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I. Introduction

Michelson interferometer was invented by American physicist by Albert Abrakham Michelson. A number of important scientific and applied problems was solved with the aid of this interferometer. However, in Michaelson's experiments there were significant errors. These mistakes he made, trying to prove that the speed of light electromagnetic (EM) wavespeed are added at speed of the source emitting such a wave. It considered to the end of its life that there is an elastic medium, in which are extended EM of wave. Therefore the results of the experiments, which it conducted together with Morley [1] for the detection of this medium, were for it large unexpected contingency. Attempting to improve experiment, it attempted as the radiation source to use light of star, but still large failure here awaited it. The studies, carried out with the aid of its interferometer, showed that the measured speed of light, does not depend on the speed of star and is equal to the previously measured by it value, which corresponded to the special theory of relativity, which life it so did not recognize to the end.

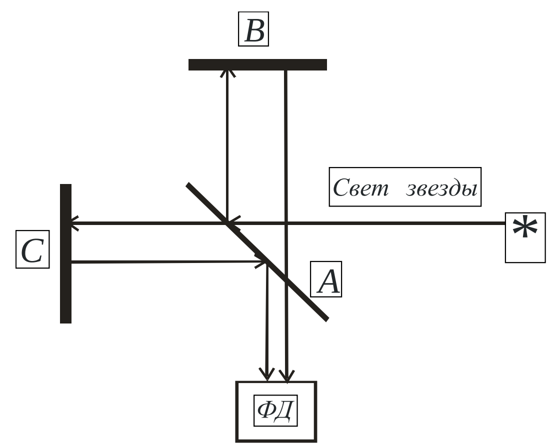

Fig. 1: Schematic of Michelson interferometer

In order to understand, in than consisted Michaelson's error, let us examine the principle of the work of its interferometer [2], diagram of whom it is given in Fig. 1.

The light of star, reflected from the dividing mirror A falls on the reflecting mirror v and, being reflected from it, it falls on photodetector. The special feature of this process is the fact that the mirror v is located in the same inertial reference system (IRS), in which is located interferometer itself. This means that, whatever there was the speed EM of the wave, which arrived from the star, its speed, after reflection from the mirror v, will be equal to the speed of light in IRS of interferometer.

The second part EM of the wave, which arrived from the star, penetrating the dividing mirror A, also falls on reflective mirror s. After reflection from this mirror the wave will also have a speed equal to the speed of light in the system of interferometer. But a question consists in what speed will have the electromagnetic wave after the passage of dividing mirror indicated. The reflecting coating, with the aid of which occurs the division of ray, is substituted to the transparent glass plate.

Let us examine the flow chart of the ray through the dividing mirror, taking into account that the fact that the reflecting layer on it is substituted to the transparent of the glass- specific thickness. Since glass- is the dielectric, which possesses the dielectric constant, different from air, the trajectory of the motion of ray will depend on the refractive index of glass. This trajectory is shown in Fig. 2.

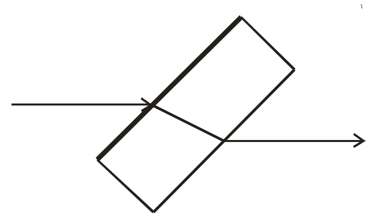

Fig. 2: Propagation of light beam through the glass plate

Light beam falls on the glass plate from the side, on which it is substituted semitransparent coating and further, refracting twice, it leaves from it in the same direction. During the reverse motion of ray its trajectory remains constant it changes only direction of its motion. In this case the ray moves in accordance with the Snel law [2], sharply changing its direction after entrance and output from the plate. But this refraction of ray is connected with the fact that the electric fields of the wave, passing through the plate, make it necessary will fluctuate the bound charges in the dielectric, which re-emit these fields. And if prior to the entrance into the plate wave had a speed different from the speed of light in the frame of reference of interferometer, then after the passage of the wave through the plate its speed will be equal to the speed of light in the system of its counting. Therefore with the aid of the Michelson interferometer it is not possible to measure the speed EM of wave to its contact with dividing mirror. Michaelson did not consider these circumstance, of than consisted its error.

Were subsequently invented different modifications of Michelson interferometer [2], such as the interferometer of Znamensky, Fabry-Pero and other instruments with repeatedly divided light beams. But in all these instruments for division and separation of light rays are used the semi-transparent layers of metals, substituted to the glass plates, or interfaces between the dielectrics with different dielectric constant. Therefore all interferometers indicated suffer the same deficiencies, as Michelson interferometer.

But there is still one circumstance, which should be considered during setting of such experiments.

The phenomenon of phase aberration of light consists in the fact that with the astronomical observations this aberration leads to a change in the observed position of stars on the celestial sphere as a result of a change in the direction of the speed of the motion of the Earth. In astronomy the frame of reference, connected with the solar system, is used, since it is possible to consider it with the high accuracy inertial. Star atlases are comprised precisely in it. The diurnal aberration is small, and even angle of annual aberration is not great; its greatest value, on the condition that that the motion of the Earth is perpendicular to beam direction, it composes a total of approximately one 20,5 second. The star, which is located in the pole of the ecliptic, rays of which are perpendicular to the plane of the earth's orbit in the frame of reference of the sun, will be observed during the entire year by that being distant behind its true position for 20,5 seconds, i.e., describe a circle by diameter 41 second. This apparent way for other stars will already represent not circle, but the ellipsis. The semi major axis of this ellipsis is equal 20,5″ and semi minor axis it is equal 20,5″sin β, where β - the ecliptic latitude of the observed celestial body. If star is located on ecliptic itself, i.e. annual motion, as a result of the light aberration, will be the visible section of straight line, the being appeared arc of ecliptic on the celestial sphere, and star goes along this section first to one side, then into another. But aberration of light in a straight manner indicates the addition of velocities of light with the speed of the Earth. Let us examine this question in more detail.

In Fig. 3 is depicted the diagram of the aberration of light of the star, when it is located in the pole of the ecliptic and its rays are perpendicular to the plane of the earth's orbit. In the frame of reference of star its ray moves with the speed of light c vertically with respect to the earth's surface. If the Earth moves, as shown in figure to the right with speed v_0, the vector addition of the beam velocity of star and speed of the Earth in the frame of reference of the Earth occurs according to the summation rule of vectors, as shown in figure. This means that the summary beam velocity v will bedetermined in accordance with the relationship $v = \sqrt{c^2 + v_0^2}$. This speed is more than the speed of light.

In this case the summary velocity vector of ray no longer is vertical the earth's surface, but its slope angle is equal to the angle of aberration, whose tangent is defined as to the ratio of the velocity of the Earth to the speed of light. Continuing its motion in the direction indicated, ray reaches the atmosphere (in this case it is considered that the atmosphere has sharp boundary with the vacuum of space). But air of the atmosphere has dielectric constant greater than dielectric constant of vacuum, therefore on the border with the atmosphere ray experiences refraction in accordance with the law of Snel and changes its speed and direction. The beam velocity was more before the entry into the atmosphere than the speed of light in air but with the entry into the atmosphere it changes its speed in such a way that it would correspond to the speed of light in air.

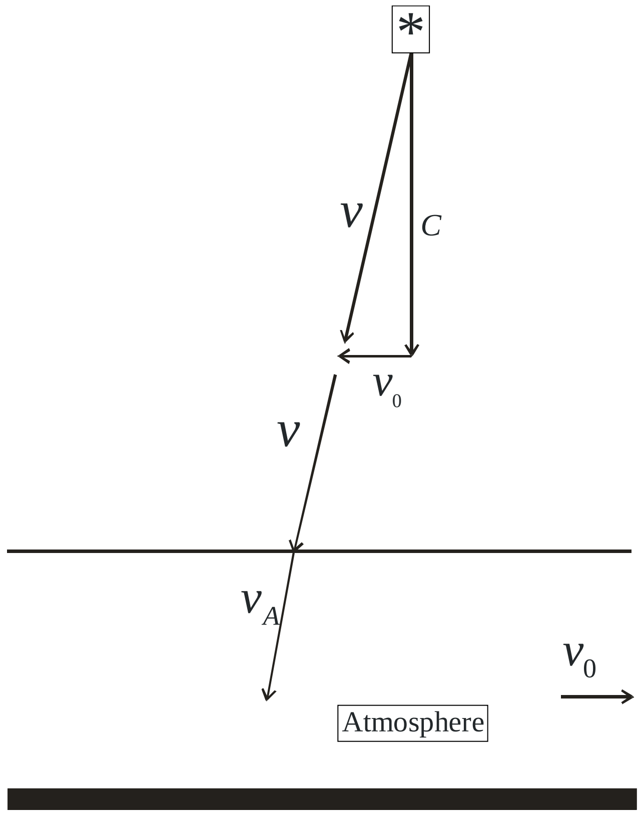

Fig. 3: Diagram of the aberration of light of the star

The transverse Doppler effect, who long ago is discussed sufficiently, until now, did not find its confident experimental confirmation. For observing the star from moving IRS it is necessary to incline telescope on the motion of motion to the angle, determined by relationship

$$tg\alpha = \frac{v_0}{c}.$$

The star, observed in the zenith, is in actuality found somewhat behind through the direction of motion. but this means that this star with respect to the observer has radial velosity determined by the relationship

$$v_r = v_0 tg\alpha .$$

Doppler frequency shift $tg\alpha \cong \alpha$, $\alpha = v/c$, is equal for small angles

$$\omega_{d\perp} = \omega_0 v^2/c^2 .$$

This result numerically coincides with the results of the special theory of relativity (SR), but it is principally characterized by the fact that into SR transverse Doppler effect it is considered real, and in this case this is only apparent effect.

At the same time, if the Earth and star converge, or they are moved away in the beam direction, then occurs the simple vector addition, with which the beam velocity can be both more and it is less than the speed of light. In this case occurs the Doppler effect, with whom, the frequency of wave, in the observation system of the Earth, obtains the Doppler additive, whose sign depends on the relative speed of the Earth and star. This question we will discuss below.

The described phenomena it is additional obstacle on the way of checking the postulate about the invariance of the speed of light, since such measurements must be conducted either in space or in the high vacuum cameras. Numerous attempts at the measurement of the speed of light, radiated by the moving sources, are known, most characteristic of them are given in the works [3-13], but all these experiments they gave one and the same result, which confirms the postulate of the theory of relativity about the invariance of the speed of light. But another result and it could not be, since all experiments were conducted in the atmosphere, in which the speed EM of waves cannot be more, or is less than that, which is determined by the dielectric constant of air. The existing interferometers, utilized in the experiments, for these purposes are not suitable moreover.

In the article is proposed the new type of the interferometer, deprived of the deficiencies indicated, as basis of which is assumed the principle of the mechanical division of ray.

II. Interferometer with the Mechanical Division of Laser Beam

The schematic of interferometer with the mechanical division of laser beam is shown in Fig. 4.

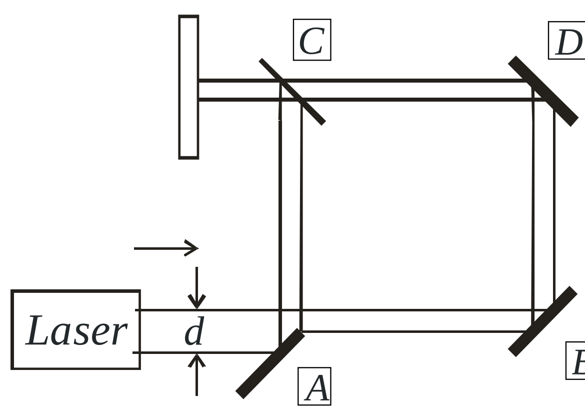

Fig. 4: Schematic of interferometer with the mechanical division of laser beam

Laser beam, whose diameter is equal d, it partially overlaps the reflecting mirror A. This mirror the part of the ray it located so that reflects in the normal direction with respect to the primary direction of the motion of ray. The second part of the ray continues to move in the previous direction with the previous speed and, falling on the reflecting mirror B, it is reflected in the vertical direction with respect to the initial direction of motion. Further rays, after passing ways indicated in the diagram, where D - the reflecting mirror, and mirror C - dividing, fall on the screen, where is reproduced the picture of their interference. In the diagram examined the laser, which is radiation source, can be fixed or move with the given speed. On the spot laser also can be located the mirror, which reflects the ray of fixed laser, in this case the mirror also can be fixed or move according to the assigned law. This case is equivalent examined with the only difference that as the ray of that emitted by the moving laser it is used the ray, reflected from the moving reflective mirror. The advantage of interferometer with the mechanical division of ray is the fact that in it are not used the dividing mirrors, but the division of ray in the assigned proportion is produced by the method of its mechanical overlap.

The schematic of interferometer with the mechanical division of the ray, in which is used the fixed laser, whose ray is reflected from the fixed or moving mirror, it is depicted in Fig. 5. On this diagram the laser beam has a diameter, which is equal to the distance between the lines, which emerge from the laser.

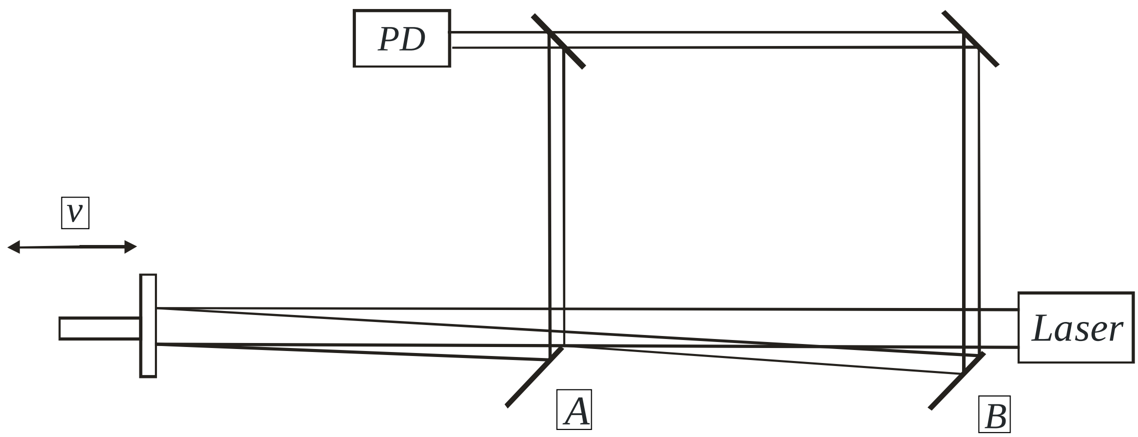

Fig. 5: Schematic of interferometer with the reflective mirror

Let us describe the parameters of the interferometer being investigated and the method of its tuning.

Interferometer is installed on the mounting plate by the size of 75x300x1200 mm and has the following parameters: the distance between the tip of laser and the mirror B - 200 mm, distance between the mirrors A and B also D and C - 250 mm, the distance between the A and D mirrors B and C with - 200 mm. Distance from the tip of laser to the reflecting mirror - 1400 mm.

In the interferometer as the laser the laser with the green flash with Green Laser Pointer the wavelength 532 nm with a power 5 mW is used. The diameter of its ray is 1.1 mm. Laser beam leaves from the tip. To this tip from the outer side is dressed the sheet reflector, in which there is an opening for the passage of the ray with a diameter of about 2 mm. At first reflecting mirrors A also in are established in such a way that they would not interfere with the passage of the straight and reflected laser beam. In this case the position of laser and reflecting mirror is established so that the straight and reflected beam and the surface of platform would be parallel.

In the interferometer there is a vibrator, which accomplishes a fluctuating motion of the reflecting mirror. For the exception of the influence of vibrator on the work of interferometer it is established on separate mounting plate by the size of 75x300x650 mm. This plate is established on the separate table. Besides this vibrator it is located in the duct, inside which there is a brick lining from foam rubber, and ray to the reflecting mirror passes through the opening in the duct. This is done so that the acoustic wave, generated by vibrator, would not influence the work of interferometer. Vibrator ensures the harmonic oscillation of the reflecting mirror with a frequency 50 Hz. The amplitude of the fluctuations of mirror can be regulated from zero to 5 mm.

Tuning interferometer is produced in the following order. Laser beam is directed at the fixed reflecting mirror, and this mirror is established in such a way that the reflected beam would fall on screen on the tip of laser. In this case the distance from the reflection of ray on the screen to the opening in it must comprise order 2-4 mm parallel to the plane of platform direction. Then mirrors A and B are established at the angle 45 of degrees with respect to the direction of the reflected beam. Further mirror v is advanced towards to ray in such a way that it would completely overlap the reflected beam, but it did not overlap straight line. After this, it is advanced mirror A. It is advanced until to ray intensity, reflected from the mirrors A and D it is equal. Further, justifying mirrors D and C, they attain the information of rays on the screen, located on the course of ray. For an increase in the interference picture the objective,

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established on the course of ray (in the diagram it is not shown) is used. Then they include the vibration of the reflecting mirror and observe the behavior of interference picture on the screen. If it is necessary to derive the signal, given by the brought rays to the oscillograph, should be used a photodetector.

III. The Experimental Check of the Validity of the Lorenz Transformation and Principle of the Invariance of the Speed of Light

That created by Einstein and that rules in physics already more than hundred years SR [3, 4] uses the Lorenz transformation, based on the postulated in it principle of the invariance of the speed of light, which causes criticism from the side of many scientists.

Let the emission in the transparent medium with the refractive index n have in IRS K, of fixed relative to source, frequency ω and wave number k. Then, if IRS K moves with respect to IRS K', of fixed relative to medium, with speed v, that, according to SR, frequency ω' and wave number k' of emission in IRS K' are determined by the following conversions, which escape from the Lorenz transformation:

$$\omega' = \frac{\omega\left(1+\frac{nv}{c}\right)}{\sqrt{1-\frac{v^2}{c^2}}}, \quad (3.1)$$

$$k' = \frac{\frac{n\omega}{c}\left(1+\frac{nv}{c}\right)}{\sqrt{1-\frac{v^2}{c^2}}}. \quad (3.2)$$

A simultaneous change in the frequency and the wave number upon transfer from IRS K to IRS K' occurs in such a way that the ratio of frequency to the wave number in both IRS remains equal to the speed of light on wednesday c/n. Whatever reasons led to a change in the frequency, nevertheless are fulfilled the relationships (3.1), (3.2). These reasons there can be two: a change in the oscillation frequency of fixed generator and the Doppler effect from the moving generator. From the point of view SR cannot be found true reason.

If receiver moves with the speed u relative to medium in the direction of source, then wave velocity relative to receiver is obtained by the relativistic addition of this speed with wave velocity c/n relative to the medium:

$$\frac{c/n+u}{1+u/(nc)} \approx c/n+\alpha u,$$

where $\alpha=1-1/n^2$ – the entrainment factor. This approximation is carried out in the first order on u. IN SR partial enthusiasm of light by medium, approximately described by coefficient α, is the apparent effect, caused by relativistic addition of velocities. However, the real (physical) enthusiasm of light by medium is complete. This is manifested in the fact that the speed of light on Wednesday depends on the speed of receiver relative to medium, but it does not depend on the speed of source relative to medium. This approximate equality is confirmed by Fizeau experiment. But this does not mean that the Fizeau experiment proves SR, since it has the classical explanation (within the framework the conversions of Galileo).

The classical explanation of Fizeau experiment leaves valid this approximate equality only in the case of the source, which is rested relative to receiver, but changes its interpretation. The physical enthusiasm of light by medium is already the partial, accurately described coefficient α. This is manifested in the fact that the speed of light on Wednesday depends not only on the speed of receiver relative to medium, but also on the speed of source relative to medium. If receiver rests relative to medium, and source moves strictly towards the receiver with speed v, that wave velocity relative to them is equal $c/n+v-\alpha v=c/n+v/n^2$. This speed is lower than the result of the corresponding classical addition of velocities $c/n+v$ for the value αv. But if source moves in the direction, strictly opposite to receiver, then value v is substituted to value $-v$, and wave velocity it proves to be equal to the value $c/n-v/n^2$.

Let us begin the examination of the Doppler effect from his classical theory.

Let the radiation source flat transverse EM of wave rest in selected IRS. Then, if wave is propagated along the three-dimensional axis z, and at the origin of coordinates its electric field it changes according to the law

$$E(t)=E_0 \sin \omega_0 t,$$

The same value of field will be observed at any observation point z with the delay $t=z/V$, where V - phase wave velocity. In this case the dependence of electric field on coordinate and time of signs the form

$$E(t,z)=E_0 \sin \omega_0 (t-z/V).$$

The instantaneous values of phase at the observation points z_1 and z_2 are respectively equal

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$$\varphi_1(t)=\omega_0 t - z_1\omega_0/V, \quad (3.3)$$

$$\varphi_2(t)=\omega_0 t - z_2\omega_0/V. \quad (3.4)$$

A phase difference between the points in this case indicated will comprise

$$\Delta\varphi=(z_2-z_1)\omega_0/V=\Delta z\omega_0/V=\Delta zk,$$

where $\Delta z=z_2-z_1$ - the distance between the observation points, $k=\omega_0/V$ - wave number.

Let now the generator move in selected IRS. Then, if at the observation point z_1 the phase of wave is again determined by relationship (3.3), that at the observation point z_2 the phase of wave will be as before determined by the relationship (3.4). But if for any reasons the frequency of incident wave will become equal ω_1, that for the phase of wave will be carried out the same relationships (3.3) also (3.4) with the new value of frequency.

If the generator of wave moves with the constant velocity v, that phase waves at points z_1, z_2 will change according to the law

$$\varphi_1(t)=\omega_0 t-\frac{\omega_0}{V}\left(z_1+vt\right), \quad (3.5)$$

$$\varphi_2(t)=\omega_0 t-\frac{\omega_0}{V}\left(z_2+vt\right). \quad (3.6)$$

A phase difference between the observation points in this case will comprise

$$\Delta\varphi_{1-2}=\omega_0\Delta z/V=2\pi\Delta z/\lambda_0 \quad (3.7)$$

where $\lambda_0=2\pi V/\omega_0$ - the wavelength.

A phase difference (3.7) on the speed of generator does not depend. This connected with the fact that wave velocity in the selected frame of reference is constant. However, the frequency of signal at the points indicated will change according to the law

$$\omega_1=\partial\varphi_1(t)/\partial t=\omega_0\left(1+v/V\right), \quad (3.8)$$

$$\omega_2=\partial\varphi_2(t)/\partial t=\omega_0\left(1+v/V\right). \quad (3.9)$$

It is evident that at both observation points the frequency obtained the not depending from the distance to the generator, Doppler additive identical

$$\Delta\omega_D=\omega_0 v/V. \quad (3.10)$$

If a phase difference (3.7) is constant during the motion of generator, then is constant wavelength. In this case a change of the frequency in the observation points can be connected only with a change in phase wave velocity in selected IRS. This change can be determined from the relationship

$$\lambda=\frac{2\pi V}{\omega_0}=\frac{2\pi(V\pm\Delta V)}{\omega_0\left(1\mp v/V\right)} \quad (3.11)$$

from where we obtain

$$\Delta V=\mp v.$$

This indicates the classical addition of velocities of light and speed of generator, and it means wave velocity in selected IRS it can be both more and it is less than the standard speed of light on Wednesday, including in the vacuum, which contradicts SR.

Let us further examine the relativistic theory of the Doppler effect.

Accordingly (3.1, 3.2) frequency changes simultaneously with the wave number, and it means also with a phase difference between the observation points. This phase difference depends both on the speed of generator and on the distance between these points. To frequency (3.8) or (3.9) corresponds the wave number

$$k=\omega_0\left(1+v/V\right)/V,$$

therefore a phase difference between the observation points into SR changes according to the law

$$\Delta\varphi=\Delta z\omega_0\left(1+v/V\right)/V. \quad (3.12)$$

From the relationship (3.12) it follows that a phase difference between the observation points will depend on the distance between this by points and on the speed of generator. However, in the classical case, as follows from the relationship (3.7), a phase difference between the observation points on the speed of generator it does not depend.

Therefore the measurement of a phase difference between the observation points for the case of the moving generator is the task of the proposed experiment. If it seems that a phase difference does not depend on the speed of the motion of generator, then this will mean that SR, Lorenz transformation and principle of the invariance of the speed of light are not accurate.

Let us examine within the framework SR case, when generator varies along the axis z according to the harmonic law with the frequency Ω:

$$z=z_1+z_0\sin\Omega t,$$

where z_1 - the initial position of generator, z_0 - the amplitude of its of fluctuations.

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Then the flutter speed of generator will be determined by the relationship

$$v(t)=\partial z/\partial t=z_0\Omega\cos\Omega t=v_0\cos\Omega t\ ,$$

where $v_0=z\Omega$ - the amplitude of speed.

In this case Doppler additive to the frequency at both observation points will change according to the law

$$\Delta\omega_D=\left(\omega_0 z_0\Omega\cos\Omega t\right)/V\ ,$$

and additive to the wave number will be determined by the relationship

$$\Delta k(t)=\left(\omega_0 z_0\Omega\cos\Omega t\right)/V^2\ .$$

The phase difference between the observation points, caused by this additive, will comprise

$$\Delta\varphi(t)=\left(\Delta z\omega_0 z_0\Omega\cos\Omega t\right)/V^2\ . \quad (3.13)$$

To this dependence of a phase difference on the time corresponds the frequency modulated signal, whose frequency will change according to the law

$$F(t)=\omega_0\left(1-\left(\Delta z x_0\Omega^2\sin\Omega t\right)/V^2\right), \quad (3.14)$$

i.e. within the framework SR will be obtained the frequency-modulated signal, whose frequency changes according to the harmonious law and the amplitude of the deviation of frequency of which it is equal

$$M=\Delta z\omega_0 x_0\Omega^2/V^2\ .$$

Since the last $V=c/n$, equality can be written down in the form into SR

$$M=n^2\Delta z\omega_0 x_0\Omega^2/c^2\ .$$

In any material medium the value M is always greater than in the vacuum, n^2 once, but in air this difference can be disregarded.

Let us calculate the expected parameters of the signal, which enters from the photodetector, for the case examined. For this it is utilized the parameters of the interferometer, described above, on which were conducted studies. The distances between the mirrors A also in it was 250 mm, the frequency of the vibrations of vibrator - 50 Hz, the amplitude of the fluctuations of mirror was equal 5 mm. With these parameters (in the case of justifiability SR) the amplitude of the deviation of the frequency of the frequency-modulated signal, which must be IRSlated on the photodetector, will be about 180 Hz. This signal easily yields to detection and measurement.

However, with conducting of experiment according to the diagram, represented in Fig. 5, interference picture did not change both in the case of the fixed reflecting mirror and in the case of its fluctuations, and interference fringes remained at their places, picture was only extended on the vertical line approximately on 50%. This connected with the fact that the axis of oscillation of the reflecting mirror is slightly inclined with respect to the laser beam reflected. Separately clearly were distinguished the interference fringes, when they were located vertically. With the start of vibrator they only were lengthened. Since the interference fringes with the start of the vibration of mirror did not change their position and did not move, signal on the photodetector was absent. Since in the process of experiment frequency modulated of signal, removed from the photodetector, was not discovered, this means that the connection between the frequency and the wave number, determined by relationships (3.1) and (3.2), they are not carried out, which contradicts SR. Experimental results indicate also that in this case the conversions of Galileo are carried out, and the rate of radiation source is added to the speed of light.

Let us examine this question for the vacuum based on example of band saw (Fig. 6).

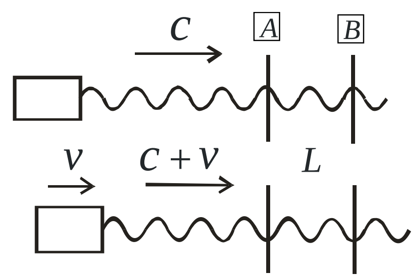

Fig. 6: Work of the band saw

From the machine tool, designated by square, with speed c leaves the band saw, whose teeth are cut in the form sinusoid. If the distance between the teeth is equal λ_0 , that the frequency of the output of teeth from the machine tool is equal $f_0=c/\lambda_0$, where c - the speed of the motion of the tape of saw. A quantity of teeth is placed between two lines of observation L located at a distance in this case, equal $N=L/\lambda_0$ and the speed of the motion of the teeth through the lines of observation is equal c . Let us assume that machine tool begins to move to the side of the lines of observation with the speed v . Together with it will move the moving saw. In this case the speed of the motion of teeth relative to the lines of observation will increase and will become equal $c+v$, but a quantity of saw teeth between the lines in this case it will remain before. The frequency of the passage of the teeth through the lines of observation also will increase and it will become equal $f_v=\left(c+v\right)/\lambda_0$. Doppler additive to the frequency of the passage of the teeth through the

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lines in this case will comprise $f_v - f_0 = v/\lambda_0$. It is possible to examine another case, when machine tool remains fixed, and both lines of observation move to the side of machine tool with the speed v. Situation will be the same as during the motion of machine tool to the side of lines. Consequently, a quantity of teeth, which are been located between the lines of observation does not depend on the speed of machine tool or observers.

A similar situation occurs in the section AB in the interferometer, since proved to be valid the conversions of Galileo. Only instead of the saw teeth we deal concerning the electromagnetic wave, generated by the fixed or moving generator.

During the motion of generator in air with the speed v to the side of the reflecting mirrors in entire section AB ray moves with the speed $c/n + v/n^2$, while in the remaining arms of interferometer it moves with the speed c/n. Since in the process of experiment it is discovered, that a phase difference in the section AB does not depend on the speed of generator, in this section the wavelength also does not depend on the speed of generator. But this means that the Doppler frequency, fixed at the observation points, which depends on the speed of generator, is not connected with the wavelength in this section.

This fact contradicts the Lorenz transformation and the principle of the invariance of the speed of light, indicating that the rate of radiation source is added to the speed of light according to the classical rule.

But was achieved in the experiment conducted the faster-than-light (more than the rate constant c of light in the vacuum) wave propagation velocity in IRS of interferometer? No, it was not, since experiment was conducted in atmospheric air. For the exceeding with wave velocity of rate constant c of source (generator or mirror) v towards the interferometer and refractive index n must be connected with the inequality

$$c/n + v/n^2 > c.$$

Expressing from this inequality a value v, we have:

$$v > n(n-1)c.$$

For air (n =0,0003) we under normal conditions obtain the astronomical speed of source v very high speed value>9 km/s. But it is possible to attain reduction in this speed due to reduction in the value n, of air achieved by the replacement by vacuum. With the assigned magnitude v the requirement for the value n takes the form

$$n < \left(1 + \sqrt{1 + 4v/c}\right)/2.$$

At least, mirrors A and B, the space between them and moving mirror, and mirror itself must it is found in vacuum chamber.

Let us assume that the value $(n-1)$ is proportional to the pressure of residual gases in the camera. If we accept the speed of the mirror of the equal 1 m/s, then it suffices to decrease the pressure in the camera on six orders in order with the tenfold reserve to satisfy the condition presented. This vacuum is considered low, and its reaching is -not problem with the contemporary level of vacuum technology.

IV. Use of an Interferometer with the Mechanical Division of the Ray for Purposes of the Passive Radar

The proposed interferometer can be used for purposes passive radar. For determining the speed of the moving generator should be determined the wavelength λ_0 in the section AB. For this one of the mirrors must be made mobile and its displacement compared with a quantity of strips, which correspond to this displacement. According to the measured value of wavelength should be determined the frequency of the moving oscillator $f_0 = c/\lambda_0$. Then it is necessary to measure the frequency f_v in one of the observation points. In this case the speed of the moving generator will be determined from the relationship

$$v = (f_v - f_0)\lambda_0. \tag{3.15}$$

The moving generator thus to easily distinguish of the fixed, whose frequency changes. For the fixed generator wavelength λ, measured between the observation points, and frequency f, measured at the observation points, they will be connected with the relationship

$$\lambda f = c. \tag{3.16}$$

V. Conclusion

By the empirical basis of the principle of the invariance of the speed of light SR it is customary to assume the class of the physical experiments, which use a Michelson interferometer and called Michaelson's experiences. However, a question about that until recently remained open, are explained the results of these experiences by the principle indicated or by some other reason. This caused the urgency of the improvement of means and methods of the corresponding checkings in the direction of an increase in the cleanliness of experiment, i.e., the elimination of other possible reasons for explanation.

For this purpose the authors developed the new type of interferometer with the mechanical division of laser beam and is proposed the method of checking SR with the aid of this interferometer. If following Michaelson's experiences the method proposed again confirmed SR, then it would be possible and to further improve means and methods of checkings, but in this case one should recognize the still high degree of experimental confirmation of this theory. However, the results of the experiment conducted showed that the speed of light from the moving generator is obtained by the classical addition of velocities of light relative to generator with the speed of its motion. Consequently, SR it is not accurate, of than any laboratory of peace can be convinced, after repeating our simple experiment. But indeed this indicates the beginning of the sunset of entire era in the history of physics – of era, which abolished for the high speeds of the motion of the conversion of Galileo upon transfer of one IRS to another and of that replaced with their Lorenz transformation. The experiment conducted showed the insolvency of this replacement.

In the work it is also shown, what errors previously experimenters accomplished, attempting to prove the justifiability of postulate SR about the invariance of the speed of light. Is outlined the way of overcoming the errors with the aid of the developed interferometer indicated.

The monograph of contributors 1, where within the framework ideas about not the invariance of the theorem of Gauss for the electric field of the moving [14] is introduced the new concept of scalar- vector potential, is dedicated to the new ideology of electrodynamics and entire physics, which assumes the fundamental role of the conversions of Galileo, or are proposed new conversions pour on, connected with the transformations of coordinates of Galileo. Still Maxwell used conversions of Galileo during the construction of electrodynamics. However, at that time still was not explained the fundamental role of the conversions of Galileo as the connecting beginning between the space and the time, and these conversions were disdainfully placed as if house with respect to "present" conversions separately of space and separately time. But indeed the precisely fundamental role of the conversions of Galileo predetermines existence of the effects, which is conventionally designated as relativistic, but which, as it seemed, have to the Lorenz transformation of no relation.

The authors hope that the appearance of their monograph [14] in conjunction with the represented experimental results they will impel researchers to the long ago ripened revolutionary revision of fundamental physical ideas.

The important technical application of the result of this work relates to the passive radar. IN SR principally it cannot be differed the change in the frequency, created by fixed generator, from the same change in the frequency, caused by the Doppler effect. Now a change in the frequency of the incoming signal in conjunction with the invariability of a phase difference between the observation points in the interferometer must unambiguously testify about the Doppler effect, and in conjunction with a change in the phase difference between these points – about a change in the frequency of fixed oscillator.

The experimental results, obtained in the work, became possible because of the invention of interferometer with the mechanical division of laser beam. Because of this invention SR was possible for the first time in entire history to prove the insolvency of the Lorenz transformation and to refute postulate about the invariance of the speed of light.

The authors did not find in the literature of the analogs of the interferometer examined known to them; therefore the designation, represented in the name of article, is appropriated to it.

The appreciation

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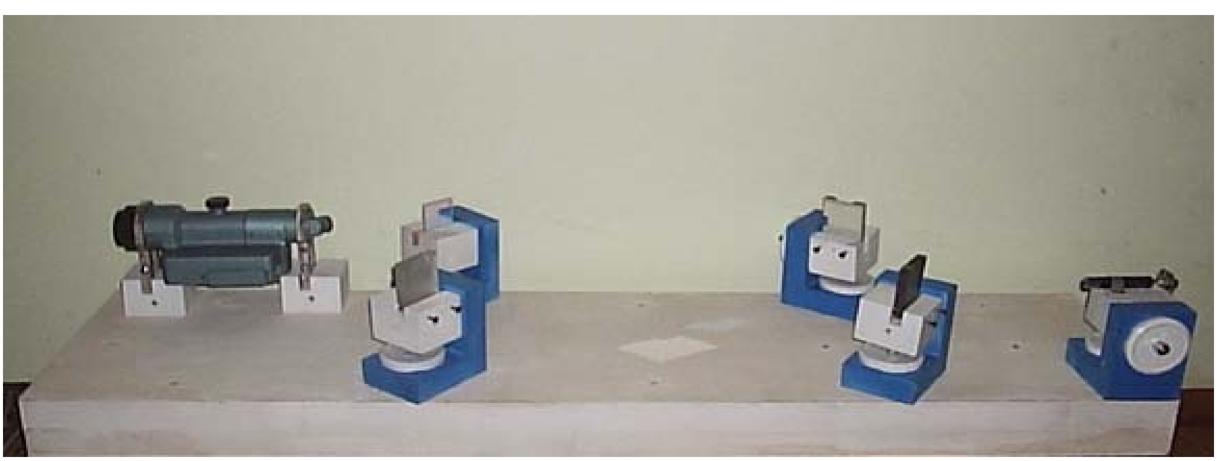

Fig. 7: General view of the interferometer on which the investigations were carried out

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