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# PRECISE FORMAT OF THE LORENTZ TRANSFORMATIONS – UNSOUNDNESS OF THE UNITED SPACE-TIME

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**Abstract** (MT)

It is by all means proved scientific fact that the World is structured on the Principle of opposites. Space and time are opposite natures – material and ideal. The united space-time is a fiction of relativism. We will demonstrate this with the Lorentz transformations between the inertial systems **K** and **K'** (we accept that the source of light **K'(x', t')** is moving in relation to **K(x, t)** , for example, to the right with velocity **v** on the axes **X'=X** and replace $\mathbf{b=(1-v^2/c^2)^{1/2}}$). The appearance of the transformations [$\mathbf{x'=(x-v.t)/b}$ ; $\mathbf{t'=(t-v.x/c^2)/b}$] is obviously intermediate (suggests that the mathematical operation in brackets is not bringed to the end). The expressions **vt** and $\mathbf{vx/c^2}$ have the meanings, accordingly $\mathbf{vt=\Delta x}$ and $\mathbf{vx/c^2=\Delta t}$, which means that the so-called united space-time is an invention (fiction) of relativism. Actually, $\Delta$**x** and $\Delta$**t** are manifestly corrections to the **x** coordinate and time **t**, caused by transposition of the systems and the top speed of light. As a result $\mathbf{(x-\Delta x)=x_{cor}}$ is the corrected coordinate **x** and $\mathbf{(t-\Delta t)=t_{cor}}$ is the corrected time **t**. I.e. **x'** and **t'** are not reciprocal of **x** and **t** , but they are reciprocal quantitys of $\mathbf{x_{cor}}$ and $\mathbf{t_{cor}}$ . Therefore, we can represent the transformations in their lawful form: $\mathbf{x'=x_{cor}/b}$ ; $\mathbf{t'=t_{cor}/b}$ (or **l'=l/b** ; **t'=t/b**) for viewpoint **K'**. Then, without any doubt, the reverse expressions will be these: $\mathbf{x_{cor}=x'.b}$ ; $\mathbf{t_{cor}=t'.b}$ (or **l=l'.b** ; **t=t'.b**) for viewpoint **K** (only in this way the laws retain their shape). It is these dependences are obtained at the solving of the experiment of Michelson-Morley. And so, according to Lorentz transformations, the true meaning of the ratio (parameters **K'**)=**k**(parameters **K**) is a Principle of similarity (**k** is a coefficient of similarity). The Principle of relativity appears without absolute status. It remains in force only in conditions of the so-called isolated laboratory (lack of an opposite side). Only then, in no way can be established whether **k** is **b**, or **1/b**.

**KEYWORDS:** inertial systems, Lorentz transformations, Principle of opposites, Principle of relativity

## INTRODUCTION

It is by all means proved and generally recognized scientific fact that the Nature is structured on the Principle of opposites, which is a Principle of difference, of asymmetry, of determination, which precisely gives the cognitive function and ability of the mind. At the same time, physics is raising the stunning thesis that inertial systems make an exception to this fundamental law of Universum. According to it they are absolutely identical, which means that the states "peace" and "movement" are indistinguishable. This discrepancy clearly outlines the three specific aspects of the problem "inertial systems": physical, mathematical and philosophical. What is the factual situation?

## EXPOSITION

### 1. The Lorentz transformations within the normal mathematics

As it is well known [1, part II, p. 464], the Lorentz transformations between the inertial systems **K(x, t)** and **K'(x', t')** seem so (we accept that the source of light **K'** is moving in relation to **K** with velocity **v** on the axes **X'=X** (**Y'=Y=0**, **Z'=Z=0**) and replace $\mathbf{b=(1-v^2/c^2)^{1/2}}$):

$\mathbf{x'=x/b-v.t/b\ ;\ t'=t/b-v.x/c^2.b}$ – viewpoint **K'** (1)

or $\mathbf{x'=(x-v.t)/b\ ;\ t'=(t-v.x/c^2)/b}$ – viewpoint **K'** (1)

This generally accepted kind (1) makes an impression with the unwonted segmented form of expressions which is subject to interpretations too vague and does not give a precise idea of the proportions we are interested in: **x'/x** and **t'/t** .

The extraction of coefficient **b** in front brackets allows us to explicitly remind that the reverse transition is always a matter of alphabetical mathematical rule: as soon as **x'=(x-v.t)/b**; $\mathbf{t'=(t-v.x/c^2)/b}$ – viewpoint **K'** , it will be in force only:

$\mathbf{(x-v.t)=x'.b\ ;\ (t-v.x/c^2)=t'.b}$ – viewpoint **K** (2)

In a more general form, as soon as **A=B/b** – viewpoint **A**, it will be in force only **B=A.b** – viewpoint **B**, and **b=B/A** , respectively, **1/b=A/B** – correlation of the two viewpoints. This is because any mathematical equation expresses a circular comparative procedure, operation in a closed contour. Only in this way, the laws retain their shape. [2] And the movement itself of the processes in a circle, in turn, is a general law of the nature, respectively, of the thinking, which means of the philosophy, physics, mathematics and logic.

It would not be superfluous to remind that the Special theory for its twin postulates stands quite artificially outside this legitimate framework. Broadly speaking, after action "going" from **K** to **K'** (by erected thesis **K**, to the antithesis **K'**), is missing action "return" back into **K** for the synthesis solution, respectively, for completion of the cognitive process (part of the philosophical side of the question).

Let us once again explicitly to point out that the formula "circular (closed) configuration" is an irrevocable characteristic, condition, law in the final reckoning a force model of organization and form of existence of the Universe. [3]

The equations (1)-(2) are the only possible option (combination) of this relationship. Transformations between the two sides of equations cannot be other, but inverse. The expression for point of view **K** follows immediately from (1). This transition brings guarantee for absolute veracity because the rules of omnipresent mathematics are not susceptible to falsification or disregarding.

We must stress that there can be no equation (dependence, relation, connection) without two real opposing sides, accordingly, winners of two real opposite natures. Equations (1)-(2) reflect the fact that system **K** is opposite in parameters, respectively, on the content of system **K'**.

## 2. For the untrue assertion that the Lorentz transformations represent mixing of spatial and temporal dimensions

Directly to the question, it appears that the starting equations (1) represent sui generis mixing space and time reports. Physics uncritically adopts this unrepresentative combination for a definitive fact [1, part II, p. 480, 481, 484, 494], producing on this base series of theoretical and terminological noveltys. In reality, things are far more ordinary.

The appearance of the section in brackets suggests that in the case mathematical operation is not bringed to the end. And intermediate results, we know, are unfit for making conclusions. That is why we orientate to further rationalization of the obtained dependencies.

The discernment in the essence of this operation is a matter of a few simple logical-mathematical reasonings. The values $\mathbf{v.t}$ and $\mathbf{v.x/c^2}$ are manifestly corrections to the **x** coordinate and time **t**, caused by displacement of the centers of the systems and the top speed of light. In this sense, the correction can be performed only with quantities of same nature (with identical dimensions). Any other assumptions will be frivolous **(**meters can not be corrected with seconds and seconds can not be corrected with meters). Indeed the addition $\mathbf{v.t=\Delta x}$ has dimension of the **x** coordinate and addition $\mathbf{v.x/c^2=(v/c)(x/c)=\Delta t}$ has dimension of the time **t** (the measured meters are corrected with meters and the measured seconds – with seconds). This means that <u>the notorious united space-time is a fiction of relativism – neither more nor less!</u>

So, the undeniable fact is that in expressions (1) the **x** coordinate and time **t** undergo a specific revision. As a result, they acquire values $\mathbf{(x\text{-}v.t)=(x\text{-}\Delta x)=x_{cor}}$ – corrected coordinate **x** and $\mathbf{(t\text{-}v.x/c^2)=(t\text{-}\Delta t)=t_{cor}}$ – corrected time **t** . It is now apparent that the **x'** coordinate and time **t'** are not reciprocal quantitys of **x** and **t**, but they are reciprocal values of $\mathbf{x_{cor}}$ (corrected coordinate **x**) and $\mathbf{t_{cor}}$ (corrected time **t**). Therefore, even here we can represent the transformations in their lawful form:

$\mathbf{x'=x_{cor}/b}$ ; $\mathbf{t'=t_{cor}/b}$ – viewpoint **K'** (1a)

Then, without any doubt, the reverse expressions will be these:

$\mathbf{x_{cor}=x'.b}$ ; $\mathbf{t_{cor}=t'.b}$ – viewpoint **K** (2a)

### 3. Presentation of the Lorentz transformations only with mono-dimensional quantities

But for the unreservedly resolve of the case we will make one more particularization.

From the attained findings, we understand that the **x'** coordinate and time **t'** are structurally incompatible with the **x** coordinate and time **t**, which difference prevents their immediate comparison. Just this circumstance needs concretization. Analysis of treatment indicates that, because of displaced systems on their relative movement, reports in system **K'** remain mono-dimensional ($\mathbf{x'=x'_{mon}}$ , $\mathbf{t'=t'_{mon}}$), while reports in system **K** are formed as summary ($\mathbf{x=x_{sum}}$ , $\mathbf{t=t_{sum}}$). The accuracy requires Lorentz transformations to reflect this detail as follows:

$\mathbf{x'_{mon}=(x_{sum}-v.t_{sum})/b}$ ; $\mathbf{t'_{mon}=(t_{sum}-v.x_{sum}/c^2)/b}$ – viewpoint **K'** (1b)

We must now address the issue about members in brackets. In fact, the procedure for this correction is quite trivial. The summary coordinate $\mathbf{x_{sum}}$ consists of mono-dimensional coordinate $\mathbf{x_{mon}}$ (corresponding to $\mathbf{x'_{mon}}$) and the additional distance $\mathbf{v.t_{sum}}$ , i.e. $\mathbf{x_{sum}=x_{mon}+v.t_{sum}}$ , and summary time $\mathbf{t_{sum}}$ consists of mono-dimensional time $\mathbf{t_{mon}}$ (corresponding to $\mathbf{t'_{mon}}$) and extra time $\mathbf{v.x_{sum}/c^2}$, i.e. $\mathbf{t_{sum}=t_{mon}+v.x_{sum}/c^2}$. Then for the expressions in brackets we obtain: $\mathbf{(x_{sum}-v.t_{sum})=x_{mon}+v.t_{sum}-v.t_{sum}}$ , respectively $\mathbf{(x_{sum}-v.t_{sum})=x_{mon}}$ , i.e. $\mathbf{x_{cor}=x_{mon}}$ and $\mathbf{(t_{sum}-v.x_{sum}/c^2)=t_{mon}+v.x_{sum}/c^2-v.x_{sum}/c^2}$ , respectively $\mathbf{(t_{sum}-v.x_{sum}/c^2)=t_{mon}}$ , i.e. $\mathbf{t_{cor}=t_{mon}}$ .

So the relationship between the two systems yields: $\mathbf{x'_{mon}=x_{mon}/b}$ ; $\mathbf{t'_{mon}=t_{mon}/b}$ . Next, things are clear because, following the rules of regular mathematics (and we know no other), simply we cannot be wrong, namely:

$\mathbf{x'_{mon}=x_{mon}/b}$ ; $\mathbf{t'_{mon}=t_{mon}/b}$ – this connection seems so from system **K'** (1c)

$\mathbf{x_{mon}=x'_{mon}.b}$ ; $\mathbf{t_{mon}=t'_{mon}.b}$ – this connection seems so from system **K** (2c)

$\mathbf{x_{mon}/x'_{mon}=b}$ ; $\mathbf{t_{mon}/t'_{mon}=b}$ – this connection seems so as a ratio (3)

$\mathbf{x'_{mon}/x_{mon}=1/b}$ ; $\mathbf{t'_{mon}/t_{mon}=1/b}$ – this connection seems so as a reverse ratio (4)

### 4. Definitive form of the Lorentz transformations – coefficient of similarity

Juxtapositions (1c), (2c), (3), (4) exhaust the correlations between the two systems. That is to say, the ultimate form of Lorentz transformations is:

$\mathbf{x'_{mon}=x_{mon}/b}$ ; $\mathbf{t'_{mon}=t_{mon}/b}$ or in summary form $\mathbf{x'=x/b}$ ; $\mathbf{t'=t/b}$ – viewpoint **K'** (1c)

$\mathbf{x_{mon}=x'_{mon}.b}$ ; $\mathbf{t_{mon}=t'_{mon}.b}$ or in summary form $\mathbf{x=x'.b}$ ; $\mathbf{t=t'.b}$ – viewpoint **K** (2c)

The received combination straight/reverse transition brings out the nature of the transformation between the two systems, unlike the expressions (1)-(2), where this truth is in disguise.

Formulas (1c)-(2c) undoubtedly demonstrate that the systems are in relation of similarity (principle of similarity), namely:

**(parameters K')=k(parameters K)** where **k** is a coefficient of similarity (5)

In other words, the form of laws remains the same in both systems. But now the Principle of relativity turns out without a absolute status. It remains in force only in conditions of the so-called isolated laboratory (lack of an opposite side). Only then, in no way can be established whether **k** is **b**, or **1/b** . But, if we violate these conditions, the value of **k** immediately shows up, and hence it becomes clear which of the systems is moving. [2]

For example, in one of the systems, say in **K** , let us measure a control segment $\mathbf{l_0}$ from the **X** axis, then we transfer with the scale in **K'** and from there we re-measure this segment. Then we should receive either the result $\mathbf{l'=l_0/b}$ , meaning, referring to (1c), that system **K'** is moving, or the result $\mathbf{l'=l_0.b}$ , meaning, referring to (2c), that system **K** is moving (as a proof – the experiment of Michelson-Morley).

In that case, we can offer the following improvisation. Systems **K** and **K'** are found in a state of relative quiescence. Their beginnings and axes coincide completely. Now in any imaginable manner we alter the physical characteristics of **K'** to a position to become relevant to its movement with speed **v** relative to **K** . The purpose of this imaginable procedure is to avoid displaced origins of the systems. So clearly, both parameters **K** , and parameters **K'** will be mono-dimensional and directly comparable. Furthermore, we know that the very system **K'** "is moving" and, because of “this movement”, only parameters **K'** "undergo changes” – simultaneously, in one direction and in equally degree, because of the condition for the same form of laws. That is, if we make the relevant measurements before and after the imaginable operation we will directly receive the final form (1c)-(2c) of the transformations. The systems stand in a ratio of similarity.

### 5. The experiment of Michelson-Morley as a negation of the Principle of relativity

The authenticity of equations (1c)-(2c) can be proved in many ways as from physics itself, and beyond. For example, the same result is received by correct solving of notorious experiment of Michelson-Morley, but held in two opposite situations:

When we execute the experiment imaginary in the motionless Ether (system **K**), while observing from the moving Earth (system **K'**), we derive dependences (1) [$\mathbf{x'=(x-v.t)/b}$ ; $\mathbf{t'=(t-v.x/c^2)/b}$] for point of view **K'**, mirror image.

When we execute the experiment on the moving Earth (system **K'**), while mentally observing from the motionless Ether (system **K**), we derive dependences (2) [$(x-v.t)=x'.b$ ; $(t-v.x/c^2)=t'.b$] for the real point of view **K** .

In a word, for moving point of view **K'** motionless meter **K** and second **K** are lengthened (the motionless time **K** run slower). For motionless point of view **K** moving meter **K'** and second **K'** are shortened (the moving time **K'** run faster). [4]

An astonishment is that the experiment of Michelson-Morley to this day is not resolved. The same shows as faithful exactly the transformations (1c)-(2c), and not those of the Special Theory. [5] And since not correspond to reality, the transformation of the Special theory does not retain the form of laws. [6]

As mentioned, the mathematical rules are direct incarnation of the comprehensive Principle of opposites. They derive from it and so have no alternative. Without contrary two sides in general mathematical operation cannot be organized, respectively, it is not possible to draw up an equation. Take for example the definition: "inertial systems **K** and **K'** are moving against each other at a speed **v**". This text undoubtedly expresses the absolute relativity of the movement since **K** and **K'** are fully equal in rights (weather speed is **v** or **-v** it is irrelevant). But from the data it obviously cannot be drawn problem from it. Once, however attach the speed **v** to any of the systems, they automatically become opposite (given). Then the mathematical apparatus immediately triggers, forming juxtaposing equations (the said transformations), which fix the gained real status – in this case system **K'** represents the movement, and system **K** represents the peace.

## CONCLUTION

Now a few words about the mistaken logic of relativism. [7] In brief, according to Galilei in the inertial systems operate the Principle of relativity, which is absolute, as is based on absolute identities: $x'_{mon}=x_{mon}$ (since $x'_{mon}=x_{sum}-v.t_{sum}$ and $x'_{mon}=x_{mon}+v.t_{sum}-v.t_{sum}=x_{mon}$); $t'_{mon}=t_{mon}$ (since the time is absolutely), in summary form $x'=x$ ; $t'=t$ (at that time only they are immediately accessible).

Einstein, however, based on the peak precision, came to the opposite result (the Lorentz transformations): $x'_{mon}=x_{mon}/b$ ; $t'_{mon}=t_{mon}/b$ , in summary form $x'=x/b$ ; $t'=t/b$ , i.e. $x'$ is different from $x$ ; $t'$ is different from $t$ which demonstrates the untenability of the upper identities. According to the transformations, in the inertial systems operate the Principle of opposites, which is based on these categorical differences. Thus, they refutes the maxim for an absolute relativity of the motion. Such is the normal logic – the opposed results predetermine and an opposed conclusions.

Obviously, we have to assume that Galilei simply makes an unforeseeable circumstantial error (arising from the then low level of knowledge and technological opportunities) and so involuntary leads astray the whole science. Any other position would carry the stigma of ridiculous alogism. [7, p. 345-349]


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