Some questions to the theory of ether and methods of assessment of the Michelson experiments

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The article attempts to show the need to the correction of representation about the propagation of light in a vacuum (light to the light-carrying medium).

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Content

1. The introduction

A.A. Michelson is used the interferometer, the concept of which is shown in fig.1, to conduct experiments on the registration of the ether wind.

A beam **0** of monochromatic light [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14] from the source **A** falls at an angle of 45° on a plane glass plate **B** (back surface of which is coated with a thin semi-transparent layer of silver), and part of that light is reflected from the plate **B** (beam **1**), and a part - passes through the plate **B** (beam **2**).

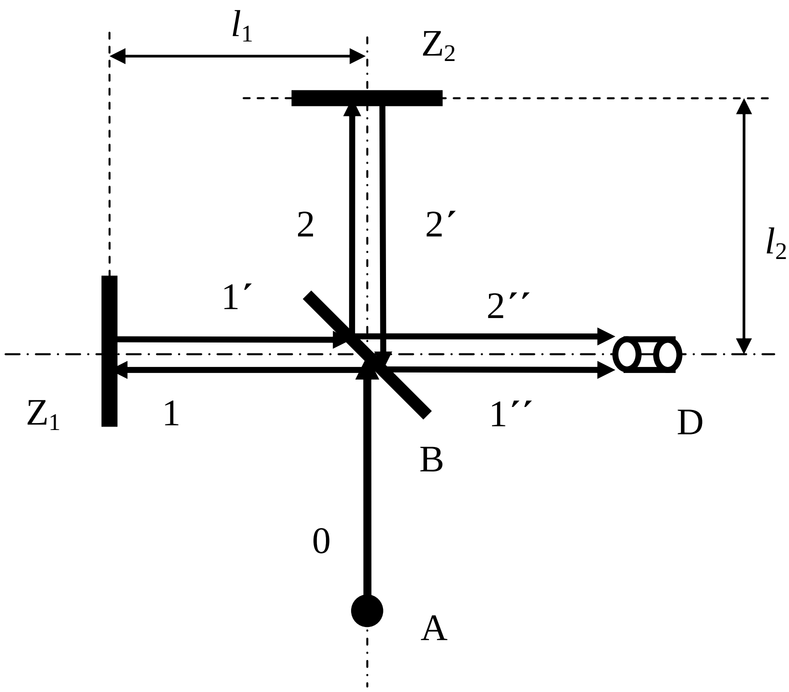

Fig. 1

Next, the following occurs with beams **1** and **2**:

- The beam **1** falls on a flat mirror $\mathbf{Z_1}$, from which is reflected as beam **1′**;

- The beam **1′** partially passing through plate **B** and as beam **1′′** misses the telescope **D**;

- The beam **2** (passing through the compensating plate, not shown in fig. 1) falls on a flat mirror $\mathbf{Z_2}$, from which is reflected as beam **2′**;

- The beam **2′** is partially reflected from the silvered surface of the plate **B**, and as a beam **2′′** enters the telescope **D**.

Thus, in the telescope **D** there are two parts (beams **1′′** and **2′′**) of the same beam **0** of light from a source **A**.

Since the beams **1´´** and **2´´** are coherent, the interference pattern (clear and dark stripes) can observe in the telescope **D**.

In the telescope **D** the interference pattern must change with changing time intervals passing the beams **1** and **1´** path **B** - $\mathbf{Z_1}$ - **B** (from the plate **B** to the plate **B** through the mirror $\mathbf{Z_1}$) and beams **2** and **2´** path **B** - $\mathbf{Z_2}$ - **B** (from the plate **B** to the plate **B** through the mirror $\mathbf{Z_2}$).

All optical parts of the Michelson interferometer (light source **A**, plate **B**, mirrors $\mathbf{Z_1}$ and $\mathbf{Z_2}$ and telescope **D**) rigidly fixed to the cross-shaped metal frame [1], [2], [3].

Using the assumption of the constancy of the speed of light in the stationary ether, the authors of books [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [13], [14] proposed to assume that in the case when the speed vector **V** of the motion of ether relative to the Michelson interferometer is parallel to the line connecting the plate **B** with a mirror $\mathbf{Z_1}$, and is directed to the side opposite the mirror $\mathbf{Z_1}$:

- The length L_2 of the path **B** – $\mathbf{Z_2}$ - **B** of beams **2** and **2´** in the reference frame, in which the ether is stationary, is:

$$L_2 = \mathrm{c} \cdot t_2 = \mathrm{c} \cdot t_{21} + \mathrm{c} \cdot t_{22} = \frac{l_2 \cdot \mathrm{c}}{\mathrm{c} - \mathrm{V}} + \frac{l_2 \cdot \mathrm{c}}{\mathrm{c} + \mathrm{V}} = \frac{2 l_2}{1 - \left(\frac{\mathrm{V}^2}{\mathrm{c}^2}\right)} \qquad (1)$$

where, as shown in fig. 2:

c – The speed of light in vacuum,

t_2 - Time of motion of the light on the path **B** – $\mathbf{Z_2}$ – **B** (the beams **2** and **2´**),

t_{21} - Time of motion of the light on the path **B** – $\mathbf{Z_2}$ (the beam **2**),

t_{22} - Time of motion of the light on the path $\mathbf{Z_2}$ – **B** (the beam **2´**),

l_2 - Length of path **B** – $\mathbf{Z_2}$ of beam **2** (or length of path $\mathbf{Z_2}$ - **B** of beam **2´**) in the reference frame, in which the Michelson interferometer is stationary;

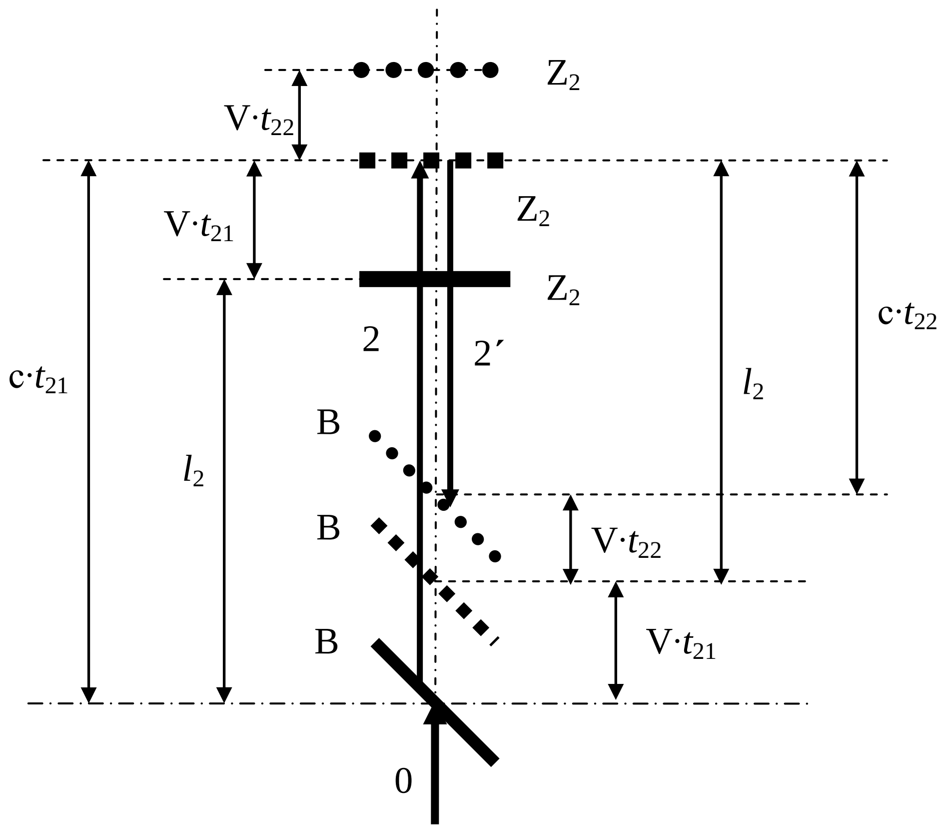

Fig. 2

- The length L_1 of the path **B – Z$_1$ - B** of beams **1** and **1′** in the reference frame, in which the ether is stationary, is:

$$L_1 = \mathrm{c} \cdot t_1 = \mathrm{c} \cdot t_{11} + \mathrm{c} \cdot t_{12} = \frac{2l_1}{\sqrt{1 - \left(\frac{\mathrm{V}^2}{\mathrm{c}^2}\right)}} \qquad (2)$$

where, as shown in fig. 3:

t_1 - Time of motion of the light on the path **B – Z$_1$ – B** (the beams **1** and **1′**),

t_{11} - Time of motion of the light on the path **B – Z$_1$** (the beam **1**),

t_{12} - Time of motion of the light on the path **Z$_1$ – B** (the beam **1′**),

l_1 - Length of path **B – Z$_1$** of beam **1** (or length of path **Z$_1$ - B** of beam **1′**) in the reference frame, in which the Michelson interferometer is stationary.

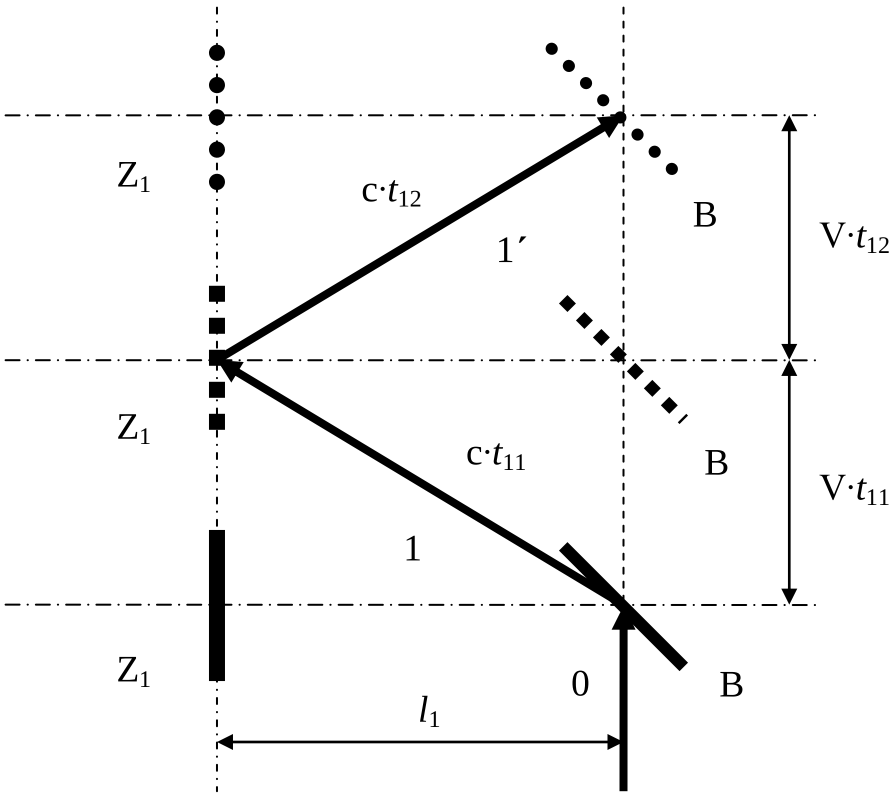

Fig. 3

As follows from equation (1) and (2), that in the special case, when the speed vector **V** of the ether relative to the Michelson interferometer is parallel to the line, connecting the plate **B** with a mirror $\mathbf{Z_2}$, and is directed to the side opposite the mirror $\mathbf{Z_2}$, the difference **ΔL** lengths L_1 and L_2 is :

$$\Delta L = L_2 - L_1 = \frac{2l_2}{1 - \left(\frac{V^2}{c^2}\right)} - \frac{2l_1}{\sqrt{1 - \left(\frac{V^2}{c^2}\right)}} \qquad (3)$$

2. The mechanical analog of light beams 1 and 1'

Take account of that the description of the Michelson experiments has not been established what is it like to "light" in fig. 2, we can make the following observation: the time t_{21} - is not the time of movement of light along the path **B** - $\mathbf{Z_2}$, and the difference between the time t_{21i0}, when the ***i***-th impulse of light beam **2** enters the point on the plate **B**, and the time t_{21i1}, when the same ***i***-th impulse of light beam **2** is at the point on the mirror $\mathbf{Z_2}$.

The analogous definition can be given for the time $\boldsymbol{t_2}$ and $\boldsymbol{t_{22}}$.

In turn, fig. 3 does not accurately show the position of beams **1** and **1'** in a reference frame, fixed with respect to the ether, and no description of the interaction between the beam **0** and the plate **B** and between the beam **1** and the mirror $\mathbf{Z_1}$.

To understand the process of the interaction between the beam **0** and the plate **B** and between the beam **1** and the mirror $\mathbf{Z_1}$, consider a simple mechanical example.

Assume, as shown in fig. 4, there is a mechanical system **K**, consisting of ***j*** number of cylindrical bodies (which is called "fragments").

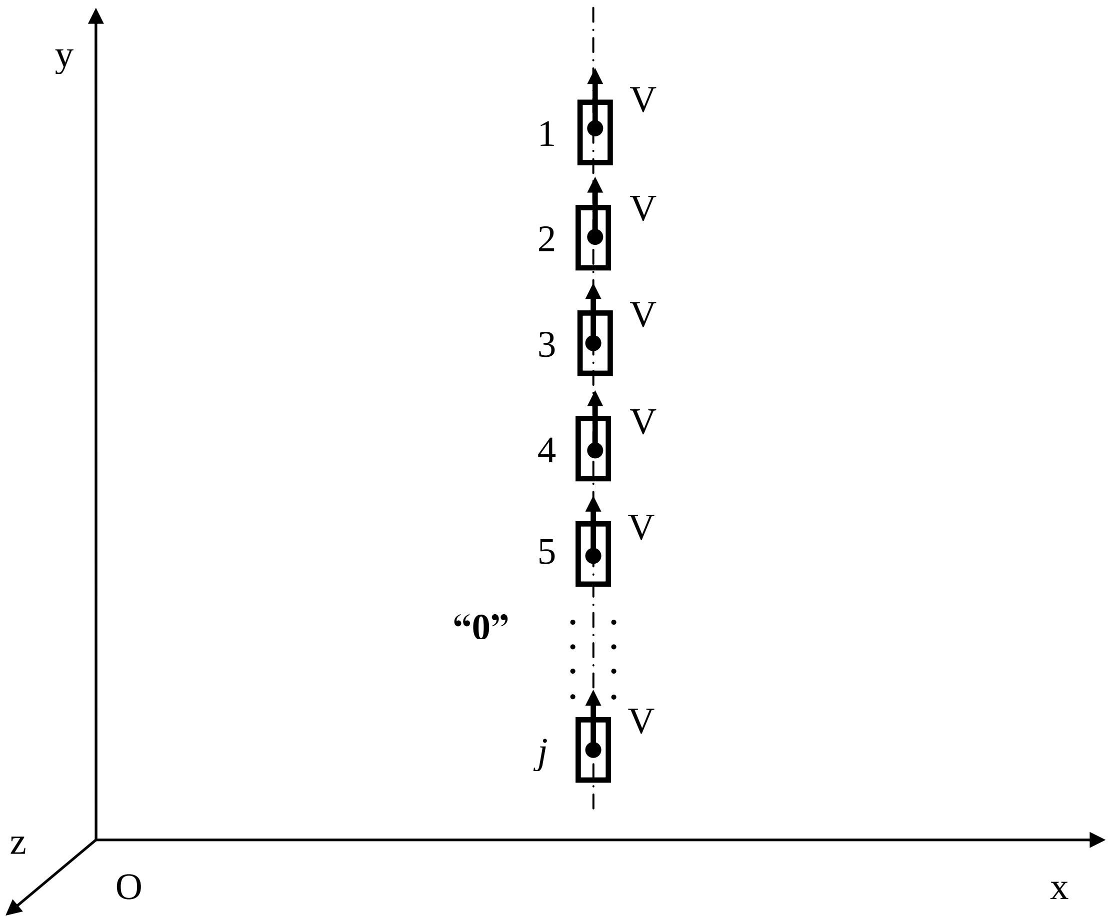

Fig. 4

Let us assume that the distance between the nearest fragments of system **K** is constant.

In case of where in the inertial reference system **Oxyz** all the fragments of the system **K** are moving translatory and unidirectionally at a constant speed and the longitudinal axes of all the fragments are on the same line, the mechanical system **K** is the flow of type **“0”**.

Line passing through the centers of mass of all the fragments, called the axis of flow.

Now let's see what happens in the system **Oxyz** with the flow of type **“0”** if the wall **B**, with infinitely greater mass and moving with speed **v**, which is unidirectional and parallel flow speed **V** fragments of the flow of type **“0”**, will be at an angle ***α*** to the axis of the flow of type **“0”**.

Fig. 5 is the flow of type **“0”** to the interaction with the wall **B**.

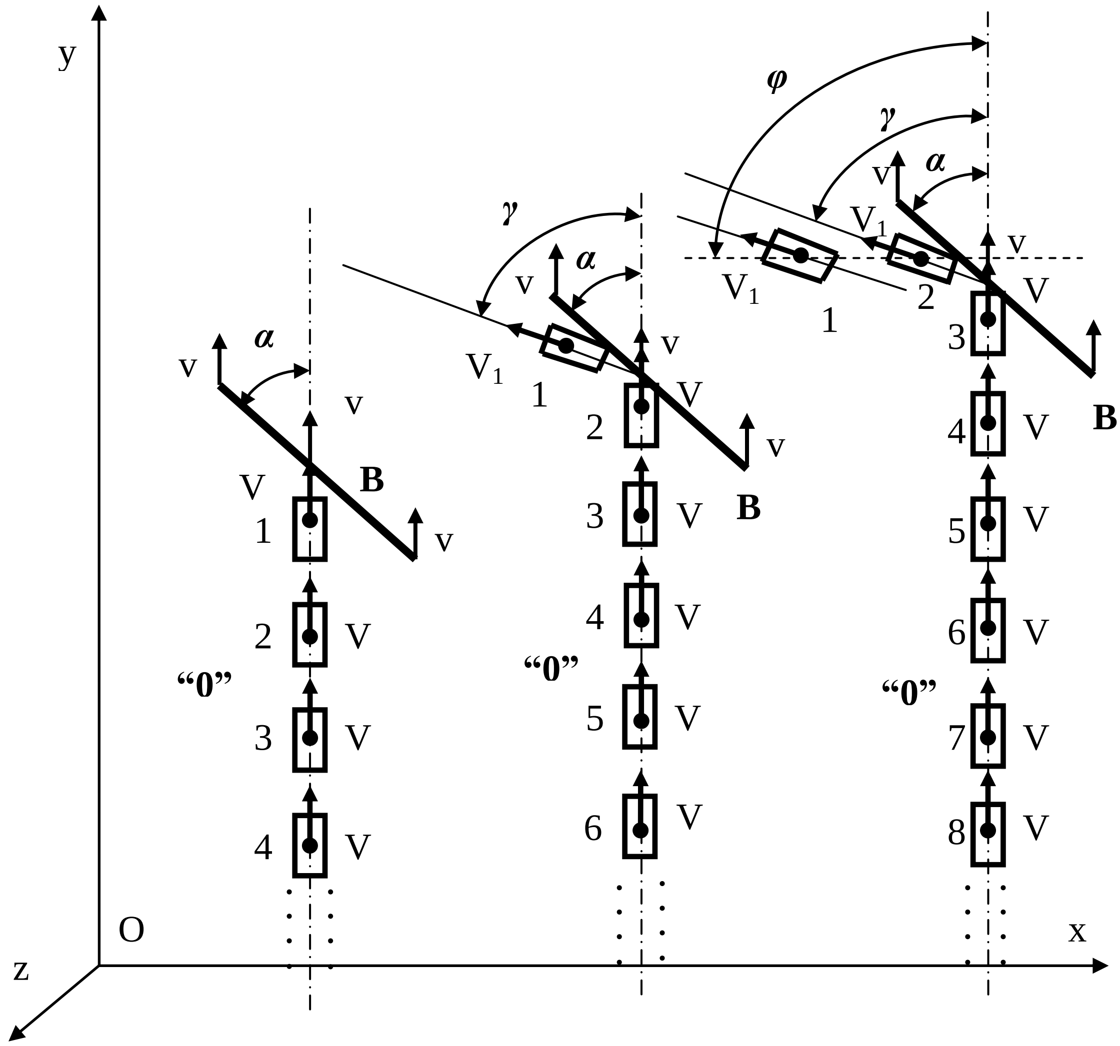

Fig. 5 Fig. 6 Fig. 7

Let us assume that the interaction of the fragments of the flow of type **“0”** with the wall **B** is absolutely elastic and after the collision with the wall **B** the each fragment of the flow of type **“0”** will move translatory (no rotation around its center of mass) at a speed $\mathbf{V_1}$ at an angle **γ** to the axis of the flow of type **“0”**, as shown in fig. 6 and fig. 7.

Fig. 6 shows a bounce of the fragment **1** from the wall **B** at time $\boldsymbol{t_{111}}$, and fig.7 shows a bounce of the fragment **2** from the wall **B** at time $\boldsymbol{t_{112}}$.

And so at time $\boldsymbol{t_{11i}}$ ***i***-th fragment is separated from the wall **B**, and assuming that the distance between the nearest fragments in the flow of type **“0”** are equal, then the time period $\boldsymbol{\Delta t}$ between the two bounces of the nearest fragments will be constant (and will continuously the distance between the nearest fragments after their interaction with the wall **B**).

Fig. 8 shows in the inertial reference frame **Oxyz** the positions of fragments in the flow at time $\boldsymbol{t_{118}}$, when the fragment **8** is separated from the wall **B**.

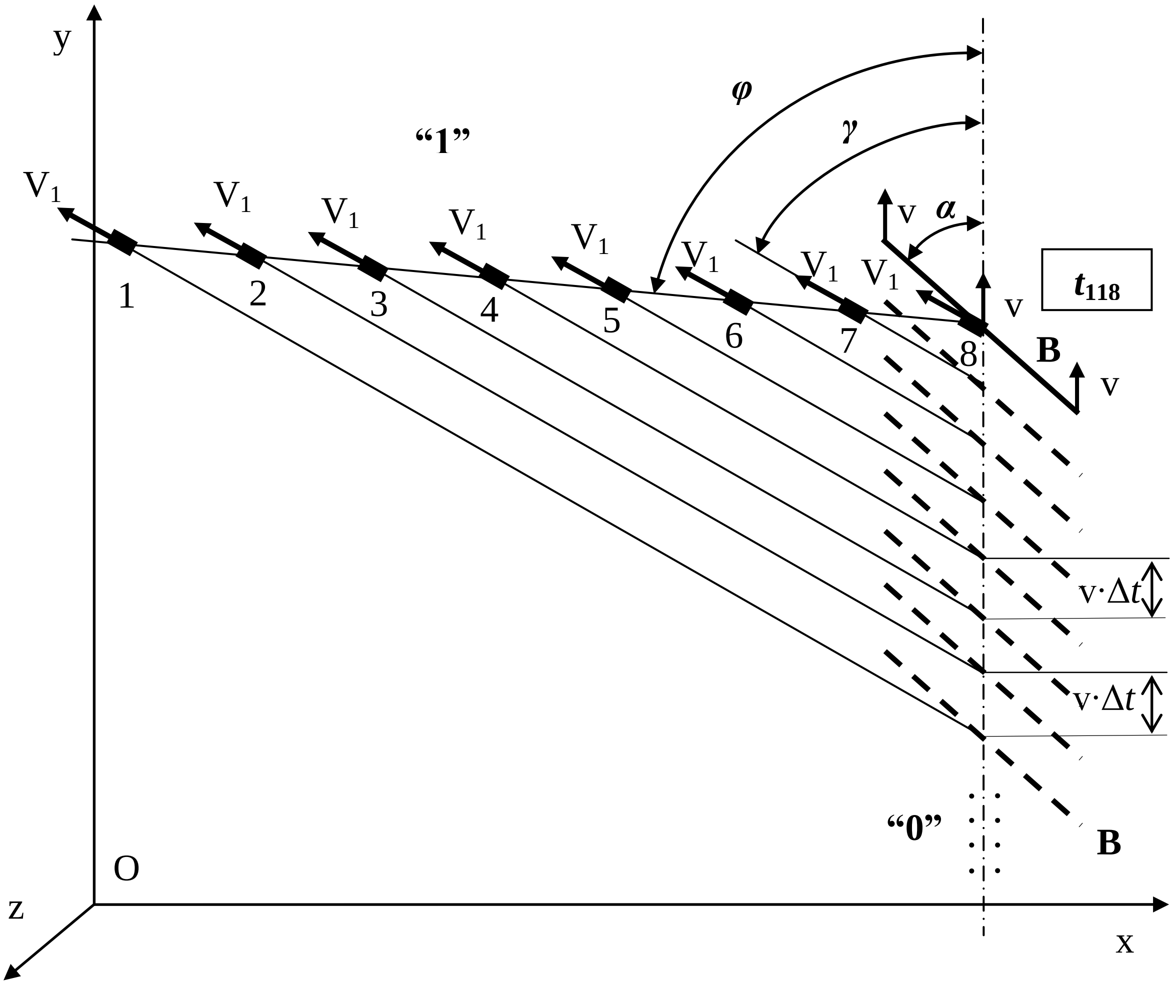

Fig. 8

As seen from fig.8 the centers of mass from the **1**- th to **8**-th fragments the flow at time t_{118} are located on the same line at an angle **φ** with the axis of the flow of type **"0"**, i.e. obtained, which after interaction with the wall **B** the flow of type **"0"** is rotated by an angle **φ** and is converted into the flow that is called a flow of type **"1"**.

In the flow of type **"1"** all its fragments move at a speed V_1 at an angle **(φ - γ)**, the axis of the flow of type **"1"**.

And in the reference frame **Oxyz** the flow of type **"1"** moves with speed V_1 at the angle of **(φ - γ)** to its axis.

The difference of the flow of type **"1"** from the flow of type **"0"** is that the flow of type **"1"** moves not only translatory forward (along its axis), but also perpendicularly to its axis and the longitudinal axes of its fragments do not coincide with flow axis.

As the angle **γ**, and the angle **φ** and the speed V_1 depends on the angle **α** and speeds **V** and **v**.

It is also possible to show what happens in system **Oxyz** with the flow of type **"1"** if if the wall Z_1, similar to wall **B**, having an infinite weight and moving, as the wall **B**, with speed **v**, which is unidirectional and parallel flow speed **V** fragments of the flow of type **"0"**, will be at an angle **α'** to the line parallel to the axis of the flow of type **"0"**.

Let us assume that the interaction of the fragments of the flow of type **"1"** with the wall Z_1 is absolutely elastic and after the collision with the wall Z_1 the each fragment of the flow of type **"1"** will move translatory (no rotation around its center of mass) at a speed V_1' at an angle γ' to the axis of the flow of type **"0"**, as shown in fig. 9.

Branch of the fragments of the flow of type **"1"** from the wall Z_1 will take place analogously separation of these fragments of type **"0"** from the wall **B**.

And so at time $t_{11'i}$ ***i***-th fragment of the flow of type **"1"** is separated from the wall Z_1, and assuming that the distance between the nearest fragments in the flow of type **"1"** are equal, then the time period $\Delta t'$ between the two bounces of the nearest fragments will be constant (and will continuously the distance between the nearest fragments after their interaction with the wall $\mathbf{Z_1}$).

Fig. 9 shows in the inertial reference frame **Oxyz** the positions of fragments in the flow at time $t_{11'11}$, when the fragment **11** is separated from the wall $\mathbf{Z_1}$**.**

From fig. 9 shows the centers of mass from the **1-** th to **11**-th fragments the flow at time $t_{11'11}$ are located on the same line at an angle **φ'** with the line parallel to the axis of the flow of type **"0"**, i.e. obtained, which after interaction with the wall $\mathbf{Z_1}$ the flow of type **"1"** is rotated by an angle **Δφ'** and is converted into the flow that is called a flow of type **"1'"**.

In the flow of type **"1'"** all its fragments move at a speed $\mathbf{V_{1'}}$ at an angle **(φ' - γ')**, the axis of the flow of type **"1'"**.

And in the reference frame **Oxyz** the flow of type **"1'"** moves with speed $\mathbf{V_1'}$ at the angle of **(φ' - γ')** to its axis.

The difference of the flow of type **"1'"** from the flow of type **"0"**, as opposed the flow of type **"1"** from the flow of type **"0"**, is that the flow of type **"1'"** moves not only translatory forward (along its axis), but also perpendicularly to its axis and the longitudinal axis of its fragments do not coincide with flow axes.

As the angle **γ'**, and the angle **φ'** and the speed $\mathbf{V_{1'}}$ depends on the angle **α** and **α'** and velocities **V** and **v**.

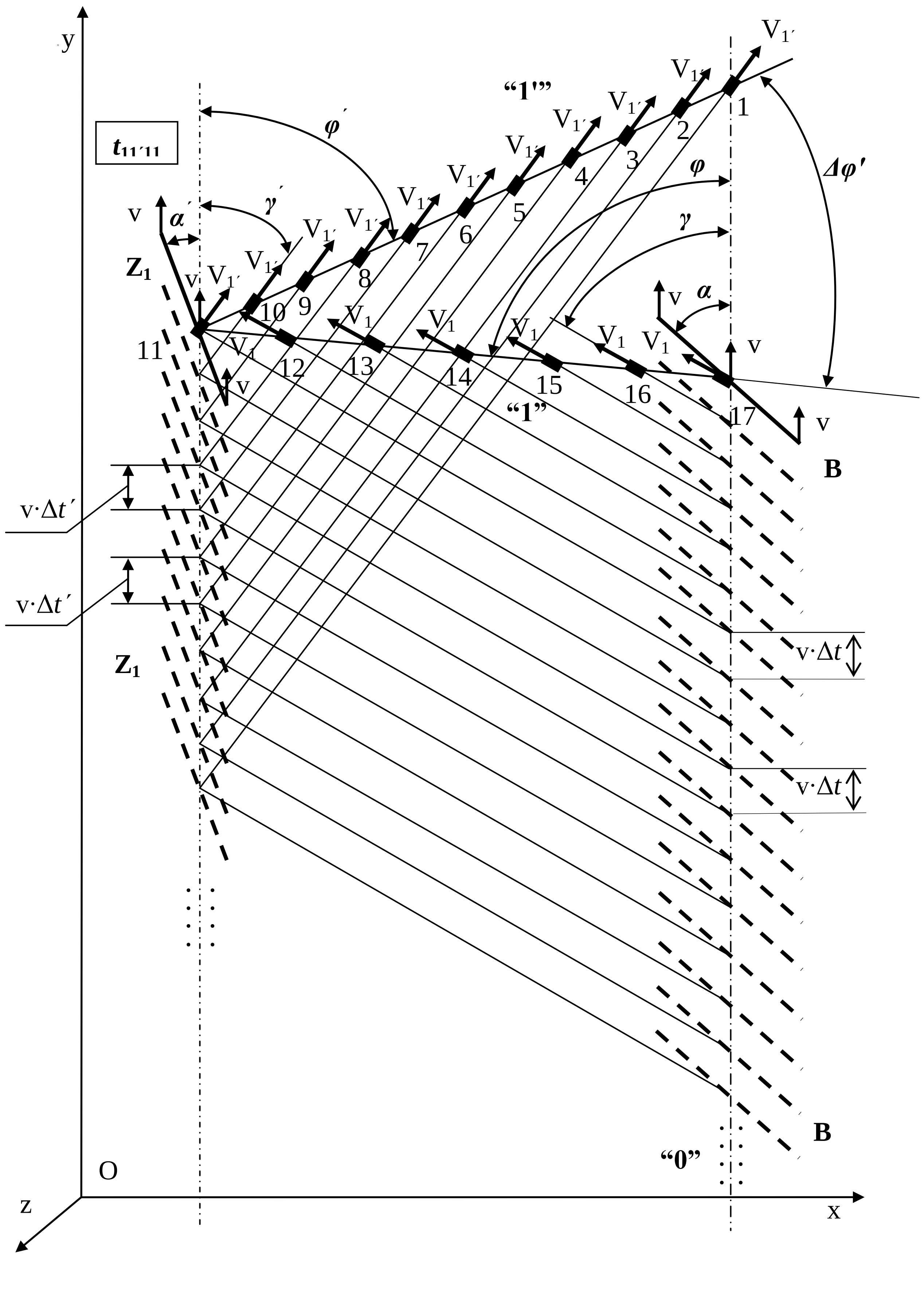
y
x
z
O
$t_{11'11}$
φ´
γ´
α´
"1'"
"1"
"0"
φ
γ
α
Δφ'
Z_1
Z_1
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Fig. 9

3. The motions of light fluxes 0, 1, 1 ', 1'', 2', 2'' in the reference frame, fixed relative to the ether

Using the results obtained by considering the mechanical analog, will try to determine the motion of the light beams in the interferometer during the experiments of Michelson.

But first we introduce to improve the perception of the following change - replace the term "light beam" with the term "light flux".

Suppose that the light flux - it is the light radiation that spreads over the light-carrying medium (the ether).

To simplify the treatment we assume that the light flux is the smallest possible cross section that is constant over the entire length of the light flux.

Also assume that the light flux in the longitudinal direction consists of several more not divisible without changing the properties of the light flux, fragments (photon, trains, solitons, ...) ensuring the transfer of impulse from one point of the space to another.

Longitudinal line, passing through the centers of fragments of the light flux, is called the axis of the light flux.

Fig. 10 shows in the inertial reference frame **Oxyz**, fixed relative to the ether, the positions of the light fluxes in the interferometer during the Michelson experiments at time t_i for the special case **1**, when the direction of the light flux **”0”**, emitted by the source **A**, is parallel and unidirectional the displacement of the interferometer in space.

Let us assume that the interferometer is moving with the speed **V** constant in magnitude and direction.

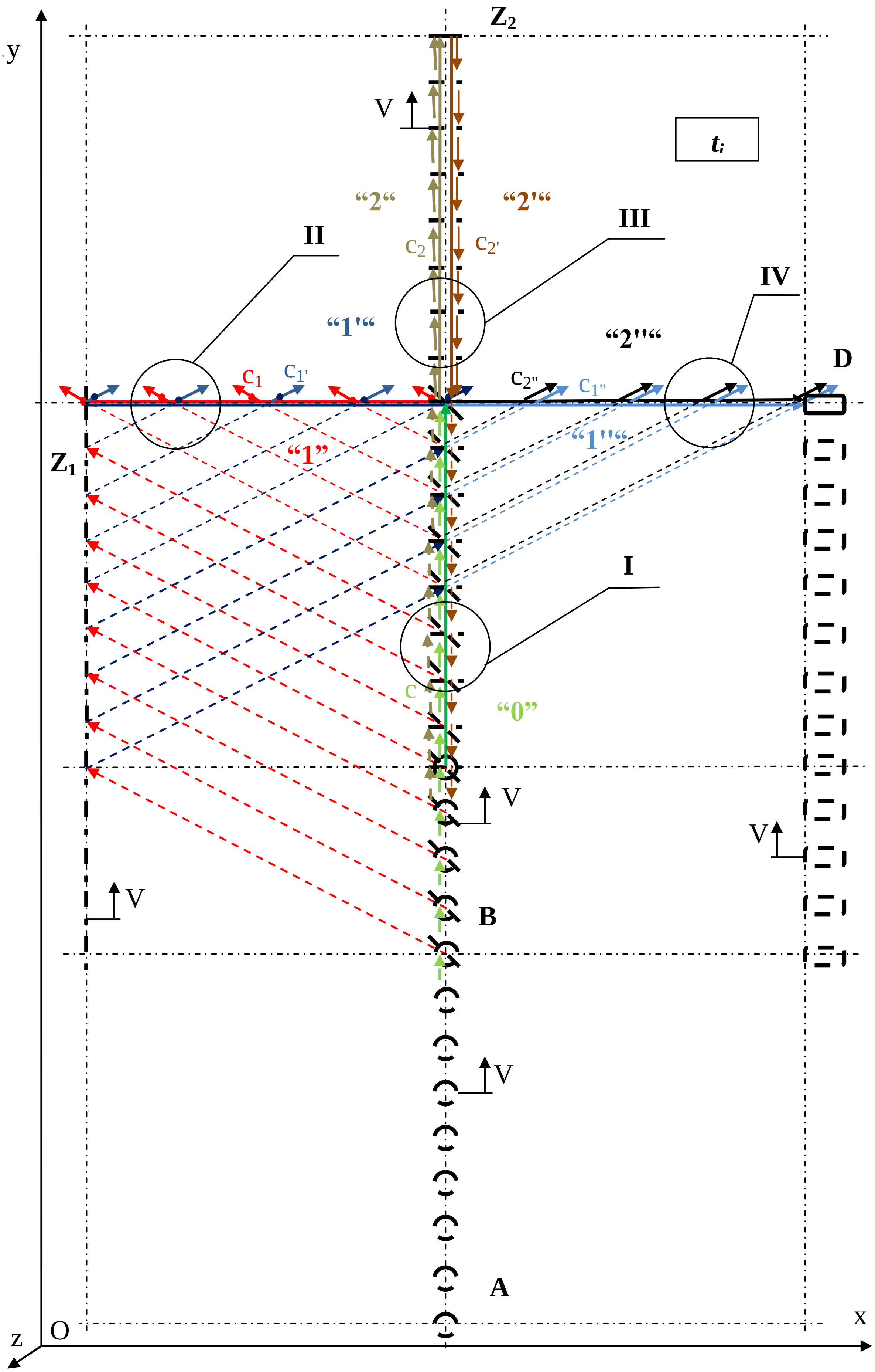

Fig. 10

The light flux **”0”** moves from the source **A** to the plate **B** translatory.

Moreover, when driving the light flux **”0”** its axis is always located on one line.

The front of the light flux **”0”** is the cross section of the light flux **”0”**.

Fig. 11 shows in the increase the zone **I** of the light flux **”0”** in the reference frame **Oxyz** at time t_i.

At time t_i all fragments of the light flux **”0”** will have the speeds equal **c**.

The vector of speed **c** of movement of the fragments of the light flux **”0”** is always on the axis of the light flux **”0”**.

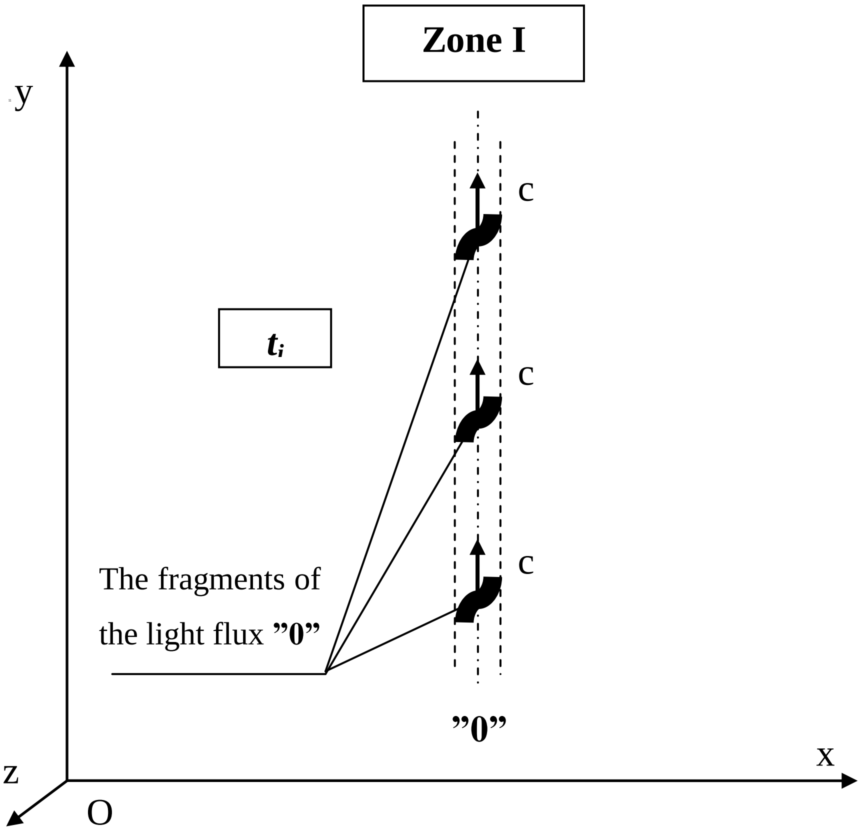

Fig. 11

After the reflection from the surface of the plate **B** the light flux **”0”** is converted partially into the light flux **”1”**, which moves from plate **B** to the mirror $\mathbf{Z_1}$.

The axis of the light flux **”1”** is always perpendicular to the axis of the light flux **”0”** for the special case **1**.

When traveling the light flux **”1”** its axis is constantly moving parallel to itself with speed **V**.

The light flux **”1”** is moved as translatory from the plate **B** to the mirror $\mathbf{Z_1}$ along its axis and perpendicular to its axis.

The front of the light flux **”1”** is the cross section of the light flux **”1”** and the lateral surface of light flux **”1”**.

After reflection from the mirror $\mathbf{Z_1}$ the light flux **”1”** is converted into a the light flux **”1´”**, which is moving away from the mirror $\mathbf{Z_1}$ to the plate **B**.

Setting the interferometer are doing so that the axis of the light flux **”1´”** is always perpendicular to the axis of the light flux **”0”** and is always coincident with the axis of the light flux **”1”**.

When traveling the light flux **”1´”** its axis is constantly moving parallel to itself with speed **V**.

The light flux **”1´”** is moved as translatory from the mirror $\mathbf{Z_1}$ to the plate **B** along its axis and perpendicular to its axis.

The front of the light flux **”1´”** is the cross section of the light flux **”1´”** and the lateral surface of the light flux **”1´”**.

The light flux **”1´”** is moving toward the light flux **”1”**.

Fig. 12 shows in the increase the zone **II** of the light fluxes **”1”** and **”1´”** in the reference frame **Oxyz** at time t_i.

At time t_i all fragments of the light flux **”1”** will have the speeds equal $\mathbf{c_1}$.

The vector of the speed $\mathbf{c_1}$ of the movement of the fragments of the light flux **”1”** will be permanently the angle γ_1 with the axis of the light flux **”1”**.

At time t_i all fragments of the light flux **”1´”** will have the speeds equal $\mathbf{c_{1'}}$.

The vector of the speed $\mathbf{c_{1'}}$ of the movement of the fragments of the light flux **”1´”** will be permanently the angle $\gamma_{1'}$ with the axis of the light flux **”1´”**.

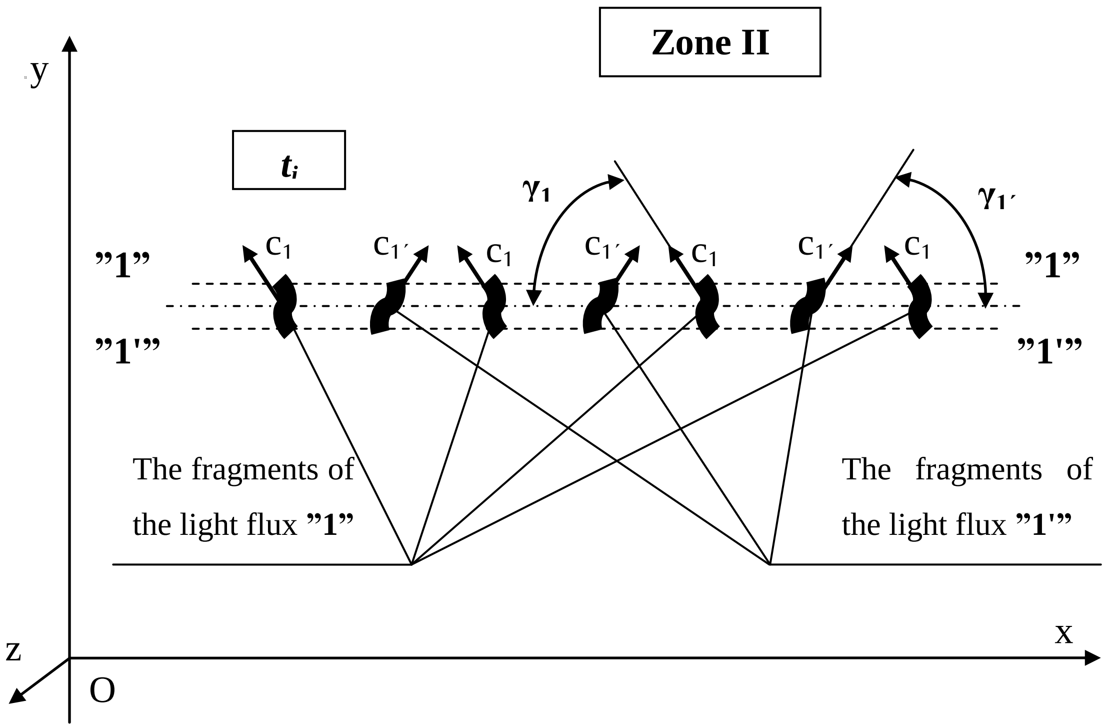

Fig. 12

The light flux **”0”** partially passes partially through the plate **B** and is changed to the light flux **”2”**.

The light flux **”2”** is moving from the plate **B** to the mirror $\mathbf{Z_2}$ translatory.

Moreover, when driving the light flux **”2”**, its axis is always located on one line, which is the axis of the flow **”0”**.

The front of the light flux **”2”** is the cross section of the light flux **”2”**.

After reflection from the mirror $\mathbf{Z_2}$ the light flux **”2”** is converted into a the light flux **”2´”**, which is moving away from the mirror $\mathbf{Z_2}$ to the plate **B**.

Setting the interferometer are doing so that the axis of the light flux **”2´”** is always coincident with the axes of the light fluxes **”2”** and **”2´”**.

The light flux **”2´”** moves from the mirror $\mathbf{Z_2}$ to the plate **B** translatory.

The front of the light flux **”2´”** is the cross section of the light flux **”2´”**.

The light flux **”2´”** is moving toward the light flux **”2”**.

Fig. 13 shows in the increase the zone **III** of the light fluxes **”2”** and **”2´”** in the reference frame **Oxyz** at time t_i.

At time t_i all fragments of the light flux **”2”** will have the speeds equal $\mathbf{c_2}$.

The vector of speed $\mathbf{c_2}$ of movement of the fragments of the light flux **”2”** is always on the axis of the light flux **”2”**.

The value of speed $\mathbf{c_2}$ is equal to the value of the speed **c**, since the light flux **”2”** is a continuation of the light flux **”0”**.

At time t_i all fragments of the light flux **”2´”** will have the speeds equal $\mathbf{c_{2'}}$.

The vector of speed $\mathbf{c_{2'}}$ of movement of the fragments of the light flux **”2´”** is always on the axis of the light flux **”2´”** and its direction opposite to the direction of the velocity speed $\mathbf{c_2}$.

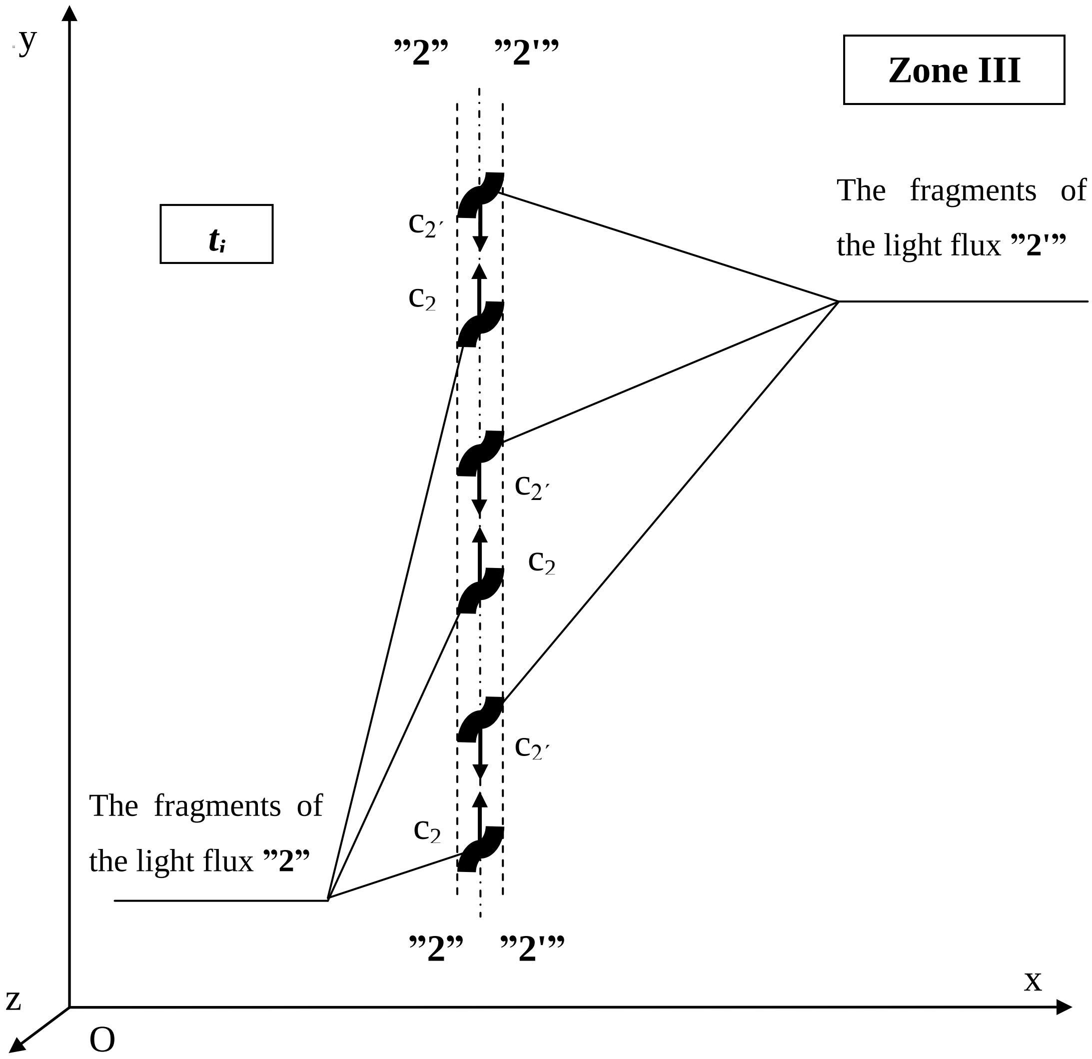

Fig. 13

After the reflection from the surface of the plate **B** the light flux **”2´”** is converted partially into the light flux **”2´´”**, which moves from plate **B** to the telescope **D**.

Setting the interferometer are doing so that the axis of the light flux **”2´´”** is always perpendicular to the axis of the light flux **”0”** for the special case **1**.

When traveling the light flux **”2´´”** its axis is constantly moving parallel to itself with speed **V**.

The light flux **”2´´”** is moved as translatory from the plate **B** to the telescope **D** along its axis and perpendicular to its axis.

The front of the light flux **”2´´”** is the cross section of the light flux **”2´´”** and the lateral surface of the light flux **”2´´”**.

After passing through the plate **B** the light flux **”1´”** is converted into the light flux **”1´´”**, which moves from the plate **B** to the telescope **D**.

The axis of the light flux **”1´´”**, as the axis of the light flux **”1´”**, is always perpendicular to the axis of the light flux **”0”** and always coincides with the axis of the light flux **”2´´”**.

When traveling the light flux **”1´´”** its axis is constantly moving parallel to itself with speed **V**.

The light flux **”1´´”** is moved as translatory from the plate **B** to the telescope **D** along its axis and perpendicular to its axis.

The front of the light flux **”1´´”** is the cross section of the light flux **”1´´”** and the lateral surface of the light flux **”1´´”**.

The light flux **”1´´”** moves in one direction with the light stream **”2´´”**.

Axes of the light flux **”1´´”** and **”2´´”** always in the same line as the setting of the interferometer provides this.

Fig. 14 shows in the increase the zone **IV** of the light fluxes **”1´´”** and **”2´´”** in the reference frame **Oxyz** at time t_i.

At time t_i all fragments of the light flux **”1´´”** will have the speeds equal $\mathbf{c_{1''}}$.

The vector of the speed $\mathbf{c_{1''}}$ of the movement of the fragments of the light flux **”1´´”** will be permanently the angle $\gamma_{1''}$ with the axis of the light flux **”1´´”**.

The value and direction of the vector of the speed $\mathbf{c_{1''}}$ and the value of the angle $\gamma_{1''}$ are the same as value and direction of the vector of the speed $\mathbf{c_{1'}}$ and the value of the angle $\gamma_{1'}$, as the light flux **”1´´”** is the continuation of the light flux **”1´”**.

At time t_i all fragments of the light flux **”2´´”** will have the speeds equal $\mathbf{c}_{2''}$.

The vector of the speed $\mathbf{c}_{2''}$ of the movement of the fragments of the light flux **”2´´”** will be permanently the angle $\gamma_{2''}$ with the axis of the light flux **”2´´”**.

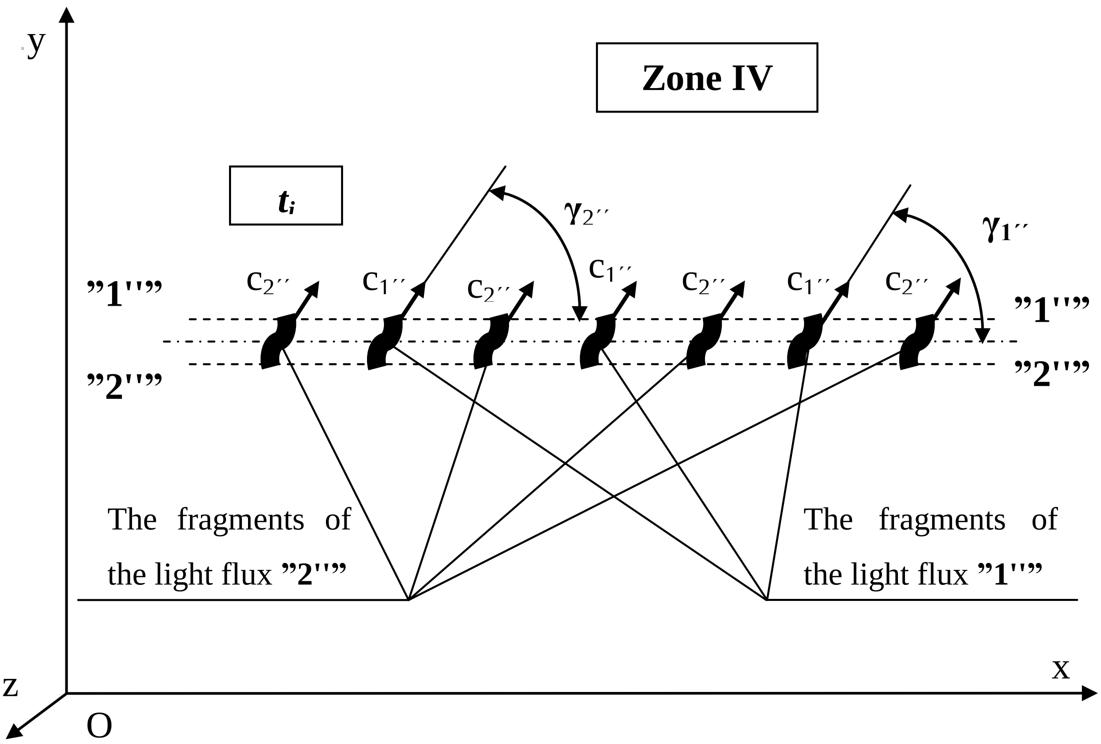

Fig. 14

Take account of that that the fragment of the light flux - this is a temporal object (a small amount of ether), across which is transmitted the impulse (energy) from one point in space to another, it can be assumed that in the reference frame **Oxyz**, fixed relative to the ether, the longitudinal axis of the fragment of the light flux, which called the axis of the fragment, will pass through the center of the fragment and being on the line of movement of the fragment (ie, the axis of the fragment and its vector of its speed will be on one line).

In the reference frame **Oxyz**, fixed relative to the ether, the axes of the fragments of the light fluxes **”0”**, **”2”** and **”2´”** respectively coincide with the axes of the light fluxes **”0”**, **”2”** and **”2´”**, and the axes of the fragments of the light fluxes **”1”**, **”1´”**, **” 1´´”** and **”2´´”** are the angles γ_1, $\gamma_{1'}$, $\gamma_{1''}$ and $\gamma_{2''}$ respectively to the axes of the light fluxes **”1”**, **”1´”**, **” 1´´”** and **”2´´”**.

Fig. 15 shows in the inertial reference frame $\mathbf{O_0x_0y_0z_0}$, wherein the interferometer is stationary, the positions of the light fluxes **”0”**, **”1”**, **”1´”**, **” 1´´”**, **”2”**, **” 2´”** and **”2´´”** in the interferometer during the Michelson experiments at time t_{0i} for the special case **1**, when the direction of the light flux **”0”**, emitted by the source **A**, is parallel and unidirectional the displacement of the interferometer in space .

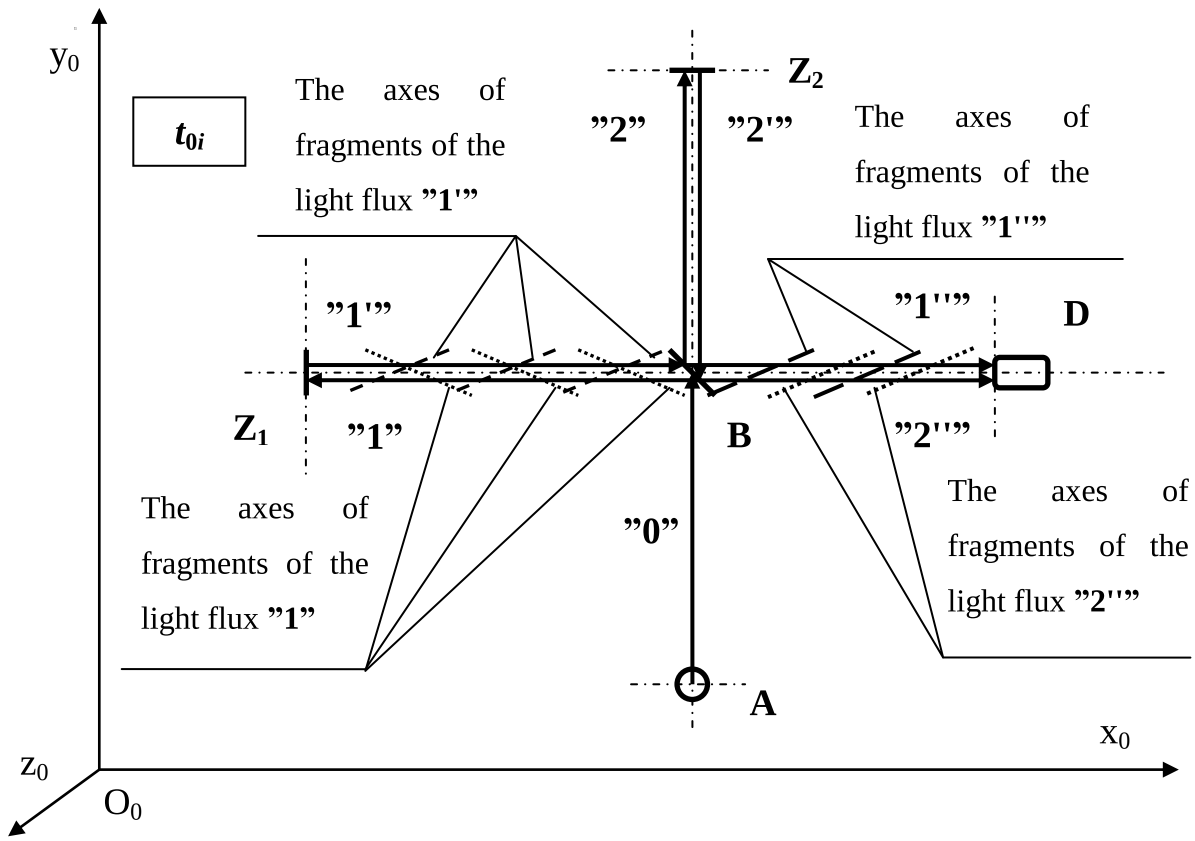

Fig. 15

In the reference frame $\mathbf{O_0x_0y_0z_0}$ the axes of the light fluxes **”1”** and **”1´”**, **” 2”** and **”2´”**, **”1´´”** and **”2´´”** pairs are aligned.

In the reference frame $\mathbf{O_0x_0y_0z_0}$ for any time t_{0i} the axes of the fragments of the light fluxes **”0”**, **”2”** and **”2´”** respectively coincide with the axes of the light fluxes **”0”**, **”2”** and **”2´”**, and the axes of the fragments of the light fluxes **”1”**, **”1´”**, **” 1´´”** and **”2´´”** are the angles γ_1, $\gamma_{1'}$, $\gamma_{1''}$ and $\gamma_{2''}$ respectively to the axes of the light fluxes **”1”**, **”1´”**, **” 1´´”** and **”2´´”**.

Now examining the simplest case **1**, we consider the more general case **2**, when in the reference frame **Oxyz**, fixed relative to the ether, the angle **γ** between the direction of light emission from the source A (the axis of the light fluxes **”0”**) and the direction of the vector of the speed **V** of the movement of the interferometer is nonzero (0, π, 2π, 3π ...).

Fig. 16 shows in the inertial reference frame **Oxyz**, fixed relative to the ether, the positions of the light fluxes in the interferometer during the Michelson experiments at time t_i for the special case **2**.

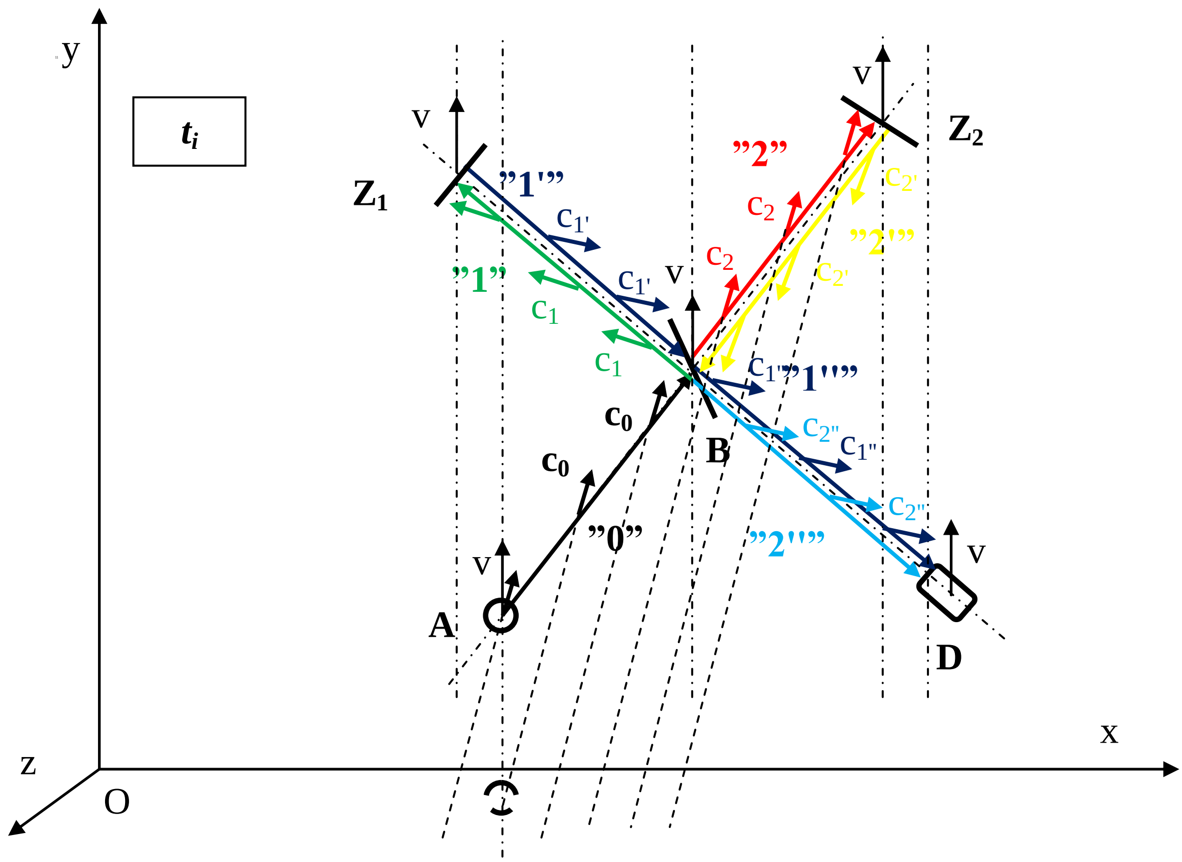

Fig. 16

In difference from the special case **1** in general case **2** the light fluxes **”0”**, **”2”** and **”2´”** are similar to the light fluxes **”1”** and **”1´”**.

When traveling the light fluxes **”0”**, **”2”** and **”2´”** their axes is constantly moving parallel to itself with speed **V**.

The light fluxes **”0”**, **”2”** and **”2´”** are moved as a translatory along their axes and perpendicular to their axes.

The fronts of light fluxes **”0”**, **”2”** and **”2´”** are as their cross sections and their lateral surfaces.

At time t_i all fragments of the light fluxes **”0”**, **”2”** and **”2´”** will have the speeds respectively equal $\mathbf{c_0}$, $\mathbf{c_2}$, and $\mathbf{c_{2'}}$.

The vector of the speed $\mathbf{c_0}$ of the movement of the fragments of the light flux **”0”** will be permanently the angle γ_0 with the axis of the light flux **”0”**.

The vector of the speed $\mathbf{c_2}$ of the movement of the fragments of the light flux **”2”** will be permanently the angle γ_2 with the axis of the light flux **”2”**.

The vector of the speed $\mathbf{c_{2'}}$ of the movement of the fragments of the light flux **”2´”** will be permanently the angle $\gamma_{2'}$ with the axis of the light flux **”2´”**.

Fig. 17 shows in the inertial reference frame $\mathbf{O_0x_0y_0z_0}$, wherein the interferometer is stationary, the positions of the light fluxes **”0”**, **”1”**, **”1´”**, **” 1´´”**, **”2”**, **” 2´”** and **”2´´”** in the interferometer during the Michelson experiments at time t_{0i} for the general case **2**, when the direction of the light flux **”0”**, emitted by the source **A**, is nonparallel to the movement of the interferometer in space .

In the reference frame $\mathbf{O_0x_0y_0z_0}$ the axes of the light fluxes **”1”** and **”1´”**, **” 2”** and **”2´”**, **”1´´”** and **”2´´”** pairs are aligned.

In the reference frame $\mathbf{O_0x_0y_0z_0}$ in difference from the special case **1** in general case **2** the light fluxes **”0”**, **”2”** and **”2´”** are similar to the light fluxes **”1”** and **”1´”**.

In general case **2** in the reference frame $\mathbf{O_0x_0y_0z_0}$ for any time t_{0i} the axes of the fragments of the light fluxes **”0”**, **”1”**, **”1´”**, **” 1´´”**, **”2”**, **” 2´”** and **”2´´”** are the angles γ_0, γ_1, $\gamma_{1'}$, $\gamma_{1''}$, γ_2, $\gamma_{2'}$ and $\gamma_{2''}$ respectively to the axes of the light fluxes **”0”**, **”1”**, **”1´”**, **” 1´´”**, **”2”**, **” 2´”** and **”2´´”**.

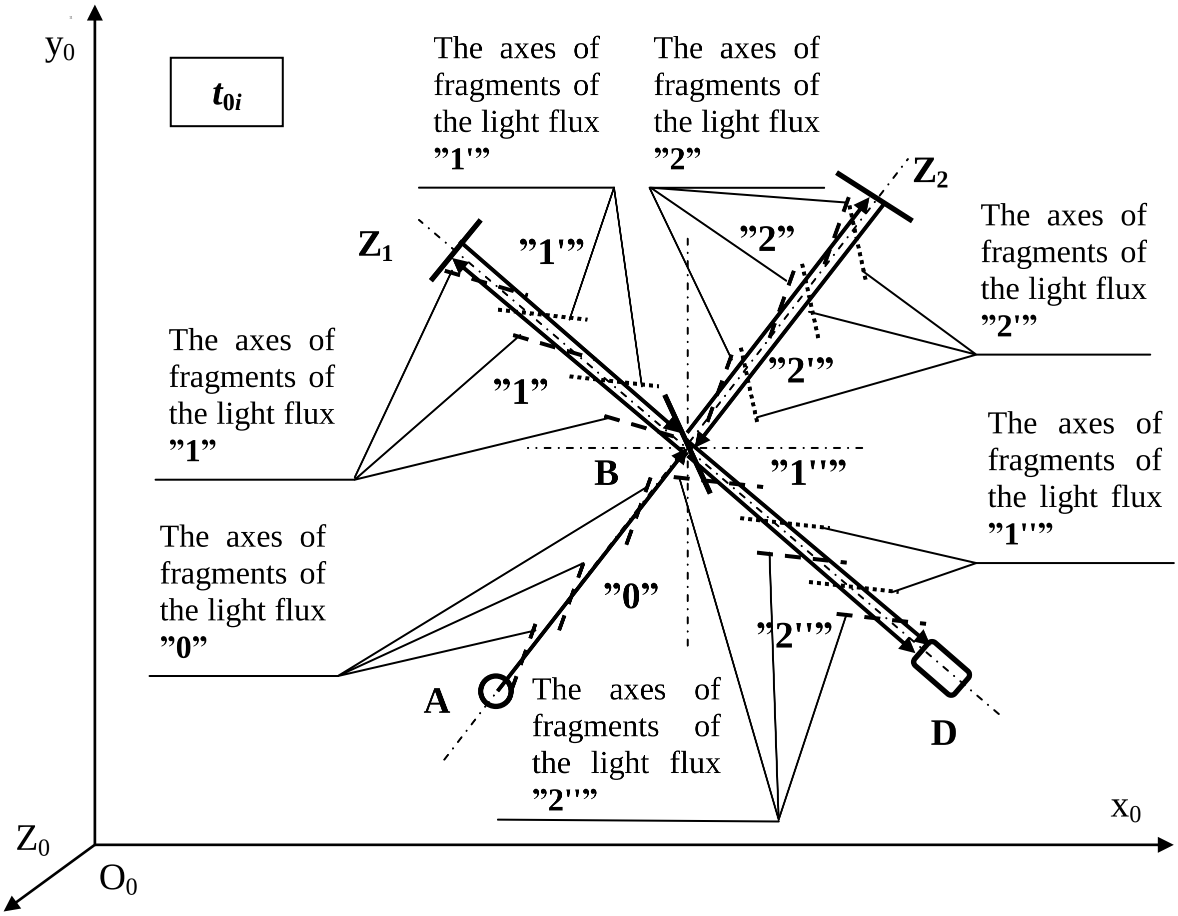

Fig. 17

4. The resumes of treatment

If we admit the existence of the ether, in the inertial reference frame **Oxyz**, fixed relative to the ether, the light flux can move in the light-carrying space (ether), not only along its longitudinal axis, but at an angle to its longitudinal axis.

Thus fragments, constituting the light flux, can move at an angle to the flux axis.

As a result of review, it was found that in inteferometre the light fluxes are not the same, as that used to the procedure in the evaluation of the Michelson experiments [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [13], [14], and these light fluxes differentiate having the different angles between the axes of the fragments of the light fluxes and respective axes of the light fluxes.

Take account of that, there is no the evidence of equality between the speed light flux whose axis fragments constantly coincide with the axes of the light flux (experiments to determine the speed of light) and the speed of the light flux whose axis fragments are constantly the certain angle to the axes of the light flux (i.e. not confirmation of the absence of the dependence of the speed of the movement of the light flux in space from the angle between the axes of its fragments and the axis of the light flux), not possible with using of the Michelson experiments show the presence or absence of ether wind.

5. The conclusion

To evaluate the results of experiments, making A.A. Michelson with the use the interferometer, and the evidence of the existence or absence of ether wind must have a confirmation of the fact, that the speed of the light flux in the light-carrying medium (ether) is not dependent from the angle of the deflection of the vector of the speed of the fragments of the light flux from the longitudinal axis of the light flux and the frequency (radiation) light flux.

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