

## EXACT DEFINITION OF THE SECOND POSTULATE OF THE SPECIAL THEORY

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### **Abstract**

The article treats the following questions: 1) The exact definition of the Second postulate of the Special theory, 2) The Ratio of indefiniteness "exact velocity  $c$  of the light signal at an inexact (asymmetric) closed contour" or "inexact (average) velocity  $c$  of the light signal at an exact (symmetric) closed contour" and 3) The single place of the experiments of Michelson-Morley and Sagnac in the relative theory.

**Keywords:** *special theory, second postulate, ratio of indefiniteness, experiments of Michelson-Morley, experiments of Sagnac*

### **INTRODUCTION** (MT)

The realization of Cognition in cognitive closed contours is a natural law (Theory of the Cognition: attainment of Cognition in an open configuration is not possible). [1] We presented this circular order in the measurement of speeds, wherever the relative ratio come up to light as an objective impossibility (prohibition) for simultaneous accurate measurement of length and time. [2] The same is in direct relation to the Second postulate of the Special theory, namely:

– In cases 1a), 1b), 2a), 2b) and 3a), 3b) the Ratio and Postulate are mutually incompatible. This means that they can not be simultaneously veracious – or Ratio is true, and the Postulate is wrong, or Postulate is correct, and the Ratio is wrong. [2]

– In cases 4) and 5) the Ratio and Postulate are in full agreement. This means that they are at once true. [2]

### **EXPOSITION**

It remains to show from where this drastic contradiction stems. For this purpose, we will take out the definition of the second postulate directly from the original article. [3]

In the preamble: "...that light is always propagated in empty space with a definite velocity  $c$  which is independent of the state of motion of the emitting body."

In § 2: "Any ray of light moves in the "stationary" system of co-ordinates with the determined velocity  $c$ , whether the ray be emitted by a stationary or by a moving body."

In the expressed assertions a priori everything would be logical and utterly OK, if it were specified what does the term "empty space" (emptiness) and if the definition "stationary" it were not enclosed by quotation marks.

As soon as the light signal is moves this means that the same has a objective, material content, mean that the same is a "thing". While the emptiness has the meaning of perfect blank, has the meaning of "nothing". As soon as the light signal moves in emptiness, this means that it moves relative to this bleakness. And to think that the emptiness is also located in some movement, that the "nothing" might drift, it's frankly craziness. We could say that the emptiness merely there is no way to express something other except zero movement...to be absolutely stationary. I.e. we are sure that the light moves with a speed  $c$  in relation to this absolute lower bound of movement – velocity zero.

On the other hand the importance of the quotes is, first, that the peace is conditional and second, that the concept "stationary system" does not refer to any definite system, but applies to all inertial systems, whether they are moving in different directions with different speeds. That is, according to the Theory, the light beam behaves absolutely equally in all systems...inexplicably how. As if by some unknown, hidden mechanism takes their movement.

Actually, the use of the speed of light acting as the only absolutely unchangeable scale, it is not thus elementary, as the relativists think.

The Universe consists of myriad systems moving with a myriad speeds in a myriad directions. Generally speaking, it represents a dynamic, vector reality, suggesting all sorts of asymmetries. Obvious impossibility is this multitude to be treated with a scale-vector.

The astute insight into this, one species, chaotic picture is hinting that it would be easy for covering if everything in it were a gradation of stationary scalars. However how the dynamic, vector reality to be transformed into a stationary, scalar (applies and for the scale  $c$ )? Obviously, such a principled twist cannot be achieved only with the quotes in the definition.

The realization of the situation in depth speaks unambiguously that, for purposes of comparison, it is imperative that all systems in some way to reduced under a common denominator. I.e., through appropriate organization of the movement of the light signal the systems should be brought to one system which means be gone to their standardization in essence. But which be a this system?

The mind indicates that this should be the system with characteristics "zero speed", "zero direction" (anyone can explained yourself why). To be able the speed of light to play the role of universal scale, all systems must be placed under the common denominator of the peace, respectively, to be adduced to the only one absolutely motionless system – to the emptiness.

The Theory precisely such adaptation is trying to do (anywhere uses this system for real, and on words assures us in the contrary). But as it offers through a purely textual leveling of the systems, we must agree that there is no how to become. Confused is the approach of keeping the reasoning, which falsifies the conclusions.

In short, Einstein treats the speed of light as measured in one direction – between two points in space. While, repeat, Cognition in such an open configuration is objectively impossible both as a philosophy and as physics. The only exception is the system in an absolute peace – the emptiness. However, at last it should be realized that this system is actually existing and plays a key role in the development of the Universe.

That is how the question stands with the Second postulate as a mixed physical and philosophical problem. Will add a further that we also will strive to complete unification of the systems will chase their seemingly (adduced) stop-state ... there is no another useful course. But we will tread on the true way. It is in this right direction the philosophy and physics begin to run in one common cognitive furrow.

Now let us to focus on contemporary inaccurate definition of the Second postulate, as follows:

The contemporary summarized inexact definition of the Second postulate: The light signal moves with a constant velocity  $c$  in all systems, and all directions, independently of the movement of the systems themselves, respectively, from the movement of its source.

The physics of this formulation we will illustrate the following treatment:

Inertial system  $\mathbf{K}'$ , with origin  $\mathbf{O}'$ , is moving towards an absolutely stationary system  $\mathbf{K}$  (emptiness), with origin  $\mathbf{O}$ , on the right with velocity  $v$  along the axes  $\mathbf{X}' = \mathbf{X}$ . On the axes  $\mathbf{X}'$  and  $\mathbf{X}$  to the right are placed mirrors  $\mathbf{A}'$  and  $\mathbf{A}$ , and to the left – mirrors  $\mathbf{B}'$  and  $\mathbf{B}$ . In peace of  $\mathbf{K}'$  concerning  $\mathbf{K}$  is available the identity: distance  $\mathbf{O}'\mathbf{A}' = \text{distance } \mathbf{O}\mathbf{A} = \text{distance } \mathbf{O}'\mathbf{B}' = \text{distance } \mathbf{O}\mathbf{B}$ . At the moment of coincidence of the origins  $\mathbf{O}' = \mathbf{O}$  is emitted light signal.

In accordance with physical laws, at the moment  $\mathbf{O}' = \mathbf{O}$  of emission of the signal, its front will go equally in all directions – for as a single sphere around the center  $\mathbf{O}' = \mathbf{O}$ . But system  $\mathbf{K}'$  is moving and in the next moment center  $\mathbf{O}'$  will move to the right from center  $\mathbf{O}$ . Precisely with this moment of dislocation  $\mathbf{O}' \neq \mathbf{O}$  of a system  $\mathbf{K}'$  the Second postulate failed thus to keep up, and trying to overcome it by magic. Upon careful insight in the summarized definition of the Postulate shows that the same prescribes on the front of the light two incompatible ways of behavior (positioning) concerning a system  $\mathbf{K}'$ , as follows:

The front of the light signal behaves differently in systems  $\mathbf{K}$  and  $\mathbf{K}'$ : According to the part of the definition "The light signal moves independently of the movement of the systems, respectively, from the movement of its source", the its front in the moment  $\mathbf{O}' \neq \mathbf{O}$  must remain symmetrical sphere only around center  $\mathbf{O}$  of the system  $\mathbf{K}$  (the emptiness). The same sphere will already stands asymmetrically towards a center  $\mathbf{O}'$  of  $\mathbf{K}'$  (and towards the center  $\mathbf{O}^n$  of any other moving system  $\mathbf{K}^n$ ). It means that this single

front of the signal will reach simultaneously to the mirrors **A** and **B** in a system **K** and obviously no way to reach simultaneously to mirrors **A'** and **B'** of the system **K'** (and up to equidistant from the origins **O<sup>n</sup>** mirrors **A<sup>n</sup>** and **B<sup>n</sup>** of any other moving system **K<sup>n</sup>**). The described picture observes the laws of physics and that is why it stands to reason.

The front of the light signal behaves equally in systems **K** and **K'**: According to the part of the definition "The light signal moves with a constant velocity **c** in all systems, and all directions" (the signal moves in the same way in all systems), its front in the moment **O'≠O** must represent a symmetrical sphere and around center **O** and around center **O'** (and around center **O<sup>n</sup>** of any other moving system **K<sup>n</sup>**). By this logic the front will reach simultaneously and up to mirrors **A** and **B** of system **K**, and up to mirror **A'** and **B'** of system **K'** (and up to equidistant from the origins **O<sup>n</sup>** mirrors **A<sup>n</sup>** and **B<sup>n</sup>** of any other moving system **K<sup>n</sup>**). That is, identical movement of the signal at the different moving systems **K<sup>n</sup>** means the same to spread like countless equally spheres around different points of space. And that cannot happen.

It turns out that the front of the signal now must be independent from the movement of a system **K'** (of all moving systems **K<sup>n</sup>**), now must accompany a system **K'** (all moving systems **K<sup>n</sup>**).

In a word, it is clear that the definition of the Second postulate is composed of two irreconcilable, mutually exclusive statements:

- 1) The light signal moves with a constant velocity **c** independently of the movement of the systems, respectively, from the movement of its source (once emitted, the light signal forgets for its source).
- 2) The light signal moves with a constant velocity **c** in all systems, and all directions.

Condition 1) is a comprehensible regularity arising from the symmetrical movement of the light signal into the emptiness (system **K**). While on condition 2), considering that the systems move in countless different ways, this its symmetry in each goes beyond the normal understanding about the nature of the movement.

With the distinction between conditions 1) and 2) of the Second postulate came to light and all its inconsistencies with the Ratio of indefiniteness, namely:

Just in condition 1) are derived the Lorentz transformations. And, quite naturally, just with condition 1) the Ratio of indefiniteness reconciles completely.

Condition 2) however is paradoxically, is contrary to the natural facts. And, accordingly, the Ratio of indefiniteness stands against him.

To put it plaintext into, the Ratio of indefiniteness is a real natural regularity, and the Second postulate represents a combination of two theses – correct and wrong. The Ratio supports the correct, contained in condition 1) and denies the wrong, created by the mind, forming a condition 2). [2]

The World of movement is World of asymmetries (is World of opposites, of differences). Their technological elimination requires a redefinition of the Second postulate in which the moving systems

$K^n$  will be adduced to the absolutely stationary system  $K$  (a kind, stopped, attached to it). It was only then this "Summarized exact definition of the Second postulate" will cover all systems and all directions.

Put differently, there is neither a ground, nor possibility the infinite multitude of moving inertial system  $K'$ ,  $K''$ ... $K^n$  to follow the regulation of the today's Second postulate. But yet the general principle (of opposites) on which they are subordinated, allows them all to be unified, and thereby entered into the integrated theory. Allows leveling of the systems to absolutely stationary system  $K$  (emptiness), to its privileged characteristics. The nulling of the differences-asymmetries of the systems we will demonstrate again with the upper staging (with the two signals (the two beams) – on the right to the mirrors  $A'$  and  $A$  and on the left to the mirror  $B'$  and  $B$ ).

Behavior of the light signals in the absolutely stationary system  $K$ : Since  $K$  is a masterbatch system for the signals, the question of their movement in it is clear. The signal to the right at  $X$ , starting from the origin  $O$ , covers with exact velocity  $c$  the exact distance of going  $OA$ . Then reflected and again covers with exact velocity  $c$  the exact distance of return  $AO=OA$ . I.e., the signal covers with exact velocity  $c$  the exact (the symmetrical) closed contour  $OAO=2OA$ . Consequently, covers with exact velocity  $c$  and the exact bisected (unidirectional, an open) distance  $OA$ .

For the signal, to the left on  $X$  (on the distance  $OB$ ) refers literally the same reasoning. Undoubtedly, in system  $K$  reigns absolute precision and symmetry (described by the Special theory). The signals simultaneously leave from the origin  $O$ , simultaneously reach the mirrors  $A$  and  $B$  and simultaneously return in the origin  $O$ . We could say that the stationary system  $K$  is the inaccessible territory of the absolute truth, because this system is actually unattainable (only in it is possible Cognition in an open configuration, respectively, synchronization of clocks).

And so far with the precision and symmetry. In the moving systems  $K^n$  obviously the things cannot stay the same way (in the nature not become miracles). In this case, two versions of conducting the survey are possible (as a manifestation of the Ratio of indefiniteness):

Real behavior of light signals in the moving system  $K'$  – variant "exact speed  $c$ /inexact (asymmetric) distance": According to the movement of  $K'$  towards  $K$ , mirror  $A'$  will flee from the signal to the right along  $X'$ . Is why it, of going, will covers with exact velocity  $c$ , apart from distances  $O'A'$ , more and some additional distance  $\Delta O'A'$  – or the total distance  $O'A' + \Delta O'A'$ . However, the reflected signal will be intercepted by the origin  $O'$ . That way about it the distance  $A'O' = O'A'$  appears shortened with some value  $\Delta O'A'$ . Therefore, the same, on return, will cover with exact velocity  $c$  the distance  $O'A' - \Delta O'A'$ . I.e., the signal will cover with exact velocity  $c$  the asymmetric closed contour  $O'A'O'=O'A'+\Delta O'A'+O'A'-\Delta O'A'=2O'A'$ . Respectively, here of the exact velocity  $c$  corresponds the inexact bisected (unidirectional, an open) distance  $O'A'$ .

For the signal, to the left on  $X'$  (on the distance  $O'B'$ ) refers literally the same reasoning, only that the effects at "going" and "return" are reversed.

Seemingly behavior of light signals in the moving system  $K'$  – variant "inexact (average) velocity  $c$ /exact (symmetric) distance": Because to the right the mirror  $A'$  will flee from the signal with velocity  $v$ , seemingly it seems that, on going to him, the same covers the distance  $O'A'$  with velocity  $c-v$ . However, the reflected signal will be intercepted by the origin  $O'$ . Therefore, seemingly seems that on return to  $O'$  this signal covers the distance  $A'O' = O'A'$  with velocity  $c+v$ . I.e., the signal as if covers the closed contour  $O'A'O' = 2O'A'$  with an average speed  $(c-v+c+v)/2=c$ . Respectively, now of the exact bisected (unidirectional, an open) distance  $O'A'$  corresponds average (inexact) velocity  $c$  (it is important to know that the used constant  $c$  presents an average value).

For the signal to the left refers literally the same reasoning, only that the effects at "going" and "return" are reversed. That is, in moving systems  $K^n$  the closed contour  $O^n A^n O^n = 2O^n A^n$  is asymmetric ( $O^n A^n \neq A^n O^n$ ). Therefore the bisected distance  $O^n A^n$  is not quite correct, but it is the most accurate (the asymmetry is bisected). In the real systems  $K^n$  is achieved a border accession to the absolute truth.

Strictly speaking, in a system  $K'$  is in force the following dependence: The signals simultaneously leave from the origin  $O'$ , obligatory at different moments reach the mirrors  $A'$  and  $B'$ , and again simultaneously return to the origin  $O'$ . Proofs of this exact chronology of events according are experiments of Sagnac and Michelson-Morley. Actually, to seen clearly the meaning of their results, we will unite them in one as mentally unfold Michelson's interferometer and the wheel of Sagnac on  $180^\circ$ , equating so them with the upper staging for a movement of the light signals in a system  $K'$ , namely:

The two light signals start simultaneously from the origin  $O'$ . Their arrival to the mirrors  $A'$  and  $B'$  is registered by the device of Sagnac. The result is known – the signals arrive at different moments, as evidenced by the displacement of the interference pattern (depending on the velocity  $v$  of the system  $K'$ ). [4]

The return of the two signals back to the origin  $O'$  is registered by the appliance of Michelson. The result is known – the signals return simultaneously, as evidenced by the lack of whatever it is displacement of the interference pattern. [5]

And here is the comparing of the closed contours:

The contour in the system in absolute peace  $K$  – distance  $2OA$ , velocity  $c$ .

The contour in the moving system  $K'$  – distance  $2O'A'$ , velocity  $c$ .

The contour in an arbitrary moving system  $K^n$  – distance  $2O^n A^n$ , velocity  $c$ .

The conclusion is obvious: The closed contours in all systems and all directions are equal ( $2O'A' = 2O^n A^n = 2OA$ ). I.e., the route "going-return" completely eliminates (compensates) the asymmetry. The closed contours ignore the movement equating the systems to the system in absolute peace.

All this allows us to redefine the second postulate in the following way:

Summarized exact definition of the Second postulate:

At the closed contour "going-return", the light signal moves with a constant velocity  $c$  in all systems, and all directions, independently of the movement of the systems themselves, respectively, from the movement of its source.

## CONCLUSION

Precisely this definition corresponds of the real movement of the light and it is in order precisely it to enter into scientific circulation. And the other can remain for personal use of those who still have not understood what what's going on.

## Reference

- [1] Николов А. – Разгримиране (25), (26), (27), (28) на Специалната теория  
(Nikolov A. – Removing the make-up (25), (26), (27), (28) of the Special theory)  
<http://alniko.log.bg/>
- [2] Nikolov A. – Ratio of indefiniteness in the relative physics,  
<http://gsjournal.net/Science-Journals/Research%20Papers-Mechanics%20/%20Electrodynamics/Download/4884>  
Николов А. – Разгримиране (29), (30), (31), (32) на Специалната теория,  
(Nikolov A. – Removing the make-up (29), (30), (31), (32) of the Special theory)  
<http://alniko.log.bg/>
- [3] Einstein A. – On the Electrodynamics of Moving Bodies, 1905,  
<http://www.fourmilab.ch/etexts/einstein/specrel/www/>
- [4] Sagnac effect  
[http://en.wikipedia.org/wiki/Sagnac\\_effect](http://en.wikipedia.org/wiki/Sagnac_effect)
- [5] Michelson-Morley experiment  
[http://en.wikipedia.org/wiki/Michelson%E2%80%93Morley\\_experiment](http://en.wikipedia.org/wiki/Michelson%E2%80%93Morley_experiment)