Three objections to modern physics

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Abstract

Relationship for kinetic energy derived from the asymmetrical form of the intensity of the moving charge. To derive it we do not need Lorentz's transformations equations, we do not need SPACE-TIME.
We do not need local time, or covariant equations or physical simultaneity definition or invariant interval. In other words, in physics we do not need Einstein's theory of relativity. From the asymmetrical form of the intensity of the moving charge we can derive Gauss law, Faraday's law and derive the 4th Maxwell's equation (fictional by Maxwell and up to now was not derived).Kinetic energy of a charge moving at the velocity of v has two different values: in direction of motion as own kinetic energy of charge and against direction of motion of charge represents the wave energy, which charge creates in transmision medium.

Kaufmann's experiment, Fizeau's experiment, Harres's Experiment, Kirchner, Perry, Chaffee experiments are reviewed.

1.Introduction

Three objections to modern physics:

1. Form of the interference field is non-linear,

2.Form of Intensity of the Moving Charge Electric Field is asymmetrical,

3. Kinetic energy of a charge moving at the velocity of *v* has two different values:

Kinetic energy of electron , (proton)

$T_{kin\ id} = mc^2 [\ln |1-v/c| + (v/c) / (1-v/c)]$ in direction of motion of electron, (proton)

where v is velocity of electron, (proton).

Kinetic energy of electron , (proton)

$T_{kin\ ad} = mc^2 [\ln |1+v/c| - (v/c) / (1+v/c)]$ against direction of motion of electron, (proton)

where v is velocity of electron, (proton).

2.Theory

2.1. Form of Intensity of the Moving Charge Electric and Magnetic Field

2.1.1 Intensity of the Moving Charge Electric Field

Let us have a system of coordinates *(x, y, z)* connected with the medium causing propagation of light. Let the electric field intensity in this medium propagate at speed *c* in all directions. It is known from Coulomb's law that intensity of the still standing charge in relation to the system of coordinates *(x, y, z)* decreases with the square of distance from that charge then represented by hyperboles symmetrical to the charge, illustrated in section as follows:
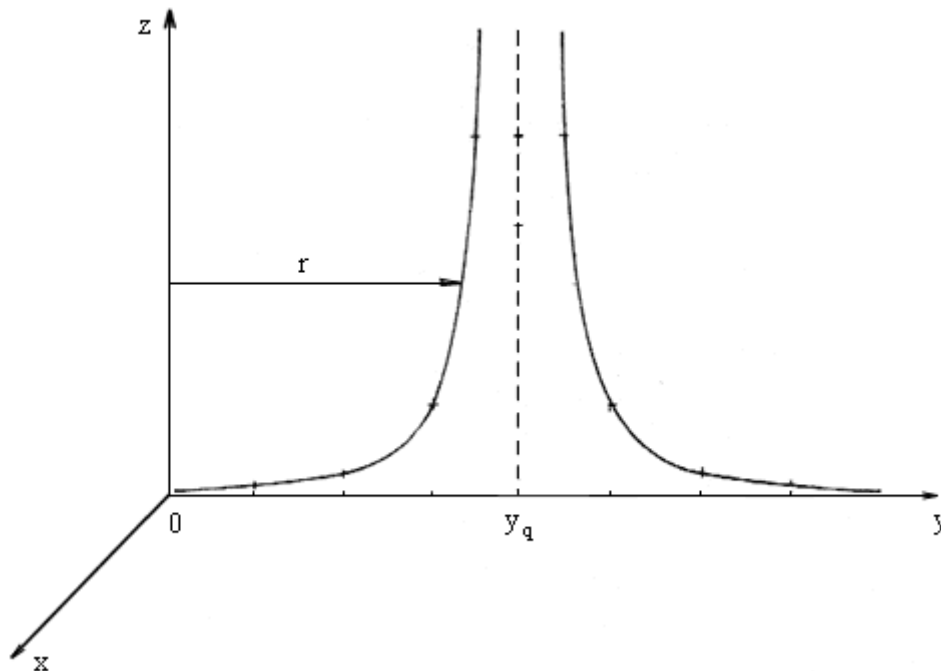

Fig. 2.1. The intensity of the stillstanding charge

r - distance of the hyperbole point from the beginning

Charge *q* is situated at level *yz* and in the distance of y_q from the beginning in the direction of axis *y*.

Let us now examine what would happen with the form of curves representing the intensity of the electric field, if charge *q* will move in a uniform straight line motion in the direction of the axis *y* at a constant speed *v*. Let's thus join firmly the system of coordinates *(x', y', z')* with the charge *q*, see fig. 2.2.

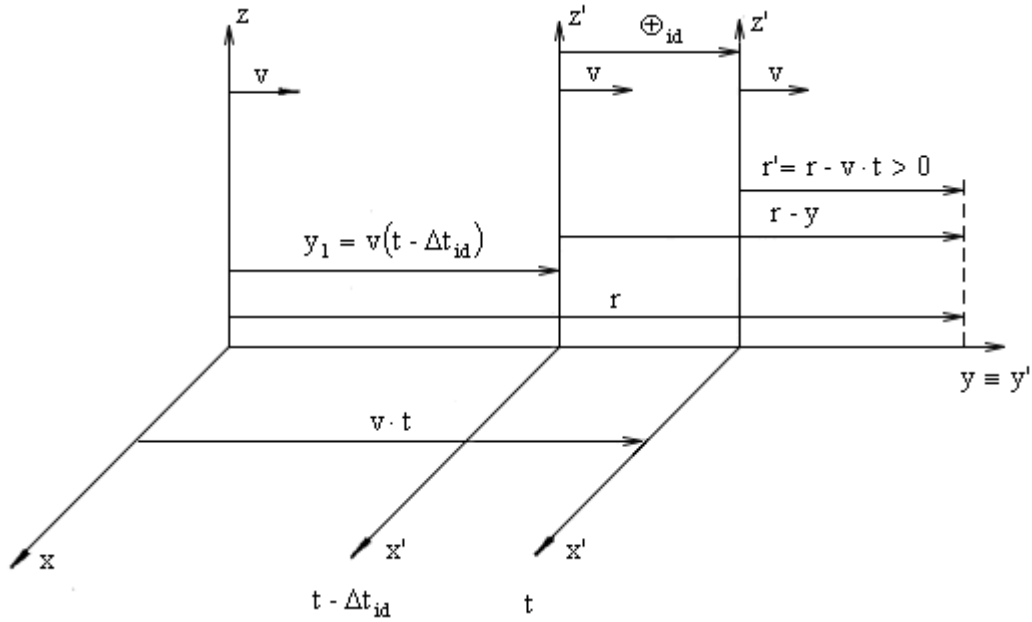*r* - distance of the hyperbole point from the beginning

Fig. 2.2. The system of coordinates (x', y', z')

Distance r' is measured in direction of axis y' from the charge (or from the beginning O' respectively), while it is valid

$$r'=r-vt \qquad (2.1)$$

At the moment $t_0=0$ both systems become identical.

When $t-\Delta t_{id}$, the charge finding itself at the distance of $y_1 = v(t - \Delta t_{id})$ would emit intensity propagating at speed c, which at the moment of t would come to point r in time of

$$\Delta t_{id} = \frac{r - y_1}{c} = \frac{r - v(t - \Delta t_{id})}{c} \qquad (2.2)$$

thus

$$\Delta t_{id} = \frac{r - vt}{c - v} \qquad (2.3)$$

The index $_{id}$ means that is the case of propagation of the electric field intensity in direction of the charge motion.

Let the $\oplus_{id}$ be the distance between the position of the charge at the moment of $t - \Delta t_{id}$ (i.e. when the charge has emitted the intensity to point r) and position of the charge at the moment t, when the intensity emitted "has reached" the point r.

At the time of Δt_{id} the charge will cover the distance of

$$\oplus_{id} = v \cdot \Delta t_{id} = \frac{v(r - vt)}{c - v} = \frac{v}{c - v} r' \qquad (2.4)$$

This is the distance at which the charge "outrun" the intensity propagated in direction of the charge motion. Consequently the intensity of the moving charge in relation to the system of coordinates *(x, y, z)* will change its form in the respective $\oplus$ of various *r*: it will be deformed (see fig. 2.3)
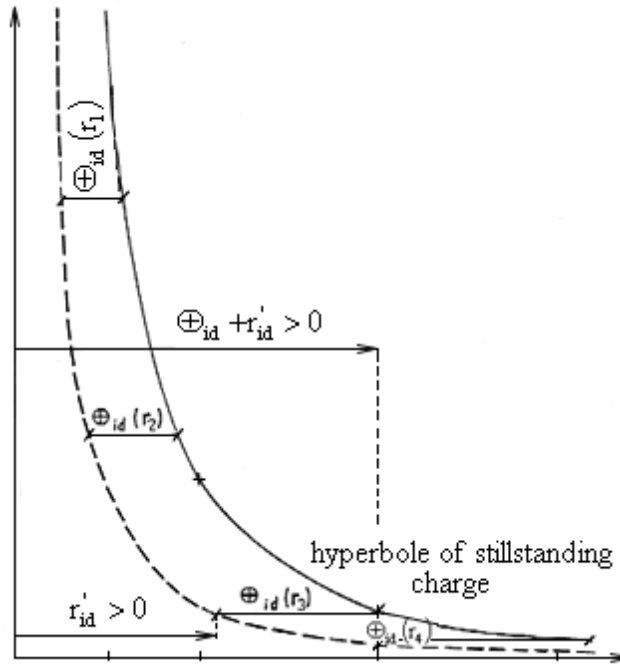

Fig. 2.3. The intensity of the moving charge in the direction of the motion E^{id}_{mov}

It is evident that with increasing distance r_i ($i = 1,2,3,...$) the respective "retardation of intensity" $\oplus_{id}$ (r_i) also increases, as can be seen in equation (2.4.). As the intensity of the moving charge in the direction of the motion E^{id}_{mov} at point *r'* and moment *t* equals the intensity of the stillstanding charge at point $(r' + \oplus_{id})$ at the moment of intensity emittance $t - \Delta t_{id}$, then:

$$E^{id}_{mov}(r') = E_{still}(r' + \oplus_{id}) \qquad (2.5)$$

From the Coulomb's law:

$$E_{still}(r' + \oplus_{id}) = const \frac{1}{(r' + \oplus_{id})^2} \qquad (2.6)$$

$$E_{still}(r') = const \frac{1}{r'^2} \qquad (2.7)$$

r are distances of points of hyperbola from the beginning of the non-dashed system, r' are distances of points of E_{still}erbola from the beginning 0' in a dashed system, r, r' are variables of the same function $r'+\oplus$ (represented by hyperbolas). In other words, t $r'-\oplus$; distance r, that numerically equals ⎯ distance. S E_{still} listance r' numerically equals ⎯ distance, both being variables of the same function ⎯. For detail refer to (2.6) and (2.7). The issue concerns the same Coulomb's law.

By substituing of (2.5) and (2.4) we get

$$E_{mov}^{id}\left(r'\right)= const\ \frac{1}{\left(r'+\oplus_{id}\right)^{2}}$$

(2.8)

Then by utilizing (2.3), (2.6) and (2.7) we calculate

$$\frac{E_{mov}^{id}\left(r'\right)}{E_{still}\left(r'\right)}=\frac{r'^{2}}{\left(r'+\oplus_{id}\right)^{2}}=\left(1-\frac{v}{c}\right)^{2}$$

(2.9)

that is

$$E_{mov}^{id}=E_{still}\left(1-\frac{v}{c}\right)^{2}$$

(2.10)

Thus we managed to express the intensity of the moving charge in direction of motion by means of the intensity of the stillstanding charge in the given point. Analogically we express the intensity of the electric field of the moving charge against the direction of motion (indexes $_{ad}$), see fig. 2.4.
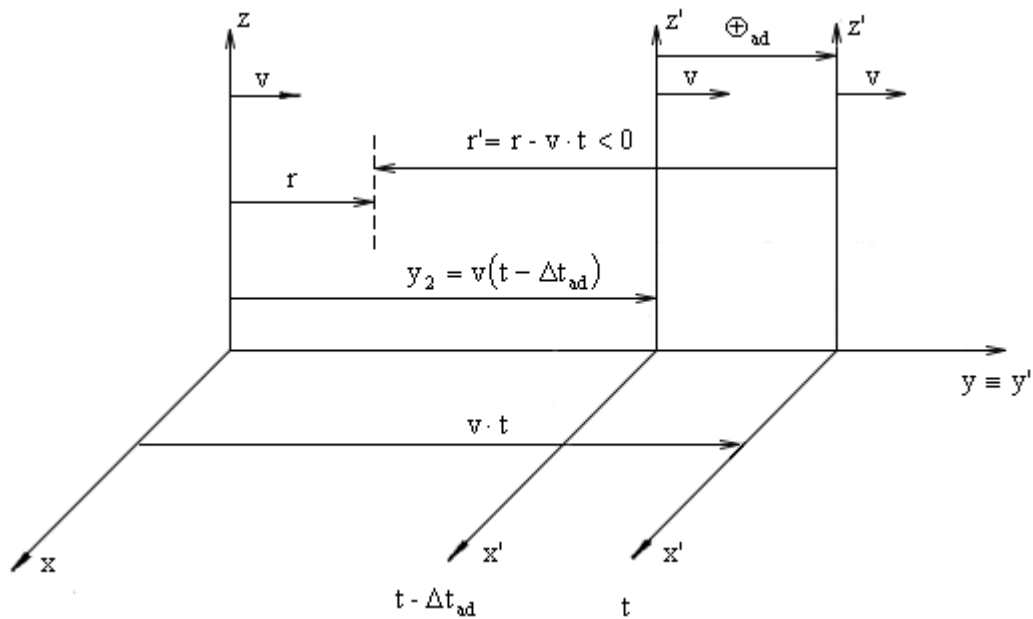

Fig. 2.4. The distance $\oplus_{ad}$

The charge moving at the speed of v parallel to the axis y is situated (at the moment t) in the distance of $v.t$ from the axis z.

At the moment $t - \Delta t_{ad}$ the charge, situated in the distance of $y_2 = v(t - \Delta t_{ad})$ will emit the intensity to the point r.

This intensity will reach at the moment t just the point r in time of

$$\Delta t_{ad} = \frac{y_2 - r}{c} = \frac{v(t - \Delta t_{ad}) - r}{c} \tag{2.11}$$

from where

$$\Delta t_{ad} = \frac{vt - r}{c + v} \tag{2.12}$$

$\oplus_{ad}$ is the distance between the position of the charge at the moment $t - \Delta t_{ad}$ i.e. when the charge emitted the intensity to the point r and the position of the charge at the moment t, when the emitted intensity "has reached" the point r.

The charge will cover the distance

$$\oplus_{ad} = v \cdot \Delta t_{ad} = \frac{v}{c + v}(v \cdot t - r) = \frac{-v}{c + v}r' \tag{2.13}$$

at time Δt_{ad}, while $r'<0$ and $\oplus_{ad} > 0$.

This is the distance by which the intensity that propagates in the direction opposite to the movement of the charge, is shifted against the intensity of the stillstanding charge in the direction away from the charge, see fig. 2.5.

Analogically to equations (2.5)-(2.10) we achieve the following:

$$E_{mov}^{ad}(r') = E_{still}(r' + \oplus_{ad}) \tag{2.14}$$

$$E_{still}(r' + \oplus_{ad}) = const \frac{1}{(r' + \oplus_{ad})^2} \tag{2.15}$$

$$E_{still}(r') = const \frac{1}{r'^2} \tag{2.16}$$

$$E_{mov}^{ad}(r') = const \frac{1}{(r' + \oplus_{ad})^2} \tag{2.17}$$

$$\frac{E_{mov}^{ad}(r')}{E_{still}(r')} = \frac{r'^2}{(r' + \oplus_{ad})^2} = \left(1 + \frac{v}{c}\right)^2 \qquad (2.18)$$

$$E_{mov}^{ad} = E_{still}\left(1 + \frac{v}{c}\right)^2 \qquad (2.19)$$

The form of intensity for $v=0.5c$ see fig. 2.6.

$\oplus_{ad}(r_1)$

$r'_{ad} < 0$
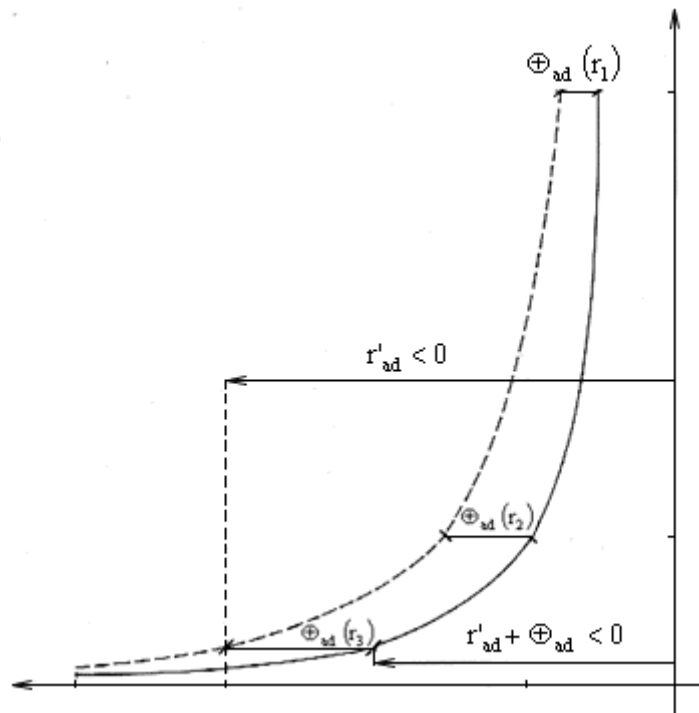
$\oplus_{ad}(r_2)$

$\oplus_{ad}(r_3)$ $r'_{ad} + \oplus_{ad} < 0$

Fig. 2.5. The intensity of the electric field by means of the moving charge against the direction of motion E^{ad}

$v = 0.5c$
$---$ moving
$\underline{\quad}$ stillstanding
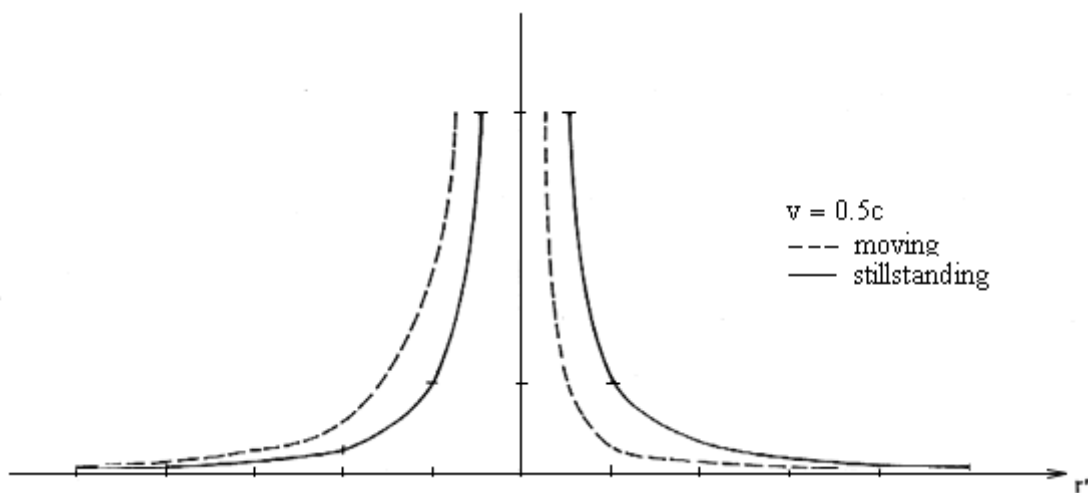
Fig. 2.6. The form of intensity for $v = 0.5c$

The equations (2.10) and (2.19) are placeable by common equation

$$E_{mov} = E_{still}\left(1 - \frac{v}{c}\cos\vartheta\right)^2$$ (2.20)

where ϑ is the angle between the direction of the charge motion (the speed v) and the direction of propagation of intensity.

At level xy, the section of the intensity hyperboloid is, for the stillstanding charge, the circle with its centre in the charge, for the moving charge it is the case of all types of Pascal's screw stocks with the charge at the beginning of the coordinates, see figs. 2.7, 2.8, 2.9 and 2.10.
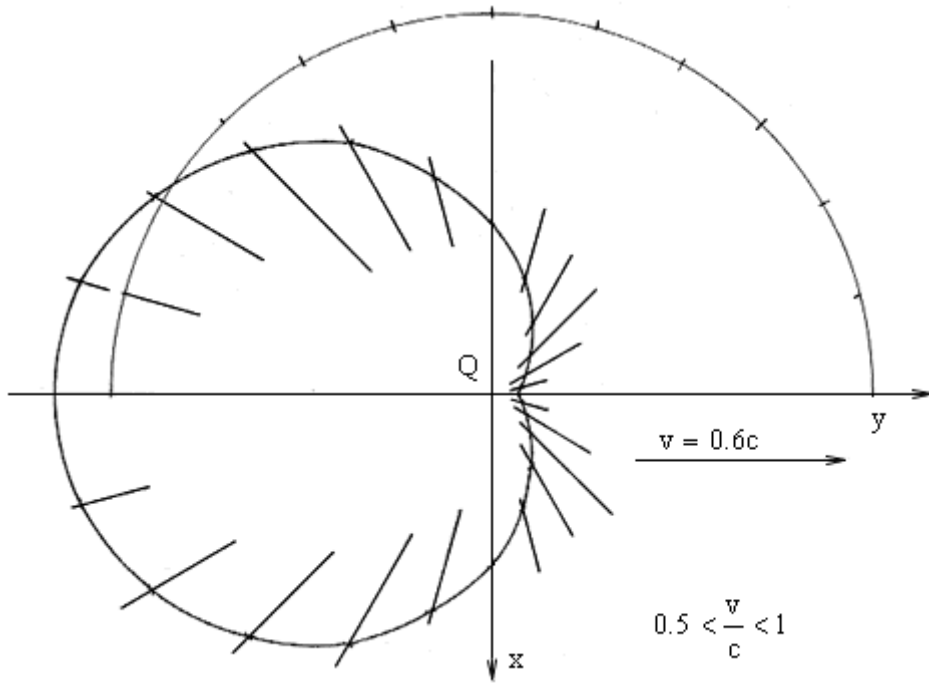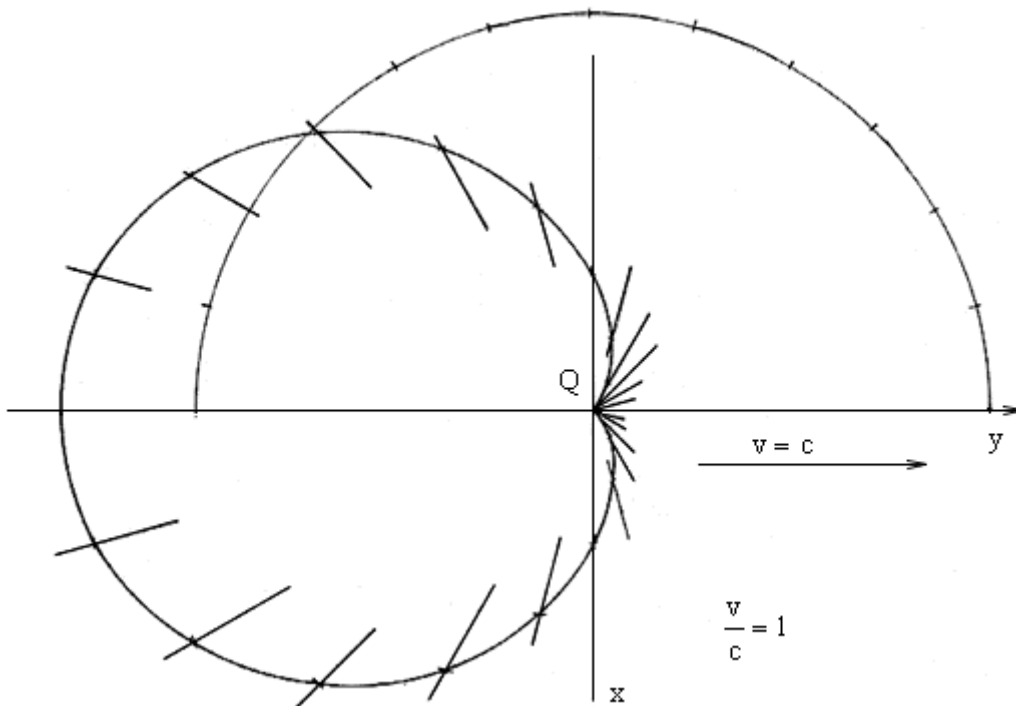
$$v = 0.6c$$

$$0.5 < \frac{v}{c} < 1$$
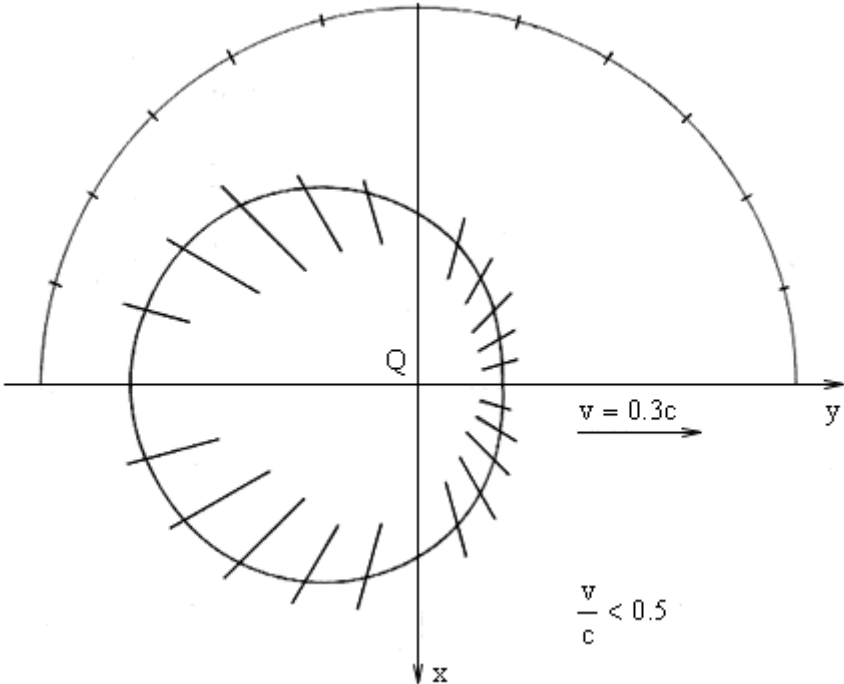
Fig. 2.7, 2.8. At level *(x, y)* section of the "hyperoloid" of the intensity for various speeds of the moving charge have a shape of all types of Pascal's screw stocks with charge at the beginning of the coordinates

$$v = c$$

$$\frac{v}{c} = 1$$

Fig. 2.9, 2.10. At level *(x, y)* section of the "hyperoloid" of the intensity for various speeds of the moving charge have a shape of all types of Pascal's screw stocks with charge at the beginning of the coordinates
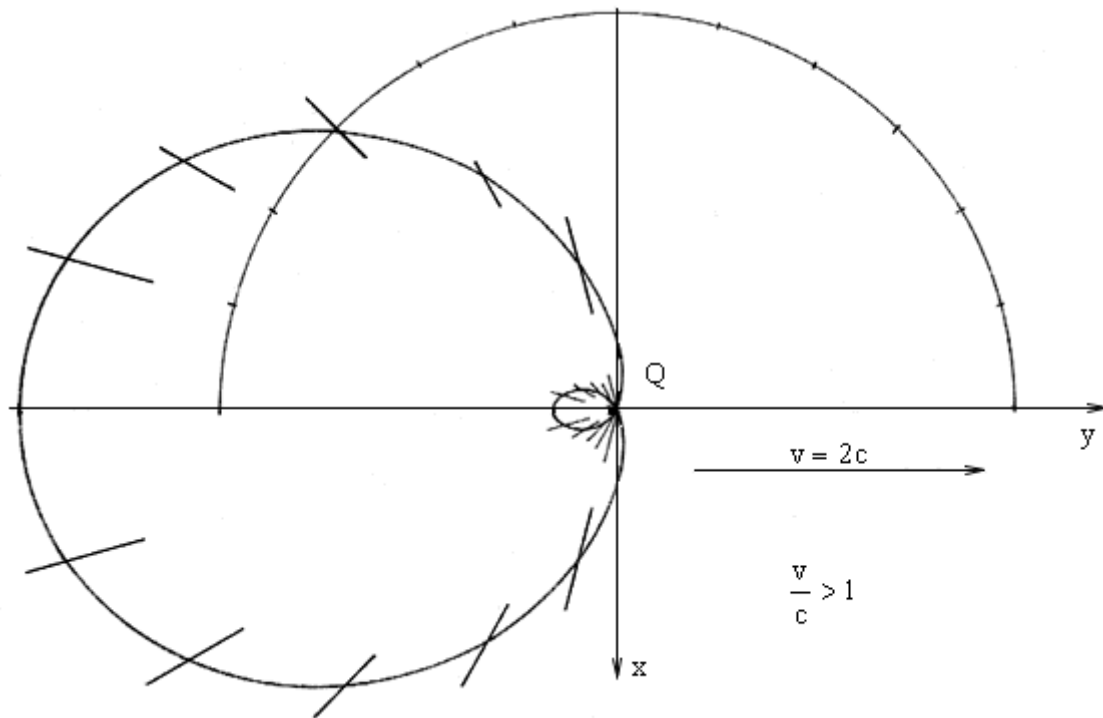
2.1.2 Kaufmann's Experiment

In the period from 1901 to 1906, Kaufmann wrote a number of works, the most coherent of them seems to be [1] : concerning experimental evidence of "the changeability of mass with speed". We shall revalue his experiment and will prove - on the basis of the theory given in the preceeding section 2.1.1 - the subject is the influence of intensity of the moving charge on the magnitude of the deviation of influence of intensity of the moving charge on the magnitude of the deviation of beta-rays in the crossed electromagnetic field, and not the changeability of mass with speed.

The attempt is done through a short correct description for sake of qualitative examination of the experiment, utilising some of the measured and calculated values given by Kaufmann in [1].

Beta-rays from Ra source, moving at speed $v \in < 0.48c; 0.99c >$ are simultaneously deflected in the crossed electric and magnetic field, see diagram in fig. 2.11.
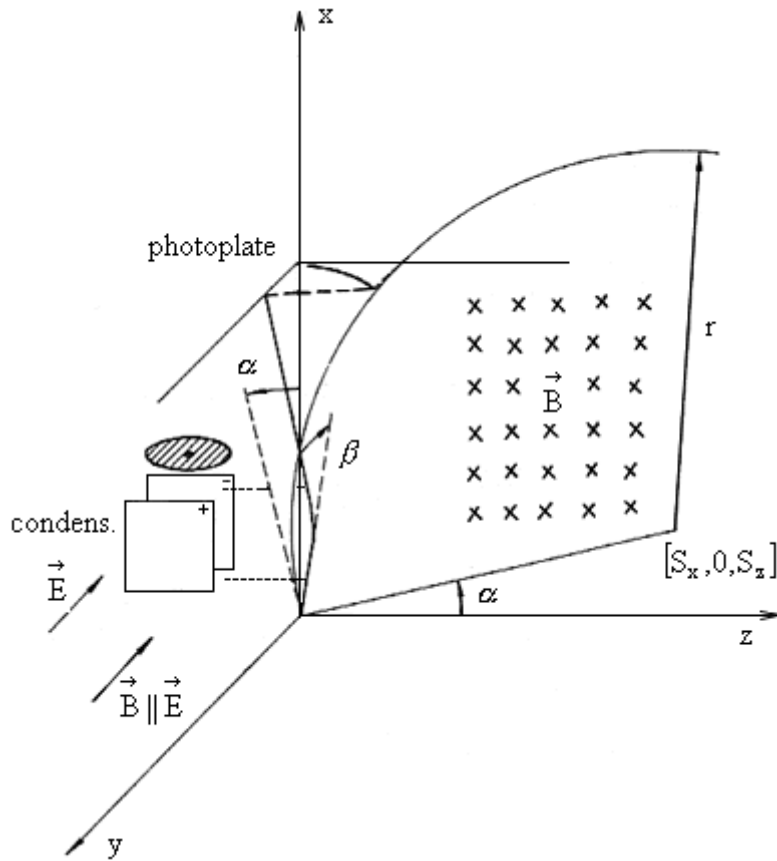
Fig. 2.11. Kaufmann's Experiment - diagram

The device is situated in the evacuated glass vessel. The rays go out from the Ra source, pass the electric screen and create a small spot on a photographic plate.

When the electric field will be created on the condenser plates PP', the additional stripe in the y- direction will arise apart from the non-diverting middle spot close to 0 (consisting of gamma and little diverting $\alpha-rays$).

When the entire device is situated between the poles of the U-shaped magnet (with the electric field switched off), the stripe will arise in the direction of the axis z.

While at the magnetic field we have the movement of electrons along circles expressed in the following equations

$$(x - S_x)^2 + (z - S_z)^2 = r^2 \qquad (2.21^*)$$

$$S_x = 1.0979 \text{ cm}$$
$$S_{z1} = 65.0608 \text{ cm}$$
$$S_{z2} = 5.8505 \text{ cm}$$
$$r_1 = 65.0684 \text{ cm}$$
were $r_2 = 5.9348 \text{ cm}$

in the electric field we first have the movement along straight line

$$y = -x \operatorname{tg} \beta \tag{2.22*}$$

- electrons are emitted from the source under the angles $\beta \in \langle 1°35', 5° \rangle$ then they move between the condenser plates along the parabola

$$y = (x - 0.246)^2 \frac{e}{m} \frac{E}{2v_0^2 \cos^2 \beta} - x \operatorname{tg} \beta \tag{2.23*}$$

then again along the straight line

$$y = 1.969 \cdot \frac{0.246}{0.270} \operatorname{tg} \beta \tag{2.24*}$$

The points of intersection of straight lines (2.24*) with the level of the photographic spot $x = x'^2 = 3.969$ will give us the deviation y.

The values E used in the calculations

$$E = 205.5 \cdot 10^{10} \quad 328 \cdot 10^{10} \quad 409.5 \cdot 10^{10} \quad (\text{for } v = 0.48c) \tag{2.25*}$$

would give, after substitued into (2.23*) and (2.24*) the deviations
$y = 0.2363 \quad 0.3873 \quad 0.4985$ which are almost four times bigger as those acquired (y_b) by Kaufmann.

Considering out theory on $E_{mov}^{id,ad}$ and the values (2.25*) be multiplied by $\left(1 - \frac{v}{c}\right)^2$ we achieve deviations identical with the results of Kaufmann's experiment, see table 1. Thus the theory under 2.1.1 concerning the intensity of the moving charge of the electric field may be regarded experimentally confirmed.

Tab. 1.

		1631 V	2603 V	3250 V
y_b[cm]		0.1236	0.1493	0.1664
		0.1119	0.1302	0.1616
β		2°	3°11'	4°30''
y[cm]		0.23626	0.3873	0.4985
y_T[cm]		0.0629	0.09947	0.12557

[1]Annalen der Physik, Vierte Folge, Band 19, Leipzig 1906, Verlag von Johann Ambrosius Barth, page 487-552

2.1.3 The electromagnetic field. Maswell's equations.

Let us take the equation (2.20) in the vector form:

$$E_{mov} = E_{still}\left(1 - \frac{v}{c}\cos\vartheta\right)^2 \tag{2.21}$$

The force acting on the moving electric charge is

$$F = QE_{mov} = QE_{still}\left(1 - \frac{v}{c}\cos\vartheta\right)^2 = QE_{still}\left(1 + \frac{v}{c}\sin\phi\right)^2 =$$
$$= QE_{still} + QE_{still}\left(2 + \frac{v}{c}\sin\phi\right)\frac{v}{c}\sin\phi \tag{2.22}$$

whereby $-\cos\beta = \sin\phi$

It is known, in line with the classical theory, that a magnetic field is created by the moving charges and electric currents. The result is that the moving charge creates its own magnetic field of induction B_q. It continues in this field in motion. According to Lorentz, the force acting on the moving charge in the electromagnetic field at speed v in the magnetic field of induction B and in the electric field of the following intensity E it is valid:

$$F = F_{el} + F_m = QE + Q(v \times B) \tag{2.23}$$

Let us compare the equations (2.22) and (2.23).

Intensity E of the electric field according to Lorentz equals to our intensity E_{still}.

As the forces acting on the acting on the moving charge are equal, it must be valid

$$E_{still}\left(2 + \frac{v}{c}\sin\phi\right)\frac{v}{c}\sin\phi = v \times B \tag{2.24}$$

With regard to the fact that both the direction E_{still} and the direction of the vector $v \times B$ are identical, for the absolute values it is possible to write

$$E_{still}\left(2+\frac{v}{c}\sin\phi\right)\frac{v}{c}\sin\phi = v\cdot B\cdot\sin\phi$$

i.e.

$$B = \frac{E_{still}}{c}\left(2+\frac{v}{c}\sin\phi\right) \tag{2.25}$$

This means that the charge moving at speed **v** creates around itself its own magnetic field of

the following induction: $B = \frac{E_{still}}{c}\left(2+\frac{v}{c}\sin\phi\right)$

while the vectorial equation is in force

$$\mathbf{v}\times\mathbf{B} = \mathbf{E}_{mov} - \mathbf{E}_{still} \tag{2.26}$$

Where from

$$\mathbf{E}_{mov} = \mathbf{E}_{still} + \mathbf{v}\times\mathbf{B} \tag{2.27}$$

The intensity of moving charge comprises in itself also the magnetic field induction **B** created by the charge moving at speed v.

Based on (2.27), Maxwell's equations which are always valid (not only in static) acquire the form:

1.

$$\nabla\mathbf{E}_{mov} = \nabla\left(\mathbf{E}_{still}+\mathbf{v}\times\mathbf{B}\right) = \nabla\mathbf{E}_{still}+\nabla\left(\mathbf{v}\times\mathbf{B}\right) = \frac{\rho}{\varepsilon_0} \qquad (\text{...Gauss law}) \tag{2.28}$$

as

$$\nabla\left(\mathbf{v}\times\mathbf{B}\right) = 0 \tag{2.29}$$

2.

$$\nabla\mathbf{B} = 0 \qquad\qquad \text{there are no magnetic charges} \tag{2.30}$$

3.

$$\nabla\times\mathbf{E}_{mov} = \nabla\times\left[\mathbf{E}_{still}+\left(\mathbf{v}\times\mathbf{B}\right)\right] = \nabla\times\mathbf{E}_{still}+\nabla\times\left(\mathbf{v}\times\mathbf{B}\right)$$

As in the statics $\nabla\times\mathbf{E}_{still} = 0$

further $\nabla \times (v \times B) = v(\nabla B) - B(\nabla v)$

We use (2.29) and except of constant it is valid

$$\nabla \cdot v = \frac{\partial}{\partial t} \qquad (2.31)$$

Then

$$\nabla \times E_{mov} = -\frac{\partial B}{\partial t} \qquad (\text{...Faraday's law}) \qquad (2.32)$$

4. Amper's law in statics

$$c^2 \nabla \times B_{stat} = \frac{j}{\varepsilon_0} \qquad (2.33)$$

$$B_{dyn} = B_{stat} + (B_{dyn} - B_{stat}) = B_{stat} + B_Q$$

Total magnetic field

$$B_{dyn} = B_{stat} + B_Q \qquad (2.34)$$

where

$$B_Q = B_{dyn} - B_{stat} \qquad (2.35)$$

Let's calculate $c^2 \nabla \times B_{dyn} = c^2 \nabla \times B_{stat} + c^2 \nabla \times B_Q$

On the own magnetic field B_Q of the charge moving at speed v it is possible to write:

$$c^2 B_Q = (v \times B_Q) \times v \qquad (2.36)$$

$$\nabla \times [(v \times B_Q) \times v] = (v \times B_Q)(\nabla v) - v[\nabla(v \times B_Q)] =$$
$$= \frac{\partial(v \times B_Q)}{\partial t} = \frac{\partial(E_{mov} - E_{still})}{\partial t} = \frac{\partial E_{mov}}{\partial t}$$

because (2.29),(2.31) and (2.27) are valid and because

$$\frac{\partial E_{still}}{\partial t} = 0 \qquad (2.37)$$

i.e. $$c^2 \nabla \times B_{dyn} = \frac{j}{\varepsilon_0} + \frac{\partial E_{mov}}{\partial t} \qquad (2.38)$$

what represents the 4th Maxwell's equation.

3.Kinetic energy of electron (proton) $T_{kin\ id} = mc^2\ [ln\ |1-v/c| + (v/c)\ /\ (1-v/c)\ ]$ in direction of motion of electron (proton), where v is velocity of electron (proton) and m is mass of electron (proton). It's own kinetic energy of the electron (proton).

Kinetic energy of electron (proton) $T_{kin\ ad} = mc^2\ [ln\ |1+v/c| - (v/c)\ /\ (1+v/c)\ ]$ against direction of motion of electron (proton), where v is velocity of electron (proton) and m is mass of electron (proton. Represents the wave energy, which creates electron (proton) in transmision medium.

Electron (proton) as a source exists if and only if repeatedly speeds up and slows down its movement in source along ellipse (when blinks).

Electron (proton) as a source, creates in the transmission medium, electromagnetic wave, that spreads in all directions with the velocity $c\ /\ n$,

regardless of the source movement, where n is the refractive index of the transmission medium.

In other words, electron (proton) , which is the source, can not be a transmission medium and remain in it.

The main characteristic of the waves is the energy transfer through a transmission medium.

And no transfer of the substance (= of real electron,proton) from the source to the transmission medium.

Wave exists if and only if there is not a source.

2.2. The non-linear form of the interference field

Until recently it has been assumed that the shape of the interference field is "linear". The corresponding fraction of the shift of the interference fringes is directly proportional to the corresponding part of the wave length. If, for example, the distance of two interference fringes is divided into 100 divisions and the shift of 23 divisions is detected, we thus assume that the change occured over a length of $\dfrac{23}{100} \cdot \dfrac{\lambda}{2}$.

In other words, the shift of the fringes is considered to be equivalent to the change of length. This view corresponds to the linear form of the interference field, see fig. 2.12.
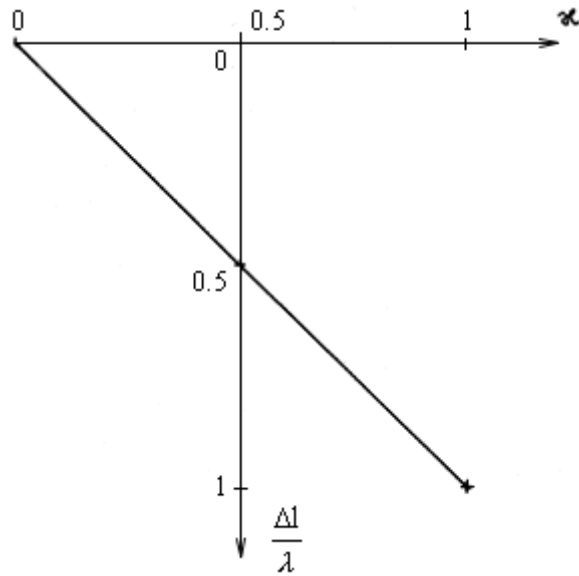
Fig. 2.12. The "linear" form of the interference field

What justifies us our assumption that the interference field is linear? Is the assumption correct?

In physics we are used to picture the experimental results through curves which are not "saw-tooth" as is the case with the linear interference field, but which have a nicely rounded shape. Let us replace the "saw-tooth" linear interference field by some rounded non-linear interference field.

Let us choose sinusoides or semi-circles instead of the sawtooth abscissas. In case of semi-circles according to fig. 2.13 we get:
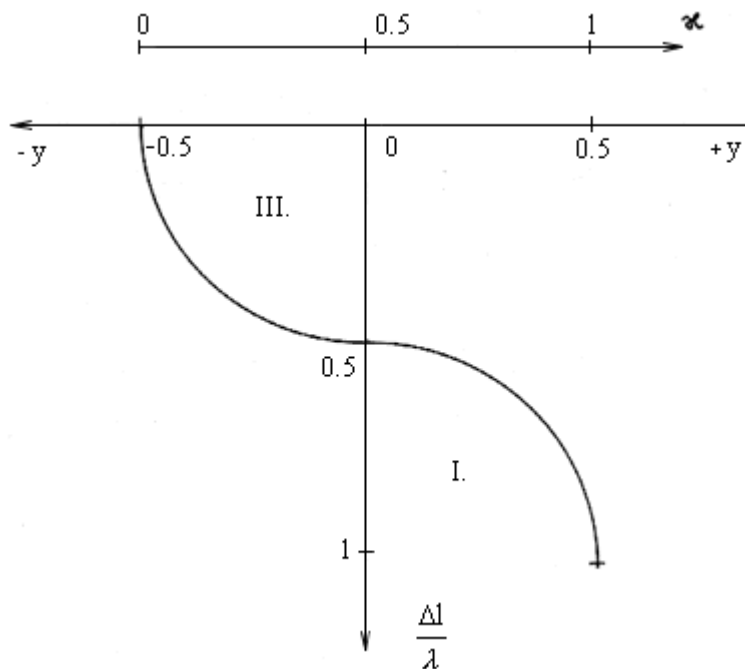

Fig. 2.13. The non-linear form of the interference field

in the 3rd quadrant: $y^2 + \left(\dfrac{\Delta l}{\lambda}\right)^2 = 0.5^2$, as

$$\kappa - 0.5 = y \qquad \kappa^2 - \kappa + 0.5^2 + \left(\frac{\Delta l}{\lambda}\right)^2 = 0.5^2$$

$$\kappa_{12} = 0.5 \pm \sqrt{\left[0.25 - \left(\frac{\Delta l}{\lambda}\right)^2\right]} \tag{2.46}$$

In the shifted 1st quadrant

$$(\kappa - 0.5)^2 + \left(\frac{\Delta l}{\lambda} + 1\right)^2 = 0.5^2$$

$$\kappa_{12} = 0.5 \pm \sqrt{\left[0.25 - \left(\frac{\Delta l}{\lambda} + 1\right)^2\right]} \tag{2.47}$$

2.2.1. Fizeau's Experiment

Let us revalue the results of the Fizeau's experiment from the aspect of non-linear interference field. Fizeau [3] used light of wave length $\lambda = 0.526\ \mu m$, two tubes, each L=1.4875 m long in which water flowed at speed u=7.059 m/s. As the experiment is generally known, we shall not describe it in detail. We shall only reassess its results.

The relation $\dfrac{\Delta l}{\lambda} = 0.4103$ corresponds to equal values of the shift of fringe κ supposing the interference field to be linear. In reality the experimentally observed values from the interval ranged from 0.167 to 0.307 in the average of $\bar{\kappa} = 0.23016$. That was explained by Fresnel's theory of partial drag of ether with the drag coefficient α. Should we consider the non-linear form of the interference field, then according to (2.46) we get

$$\kappa = 0.5 \pm \sqrt{\left(0.25 - 0.41^2\right)} = 0.22$$

which is in line with the experimentally observed mean value $\bar{\kappa}$. We do not need any coefficient α. Fizeau's experiment confirms also that the interference field has a non-linear form.

2.2.2. Harres's Experiment

Harres [4] used two wavelengths of light

$$\lambda_{625} = 0.625\,\mu m \qquad \lambda_{535} = 0.535\,\mu m$$

which were passing through ten firmly fastened prisms in a rotating apparatus at speed 400-600 revolutions/min. According to [4], if the drag coefficient $x = \alpha$ is not included

$$\frac{\Delta l}{\lambda} = \frac{200\,n^2\pi}{z_m\lambda c}\,0.20409 + \frac{200\,\pi}{z_m\lambda c}\,0.00188$$

were $z_m = 0.99727z$, z - is the number of sideral time seconds required by the apparatus to make 50 revolutions.

After the arrangement

$$\frac{\Delta l}{\lambda_{625}} = \frac{1.70148214}{z} \tag{2.48}$$

$$\frac{\Delta l}{\lambda_{535}} = \frac{2.00028242}{z} \tag{2.49}$$

The average value $\bar{z} = 5.11$ (tab. 1) after substitution in (2.48) gives

$$\frac{\Delta l}{\lambda_{625}} = 0.333$$

Substituing $\dfrac{\Delta l}{\lambda}$ to (2.46) we get

$$\kappa = 0.5 - 0.3755 = 0.1245$$

According to the experiment $\kappa_{Harres} = 0.132$ is again in line with the theory of the non-linear interference field. The comparison of Harres's experimental values that do not include the drag coefficient α with both linear and non-linear form of the interference field, as well as the results of Fizeau's experiment, are shown in figs. (2.14)-(2.21).

Fig. 2.14.-2.21. The comparison of Harre's experimental values which do not comprise the drag coefficient with both linear and non-linear form of the interference field, as well as the results of Fizeau's experiment.
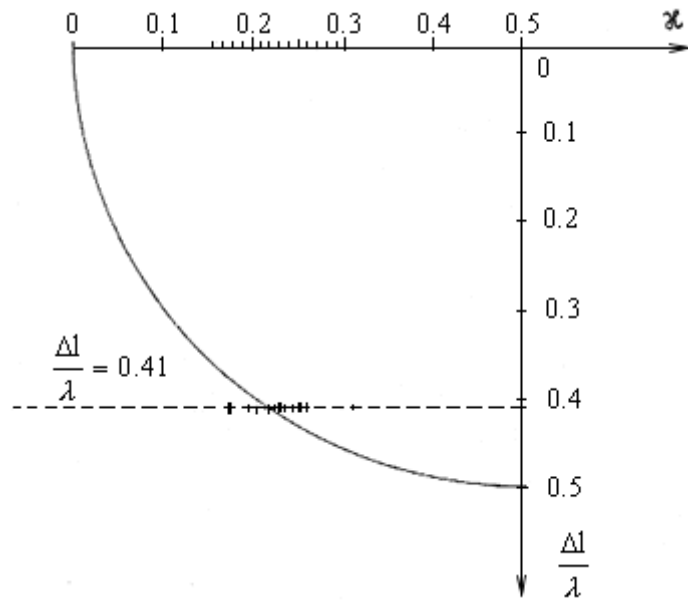
$$\frac{\Delta l}{\lambda} = 0.41$$

Fig. 2.14. Fizeau's experiment [3] p. 392

$$\frac{\Delta l}{\lambda_{625}} = \frac{1.70148214}{z}$$

Fig. 2.15. [4] Tab. 1., 1. Reihe

$$\frac{\Delta l}{\lambda_{625}} = \frac{1.70148214}{z}$$

Fig. 2.16. [4] Tab. 1., 2. Reihe

$$\frac{\Delta l}{\lambda_{625}} = \frac{1.70148214}{z}$$

Fig. 2.17. [4] Tab. 1., 3. Reihe

$$\frac{\Delta l}{\lambda_{625}} = \frac{1.70148214}{z}$$

Fig. 2.18. [4] Tab. 1., 4. Reihe

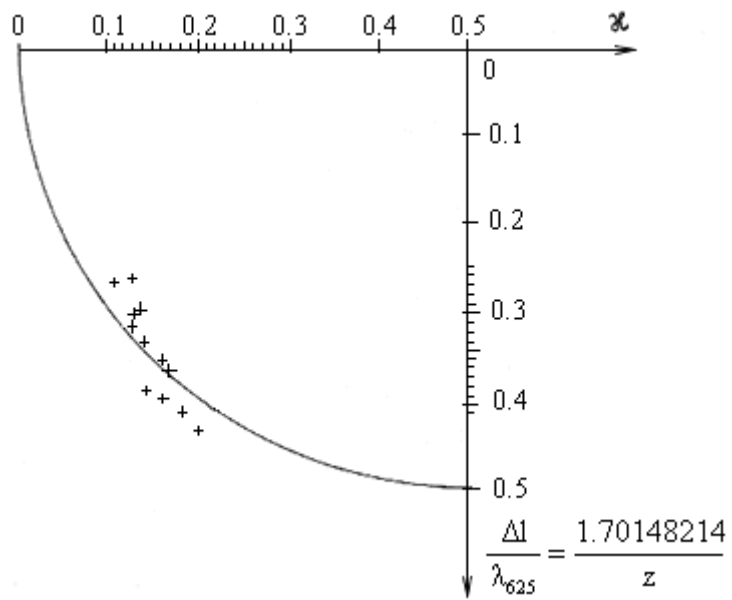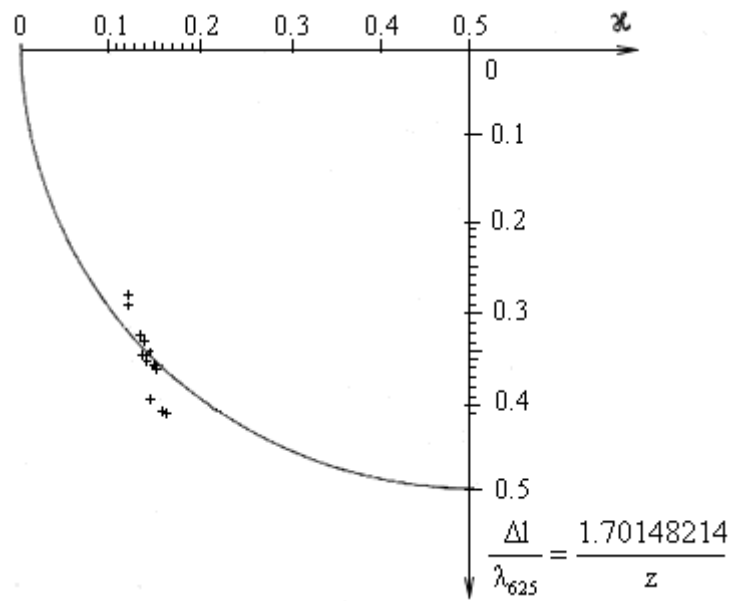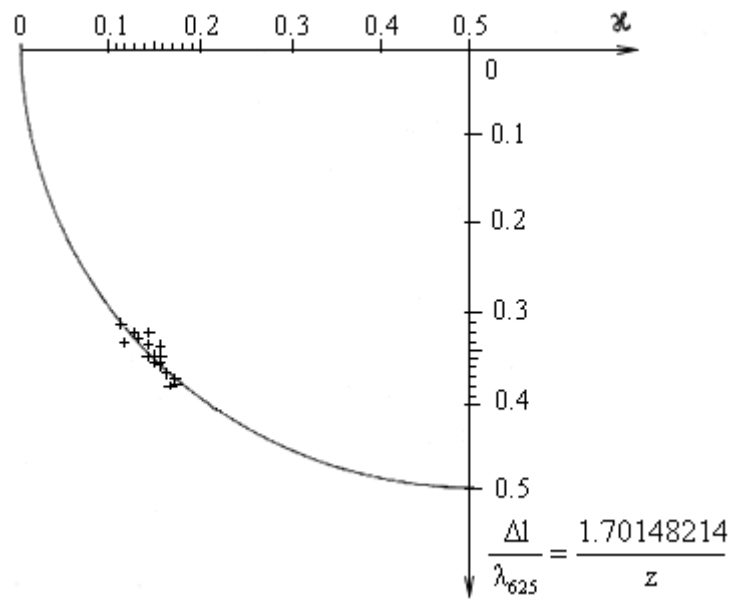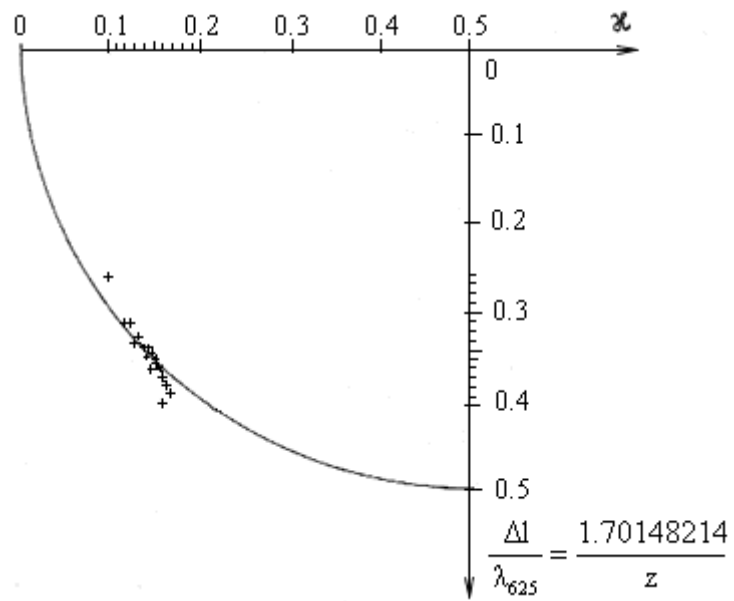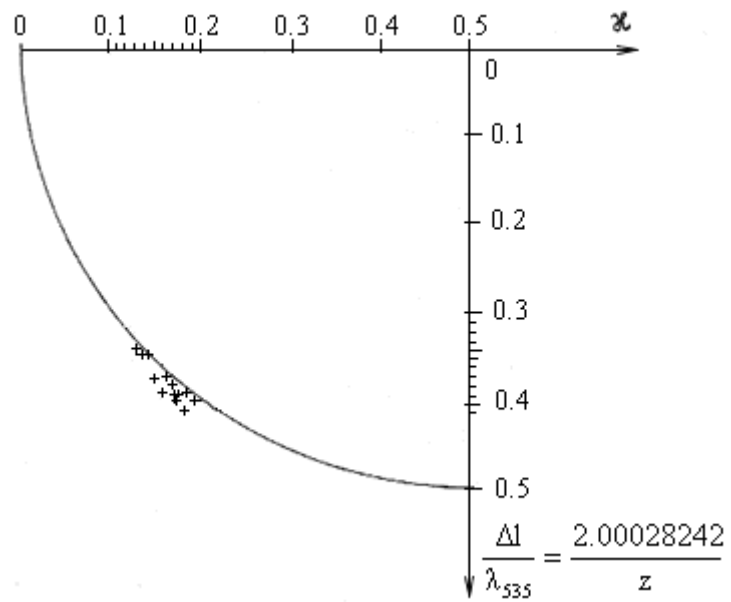$$\frac{\Delta l}{\lambda_{535}} = \frac{2.00028242}{z}$$

Fig. 2.19. [4] Tab. 2., 1. Reihe
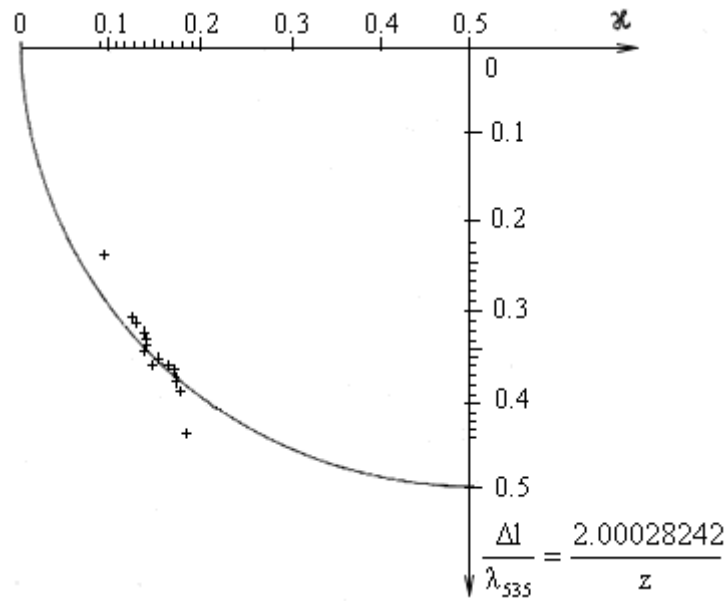
Fig. 2.20. [4] Tab. 2., 2. Reihe
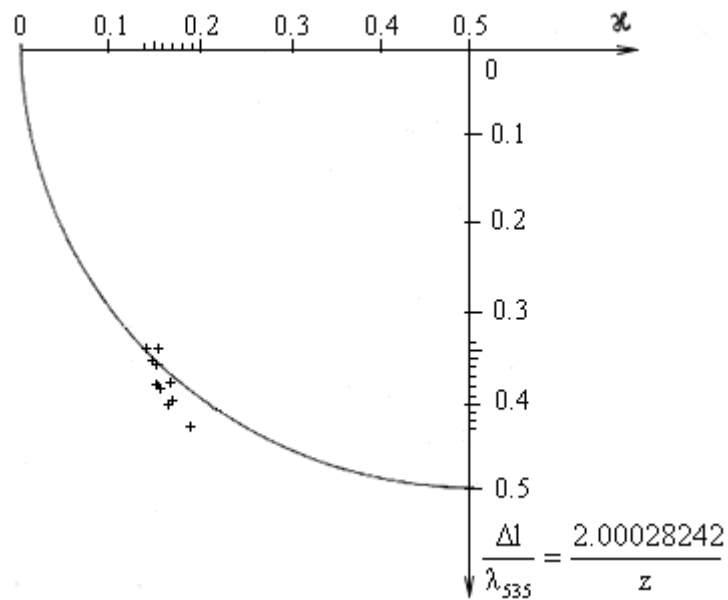
Fig. 2.21. [4] Tab. 2., 3. Reihe

This is simultaneously proves that the drag coefficient always equals one and the interference field has a non-linear form. Consequently, the interference fields are identical only for the shift of the interference fringes about 0 and/or 100 and 50 divisions.

3. Calculation of the kinetic energy of a body moving at the velocity of *v*

For the sake of simplicity let us consider for instance the gravitational field of the Earth. Analogically to (2.20), for the intensity of the gravitational field one could write:

$$g_{mov} = g_{still}\left(1 - \frac{v}{c}\cos\vartheta\right)^2$$

(3.1)

Let us consider the physical processes in which kinetic energy is transformed into potential one and potential energy is transformed into kinetic one. There is a state in which the potential energy equals total energy of the body (while the kinetic energy equals zero) and the state in which kinetic energy equals the total energy of the body (while the potential energy equals zero). These extreme will help us to calculate the kinetic energy of body. For the potential energy we have

$$dW_p = mg_{still}\,dh$$

(3.2)

By integrating and utilizing of the relation (3.1) we have

$$T_{kin} = \int dW_p = \int_0^h mg_{still}\,dh = \int_0^h m\frac{g_{mov}}{\left(1 - \frac{v}{c}\cos\vartheta\right)^2}\,dh$$

By substituting $g_{mov} = \frac{dv}{dt}, \ \frac{dh}{dt} = v$

we get

$$T_{kin} = m\int_0^v \frac{v\,dv}{\left(1 - \frac{v}{c}\cos\vartheta\right)^2}$$

(3.3)

Solving by substitution $1 - \frac{v}{c}\cos\vartheta = z$

we get

$$T_{kin} = \frac{mc^2}{\cos^2\vartheta}\left[\ln\left|1 - \frac{v}{c}\cos\vartheta\right| + \frac{\frac{v}{c}\cos\vartheta}{1 - \frac{v}{c}\cos\vartheta}\right]$$

(3.4)

while ϑ isn't $\frac{\pi}{2}, \ \frac{3\pi}{2}$

For $\vartheta = 0°$ we have the kinetic energy in the direction of motion

$$T_{kin_{id}} = mc^2 \left[\ln\left|1 - \frac{v}{c}\right| + \frac{\dfrac{v}{c}}{1 - \dfrac{v}{c}} \right] \qquad (3.5)$$

For $\vartheta = 180°$ we have the kinetic energy against the direction of motion

$$T_{kin_{ad}} = mc^2 \left[\ln\left|1 + \frac{v}{c}\right| - \frac{\dfrac{v}{c}}{1 + \dfrac{v}{c}} \right] \qquad (3.6)$$

If $\quad 0 < \dfrac{v}{c} = x \ll 1 \quad$ (i.e. $v \ll c$)

utilizing the series $\quad \begin{array}{c} \ln(1 \pm x) \\ (1 \pm x)^{-1} \end{array}$

the equations (3.5) and (3.6) will be changed in the equation $\quad T_{kin_{id}} = T_{kin_{ad}} = \dfrac{1}{2}mv^2$

Kinetic energy of electron (proton) $T_{kin\ id} = mc^2 [\ln |1-v/c| + (v/c)/(1-v/c)]$ in direction of motion of electron (proton), where v is velocity of electron (proton) and m is mass of electron (proton). It's own kinetic energy of the electron (proton).

Kinetic energy of electron (proton) $T_{kin\ ad} = mc^2 [\ln |1+v/c| - (v/c)/(1+v/c)]$ against direction of motion of electron (proton), where v is velocity of electron (proton) and m is mass of electron (proton. Represents the wave energy, which creates electron (proton) in transmision medium.

Electron (proton) as a source exists if and only if repeatedly speeds up and slows down its movement in source along ellipse (when blinks).

Electron (proton) as a source, creates in the transmission medium, electromagnetic wave, that spreads in all directions with the velocity c / n,

regardless of the source movement, where n is the refractive index of the transmission medium.

In other words, electron (proton) , which is the source, can not be a transmission medium and remain in it.

The main characteristic of the waves is the energy transfer through a transmission medium.

And no transfer of the substance (= of real electron,proton) from the source to the transmission medium.

Wave exists if and only if there is not a source.

Tab. 2. Calculation of the kinetic energy T_{kin} of a body moving at the velocity of v

v/c	Vlcek´s theory $T_{kin\,ad} =$ $mc^2[ln\ |1+v/c|- (v/c)/(1+v/c)]$	Vlcek´s theory $T_{kin\,id} =$ $mc^2[ln\ |1-v/c|+ (v/c)/(1-v/c)]$	Einstein´s theory T_{kin}
0.1	$0.00439\ mc^2$	$0.0057\ mc^2$	$0.0050\ m\,c^2$
0.2	$0.0156\ mc^2$	$0.0268\ mc^2$	$0.0200\ m\,c^2$
0.3	$0.0316\ mc^2$	$0.0719\ mc^2$	$0.0480\ m\,c^2$
0.4	$0.0508\ mc^2$	$0.1558\ mc^2$	$0.0910\ m\,c^2$
0.5	$0.0722\ mc^2$	$0.3068\ mc^2$	$0.1550\ m\,c^2$
0.6	$0.0950\ mc^2$	$0.5837\ mc^2$	$0.2500\ m\,c^2$
0.7	$0.1174\ mc^2$	$1.1293\ mc^2$	$0.4010\ m\,c^2$
0.8	$0.1434\ mc^2$	$2.3905\ mc^2$	$0.6670\ m\,c^2$
0.9	$0.1680\ mc^2$	$6.6974\ mc^2$	$1.2930\ m\,c^2$
0.99	$0.1906\ mc^2$	$94.3948\ mc^2$	$6.9200\ m\,c^2$
1.0	$0.1931\ mc^2$	infinite	infinite

Direct measurement of the speed in the experiments Kirchner[7], [8], Perry, Chaffee [9]

for v/c = 0.08-0.27.

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