$ occur identical relationships (4.6) and (4.7). The fact is that according to the relativistic law of addition of velocities, are added not speeds, but rapidities. According to definition the rapidity is introduced as

$$\theta = c\ arth\frac{v}{c} \tag{4.12}$$

Precisely, if the rapidity of the systems K_1 and K, K_2 and K_1, K_3 and K_2 they are distinguished to $\Delta\theta$, then rapidity the rapidity IS $K' = K_N$ relative to K is $\theta = N\Delta\theta$. With the low speeds $\Delta\theta \cong \Delta v$; therefore formula (4.7) it is possible to rewrite so

$$\Delta\vec{E} = \Delta\theta\times\vec{B}_\perp, \qquad \Delta\vec{B} = -\Delta\vec{\theta}\times\vec{E}_\perp / c^2$$

where $\vec{\theta} = \theta\frac{\vec{v}}{v}$. System (4.9) taking into account the additivity of rapidity, but not speed, it is substituted by the system of equations

$$\frac{dU(\theta)}{d\theta} = AU(\theta)$$

Thus, all computations will be analogous given above, only with the difference that in the expressions instead of the speeds will figure rapidity. In particular formulas (4.11) take the form

$$\vec{E}'_\perp = \vec{E}_\perp ch\ \frac{\theta}{c} + \frac{\theta}{c}\vec{\theta}\times\vec{B}_\perp sh\frac{\theta}{c}, \qquad \vec{B}'_\perp = \vec{B}_\perp ch\ \frac{\theta}{c} - \frac{1}{\theta c}\vec{\theta}\times\vec{E}_\perp sh\frac{\theta}{c},$$

or

$$\vec{E}'_\perp = \vec{E}_\perp ch\ \frac{\theta}{c} + \frac{v}{c}\vec{v}\times\vec{B}_\perp sh\frac{\theta}{c}, \qquad \vec{B}'_\perp = \vec{B}_\perp ch\ \frac{\theta}{c} - \frac{1}{vc}\vec{v}\times\vec{E}_\perp sh\frac{\theta}{c}, \tag{4.13}$$

Since

$$ch\frac{\theta}{c} = \frac{1}{\sqrt{1 - th^2\left(\theta/c\right)}}, \qquad sh\frac{\theta}{c} = \frac{th\left(\theta/c\right)}{\sqrt{1 - th^2\left(\theta/c\right)}}$$

that substitution (4.12) in (4.13) leads to the well known conversions fields on

$$\vec{E}'_\perp = \frac{1}{\sqrt{1 - v^2/c^2}}\left(\vec{E}_\perp + \vec{v}\vec{B}_\perp\right), \qquad \vec{B}'_\perp = \frac{1}{\sqrt{1 - v^2/c^2}}\left(\vec{B}_\perp - \frac{1}{c^2}\vec{v}\times\vec{E}_\perp\right) \tag{4.14}$$

With the small relative conversion rates (4.11) and (4.14) differ, beginning from the terms of the expansion of the order v^2/c^2.

The obtained results are very significant and show a difference in the results, conversions of Galileo and conversions of Lorenz obtained within the framework. These differences are not so great and they do not yield to thus far experimental measurement, since the difference is noted only in the fourth degrees of decomposition. But even such differences indicate that within the framework the conversions of Lorenz the speed of inertial system cannot exceed the speed of light, since pour on values, but it means and their energy approaches infinity, while within the framework of the conversions of Galileo of such limitations no.

One should hope that further development of sciences will make it possible to solve this fundamental question.

5. Conclusion

In the article are examined the problems, connected with the determination of such concepts as space, material, time. Is introduced the concept of the point of united place, which is only in the space. The concept of clustering space, which presents the space in the form is introduced of clusters with the intended sizes. It is shown that the time is not primary value, which are the length, mass and force, but it depends on the parameters indicated. Is introduced the new system of units, in which the time is expressed through the mass and the length. The concept of the global of counting and global time is introduced. Are given the conversions of electromagnetic pour on upon transfer from the global of counting into the inertial system.

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