Einstein's theory of relativity can not explain ...

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Abstract

Einstein's theory of relativity can not explain ...

1. Movement principles of the fast-spinning *pulsars,*

2. ***Nuclear Fusion ,***

3. Wave - Particle Duality as Kinetic Energy Against and In Direction of Motion

4. *the 4th Maxwell's equation,*

5. Lorentz equals without the help of Space-Time,

6.Confinement of quarks

7. ***Great Table of Elementary Particles***

8. ***Spectral line Hα***

9. Neutrino Oscillations

10. *Form of the interference field must be non-linear.*

11.Form of Intensity of the Moving Charge Electric Field must be asymmetrical.

12.Kinetic energy of a charge moving at the velocity of v has two different values:
Kinetic energy *against direction of motion* ***as wave***

$$T_{kin\ ad} = mc^2[\ln|1+v/c| - (v/c)/(1+v/c)]$$

Kinetic energy *in direction of motion* ***as particle***

$$T_{kin\ id} = mc^2[\ln|1-v/c| + (v/c)/(1-v/c)]$$

13. ***Yukawa potential***

1. Introduction

Through the work of Max Planck, Albert Einstein, Louis de Broglie, Arthur Compton, Niels Bohr, and many others, current scientific theory holds that all particles also have a wave nature (and vice versa).[1] This phenomenon has been verified not only for elementary particles, but also for compound particles like atoms and even molecules. For macroscopic particles, because of their extremely short wavelengths, wave properties usually cannot be detected.[2] Wave–particle duality is an ongoing conundrum in modern physics. Most physicists accept wave-particle duality as the best explanation for a broad range of observed phenomena; however, it is not without controversy.

Philosophical criticism

The consequences of relativity, such as the change of ordinary concepts of space and time, as well as the introduction of non-Euclidean geometry in general relativity, were criticized by some philosophers of different philosophical schools. It was characteristic for many philosophical critics that they had insufficient knowledge of the mathematical and formal basis of relativity, which lead to the criticisms often missing the heart of the matter. For example, relativity was misinterpreted as some form of relativism. However, this is misleading as it was emphasized by Einstein or Planck. On one hand it's true that space and time became relative, and the inertial frames of reference are handled on equal footing. On the other hand the theory makes natural laws invariant - examples are the constancy of the speed of light, or the covariance of Maxwell's equations. Consequently, Felix Klein (1910) called it the "invariant theory of the Lorentz group" instead of relativity theory, and Einstein (who reportedly used expressions like "absolute theory") sympathized with this expression as well.

Critical responses to relativity (in German speaking countries) were also expressed by proponents of Neo-Kantianism (Paul Natorp, Bruno Bauch, etc.), and Phenomenology (Oskar Becker, Moritz Geiger etc.). While some of them only rejected the philosophical consequences, others rejected also the physical consequences of the theory. Einstein was criticized for violating Immanuel Kant's categoric scheme, *i.e.*, it was claimed that space-time curvature caused by matter and energy is impossible, since matter and energy already require the concepts of space and time. Also the three-dimensionality of space, Euclidean geometry, and the existence of absolute simultaneity was claimed to be necessary for the understanding of the world - none of them can possibly be altered by empirical findings. However, Hentschel (1990) and others criticized these arguments as "Strategies of Immunization". By moving all those concepts into a metaphysical area, any form of criticism of Kantianism would be prevented. Additionally, he argued that also Kant's philosophy is the product of his time, *i.e.* Kant used Newton's theories as the basis of many of his philosophical thoughts. Therefore, other Kantians like Ernst Cassirer or Hans Reichenbach (1920), tried to modify Kant's philosophy. Subsequently, Reichenbach rejected Kantianism at all and became a proponent of logical positivism.

Based on Henri Poincaré's conventionalism, philosophers such as Pierre Duhem (1914) or Hugo Dingler (1920) argued that the classical concepts of space, time, and geometry were, and will always be, the most convenient expressions in natural science, therefore the concepts of relativity cannot be correct. This was criticized by proponents of logical positivism such as Moritz Schlick, Rudolf Carnap, or Reichenbach. They argued that Poincaré's conventionalism could be modified, as to bring it into accord with relativity. Although it is true that the basic assumptions of Newtonian mechanics are simpler, it can only be brought into accord with modern experiments by inventing auxiliary hypotheses. On the other hand, relativity doesn't need such hypotheses, thus from a conceptual viewpoint, relativity is in fact simpler than Newtonian mechanics.

Some proponents of Philosophy of Life, Vitalism, Critical realism (in German speaking countries) argued that there is a fundamental difference between physical, biological and psychological phenomena. For example, Henri Bergson (1921), who otherwise was a proponent of special relativity, argued that time dilation cannot be applied to biological organisms, therefore he denied the relativistic solution of the twin paradox. However, those claims were rejected by Paul Langevin, André Metz and others. Biological organisms consist of physical processes, so there is no reason to assume that they are not subject to relativistic effects like time dilation.

Based on the philosophy of Fictionalism, the philosopher Oskar Kraus (1921) and others claimed that the foundations of relativity were only fictitious and even self-contradictory. Examples were the constancy of the speed of light, time dilation, length contraction. These effects appear to be mathematically consistent as a whole, but in reality they allegedly are not true. Yet, this view was immediately rejected. The foundations of relativity (such as the equivalence principle or the relativity principle) are not fictitious, but based on experimental results. Also, effects like constancy of the speed of light and relativity of simultaneity are not contradictory, but complementary to one another.

Academic criticism

Some academic scientists, especially experimental physicists such as the Nobel laureates Philipp Lenard and Johannes Stark, as well as Ernst Gehrcke, Stjepan Mohorovičić, Rudolf Tomaschek and others criticized the increasing mathematization of modern physics, especially in the form of relativity theory and quantum mechanics. It was seen as a tendency to abstract theory building, connected with the loss of "common sense". In fact, relativity was the first theory, in which the inadequacy of the "illustrative" classical physics was clearly demonstrated. The critics ignored these developments and tried to revitalize older theories, such as aether drag models or emission theories (see "Alternative Theories"). However, those qualitative models were never sufficiently advanced to compete with the success of the precise experimental predictions and explanatory powers of the modern theories. Additionally, there was also a great rivalry between experimental and theoretical physicists, as regards the professorial activities and the occupation of chairs at German universities. The opinions clashed at the "Bad Nauheim debate" in 1920 between Einstein and Lenard, which attracted much attention in the public

In the "Bad Nauheim Debate" (1920) between Einstein and Philipp Lenard, the latter stated the following objections: He criticized the lack of "illustrativeness" of relativity, a condition that allegedly can only be met by an aether theory. Einstein responded that the content of "illustrativeness" or "common sense" has changed in time, so it cannot be used as a criterion for the validity of a theory. Lenard also argued, that Einstein reintroduced the aether in general relativity. This was refuted by Hermann Weyl - although Einstein used that expression in 1920, he simply referred to the fact that in general relativity, space possesses properties that influences matter and *vice versa*. However, no "substance" with a state motion (as the aether in the older sense) exists in general relativity. Lenard also argued, that general relativity admits of the existence of superluminal velocities. For example, in a reference frame in which the Earth is at rest, the distant points of the whole universe are rotating around Earth with superluminal velocities. However, as been pointed out by Weyl, it's not possible to handle a rotating extended system as a rigid body (neither in special nor in general relativity) - so the signal velocity of an object never exceeds the speed of light. Another issue (that was raised by both Lenard and Gustav Mie) concerns the existence of "fictitious" gravitational fields, which were introduced by Einstein within accelerated frames to guarantee their equivalence to frames in which gravitational fields exist. Lenard and Mie argued, that only forces can exist that are proportional to real existing masses, while the gravitational field in an accelerating frame of reference has no physical meaning, *i.e.* the relativity principle can only be valid for mass proportional forces. Einstein responded, that based on Mach's principle one can think of these gravitational fields as induced by the distant masses. In this respect the criticism of Lenard and Mie was partly justified - Mach's principle is not fulfilled in general relativity, as already mentioned above.

Physics in the past formulated at least part of the truth about the physical phenomena.

Some ideas, even if they were doubtful and rejectable, are still valid today:

1. Electron radiates electromagnetic waves if and only if moves with acceleration from the higher Bohr´s energy levels to a lower. In atom, as a source of electromagnetic waves , them it then , when it moves from afnucleum to perinucleum along the ellipse . If the electron moves with decelerated motion, when it absorbs energy , while moving from a lower to a higher energy level, in the direction from perinukleum to afnucleum along the ellipse with of very small eccentricity . Eccentricity of the ellipse is maximal, when electron radiates head of series. Minimal, almost zero, eccentricity corresponds to edge series.

Faulty arguments leveled against classical physics - the electron is moving with acceleration along of a spiral towards the nucleus - we will find in Beiser[19] 5.7 The failure of classical physics , p.120 , Fig.5.12 : " Electron in an atom should be according to classical physics, rapidly converge to the nucleus , because as a result of its acceleration radiates energy."

Because the electron flashes **4,56794e+14** times per second, i.e. emits energy **4,56794e+14** times per second and absorbs energy **4,56794 e+14** times per second (for spectral line **Hα**). Electron creates in the transmission medium, electromagnetic wave **4,56794 e+14** times per second and absorbs energy **4,56794e+14** times per second (for spectral line **Hα**) - Beiser´s argument is unfounded.

Electron is no oscillator. Atóm resembles to the solar system with the same "planets" (electrons) and different distances from the nucleus. Electron in an atom not to skip, but moves continuously with great speed, which increases from the value **0,002717146 c** (in afnucleum) to **0,0027212042 c** (in perinucleum). Then decreases from the value **0,0027212042 c** (in perinucleum) to **0,002717146 c** (in afnucleum) etc.

Changing the speed of the electron is repeated **9,1358772e+14** times per sec. (spectral lines **Hα**).

2. The quantum harmonic oscillator as the quantum-mechanical analog of the classical Planck´s harmonic oscillator we can replace with circulating electron along ellipse around the nucleus of an atom between two Bohr´s energy levels, while electron moving alternately with acceleration and deceleration. Linear harmonic oscillator is only the projection of the real motion of the electrons along the ellipse in the plane perpendicular to the plane of the ellipse.

Linear harmonic oscillator is only the projection of the real motion of the electrons along the ellipse in the plane perpendicular to the plane of the ellipse.

Or more accurately, is only the projection - of rotating ellipses (Sommerlfeld's ellipses around perinucleus) - in a plane perpendicular to the plane of the ellipses.

In quantum mechanics are used so imprecise and imperfect expressions of motion of electrons around the nucleus.

Definition of particle

The main characteristic of the particle :

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

Particle 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, particle, which is the source, can not become the transmission medium and remain in it.

Particle that is the source, remain in the source.

Definition of waves

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

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

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

In the case of electromagnetic waves, see **2.1.3 The electromagnetic field. Maswell's equations, p. 28**[3]

electric field intensity E and the magnetic induction B

are both associated with the intensity of a moving charge

$$\boldsymbol{E}_{\text{mov}} = \boldsymbol{E}_{\text{still}}\left(1-\frac{v}{c}\cos\vartheta\right)^2 = E_{still} + \text{B} \quad \text{where} \quad B = \frac{E_{\text{still}}}{\text{c}}\left(2+\frac{v}{c}\sin\phi\right)$$

The force acting on the moving electric charge is

$$\boldsymbol{F} = Q\boldsymbol{E}_{\text{mov}} = Q\boldsymbol{E}_{\text{still}}\left(1-\frac{v}{c}\cos\vartheta\right)^2 = Q\boldsymbol{E}_{\text{still}}\left(1+\frac{v}{c}\sin\phi\right)^2 =$$

$$= Q\boldsymbol{E}_{\text{still}} + Q\boldsymbol{E}_{\text{still}}\left(2+\frac{v}{c}\sin\phi\right)\frac{v}{c}\sin\phi$$

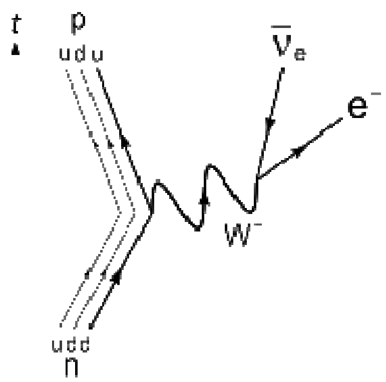
whereby $-\cos\beta = \sin\phi$

$$\boldsymbol{F} = \boldsymbol{F}_{\text{el}} + \boldsymbol{F}_{\text{m}} = Q\boldsymbol{E} + Q(\boldsymbol{v}\times\boldsymbol{B})$$

Neutron, β electron , gamma rays

Gamma rays have frequencies above 10 exahertz (10^{19} Hz), and therefore have energies above 100 keV and wavelength less than 10 picometers, often smaller than an atom. Gamma rays from radioactive decay commonly have energies of a few hundred keV, and almost always less than 10 MeV. The upper limit for such energies is about 20 MeV, and there is effectively no lower limit (they are sometimes classed as x-rays if their frequencies are lower than 10^{19} Hz).

β electron is emitted from the neutron



The Feynman diagram for beta decay of a neutron into a proton , electron , and electron antineutrino via an intermediate heavy W boson.

In the "stable" neutron, electron orbits around the center-of-mass with speed greater than 0,999994c.

If will start beta decay of a neutron, β electron has kinetical energy in direction of motion 80 398 MeV (it is W- boson), proton is moving at a speed 0,023337c, and radiates γ ray.

Planck : 80 398 MeV = h*f , f is frequency circulation electron around center of mass in neutron in center- of- mass coordinate system

Neutron (= Proton and an electron orbiting a common center of mass) Beta decay is mediated by the weak force.

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:

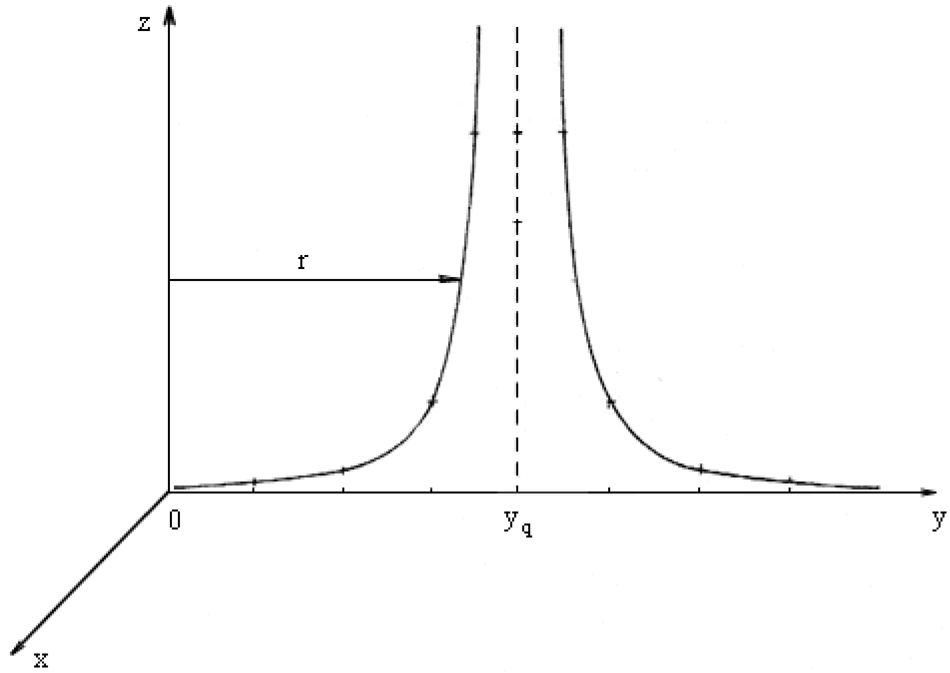


Fig. 2.1. The intensity of the stillstanding charge

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

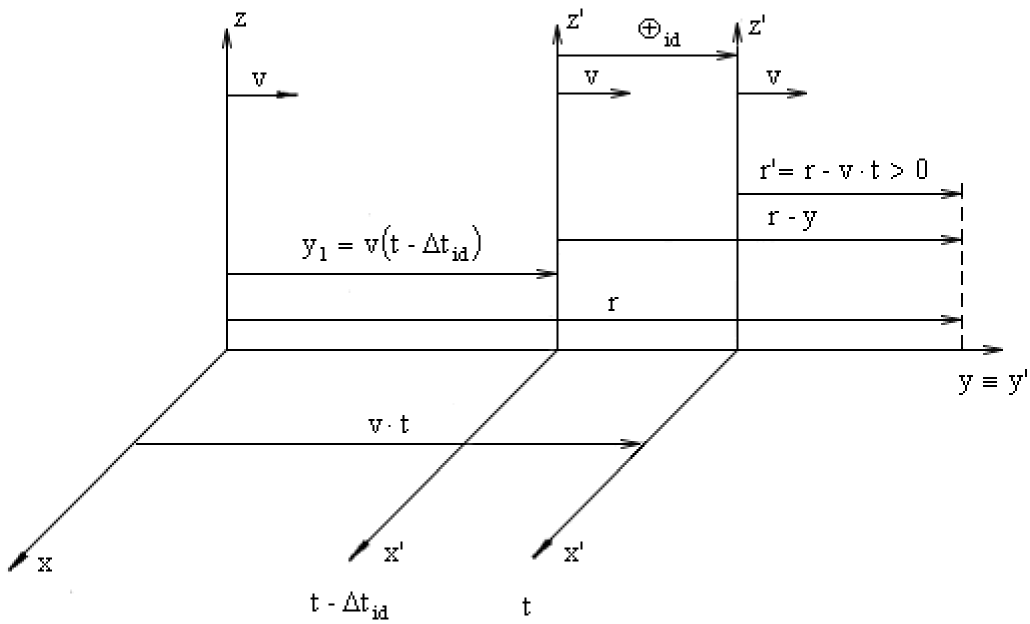


Fig. 2.2. The system of coordinates *(x', y', z')*

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

$$r'=r-vt \tag{2.1}$$

At the moment t_0=0 both systems become identical.

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

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

thus

$$\Delta t_{\mathrm{id}} = \frac{r-vt}{c-v} \tag{2.3}$$

The index $_{\mathrm{id}}$ 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 $t-\Delta t_{\mathrm{id}}$ (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

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

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)

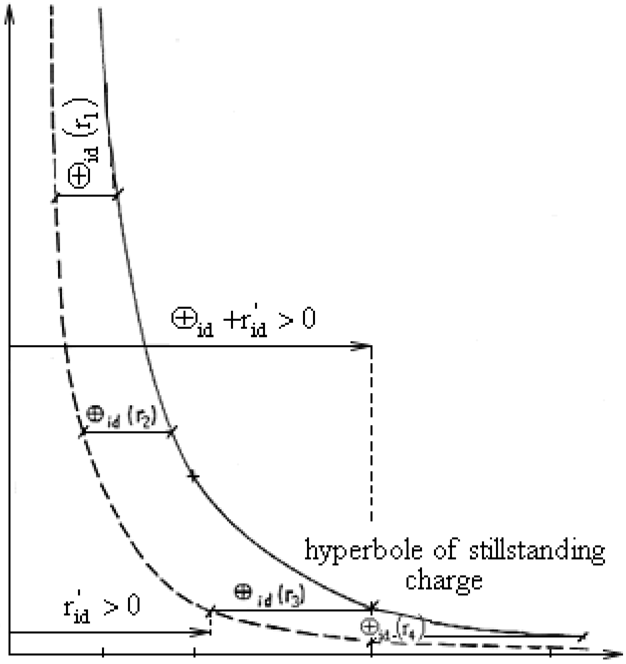


Fig. 2.3. The intensity of the moving charge in the direction of the motion E^{id}_{mov}

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:

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

From the Coulomb's law:

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

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

r are distances of points of hyperbola from the beginning of the non-dashed system, r' are distances of points of hyperbola from the beginning 0' in a dashed system, r, r' are variables of the same function E_{still}(represented by hyperbolas). In other words, there is distance r, that numerically equals $r' + \oplus$ distance. Such distance r' numerically equals $r' - \oplus$ distance, both being variables of the same function E_{still}. 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

$$E_{\mathrm{mov}}^{\mathrm{id}}(r') = \mathrm{const}\,\frac{1}{(r' + \oplus_{\mathrm{id}})^2} \tag{2.8}$$

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

$$\frac{E_{\mathrm{mov}}^{\mathrm{id}}(r')}{E_{\mathrm{still}}(r')} = \frac{r'^2}{(r' + \oplus_{\mathrm{id}})^2} = \left(1 - \frac{v}{c}\right)^2 \tag{2.9}$$

that is

$$E_{\mathrm{mov}}^{\mathrm{id}} = E_{\mathrm{still}}\left(1 - \frac{v}{c}\right)^2 \tag{2.10}$$

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 $_{\mathrm{ad}}$), see Fig. 2.4

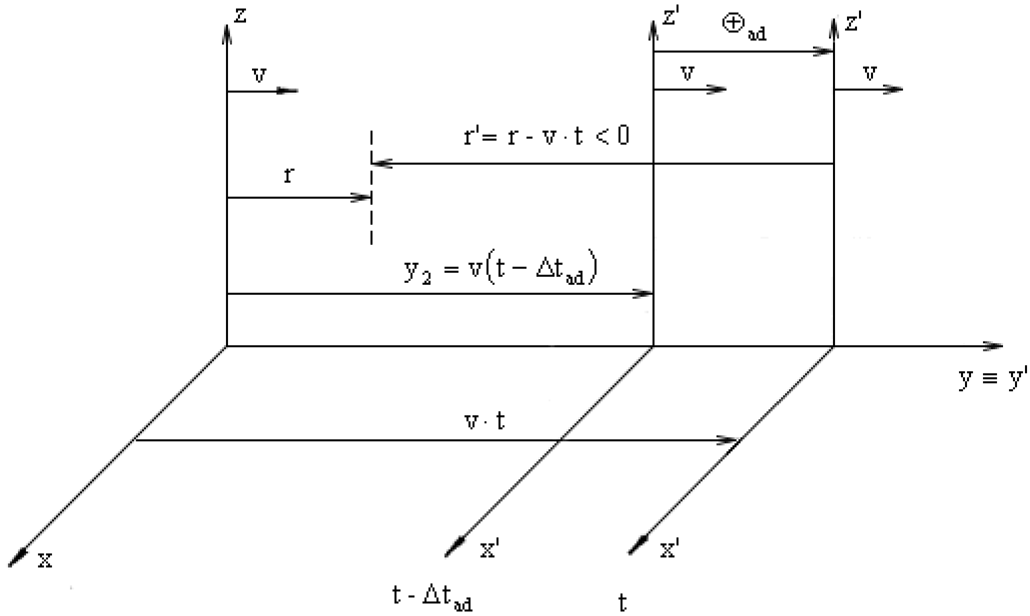


Fig. 2.4. The distance $\oplus_{\mathrm{ad}}$

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

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

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

from where

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

$\oplus_{\mathrm{ad}}$ is the distance between the position of the charge at the moment $t - \Delta t_{\mathrm{ad}}$ 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

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

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

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:

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

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

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

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

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

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

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

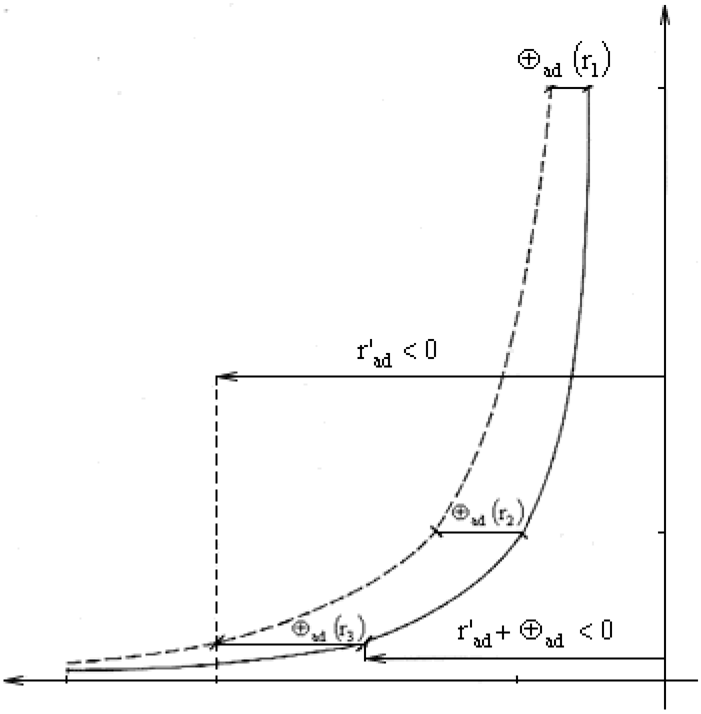


Fig. 2.5. The intensity of the electric field by means of the moving charge against the direction of motion E^{ad}

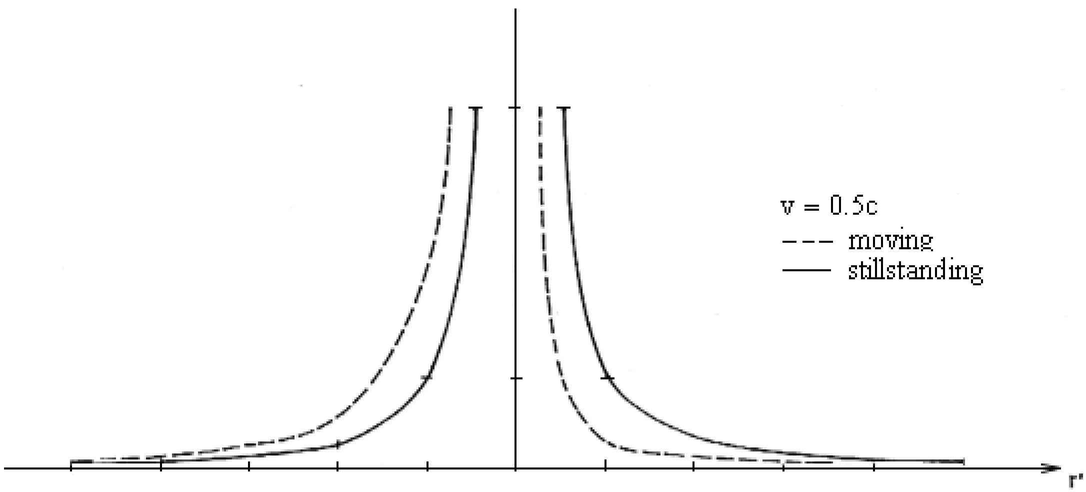


Fig. 2.6. The form of intensity for $v = 0.5c$

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

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

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 s2.10. tocks with the charge at the beginning of the coordinates, see Fig. 2.7, Fig. 2.8, Fig.2.9, and Fig. 2.10.

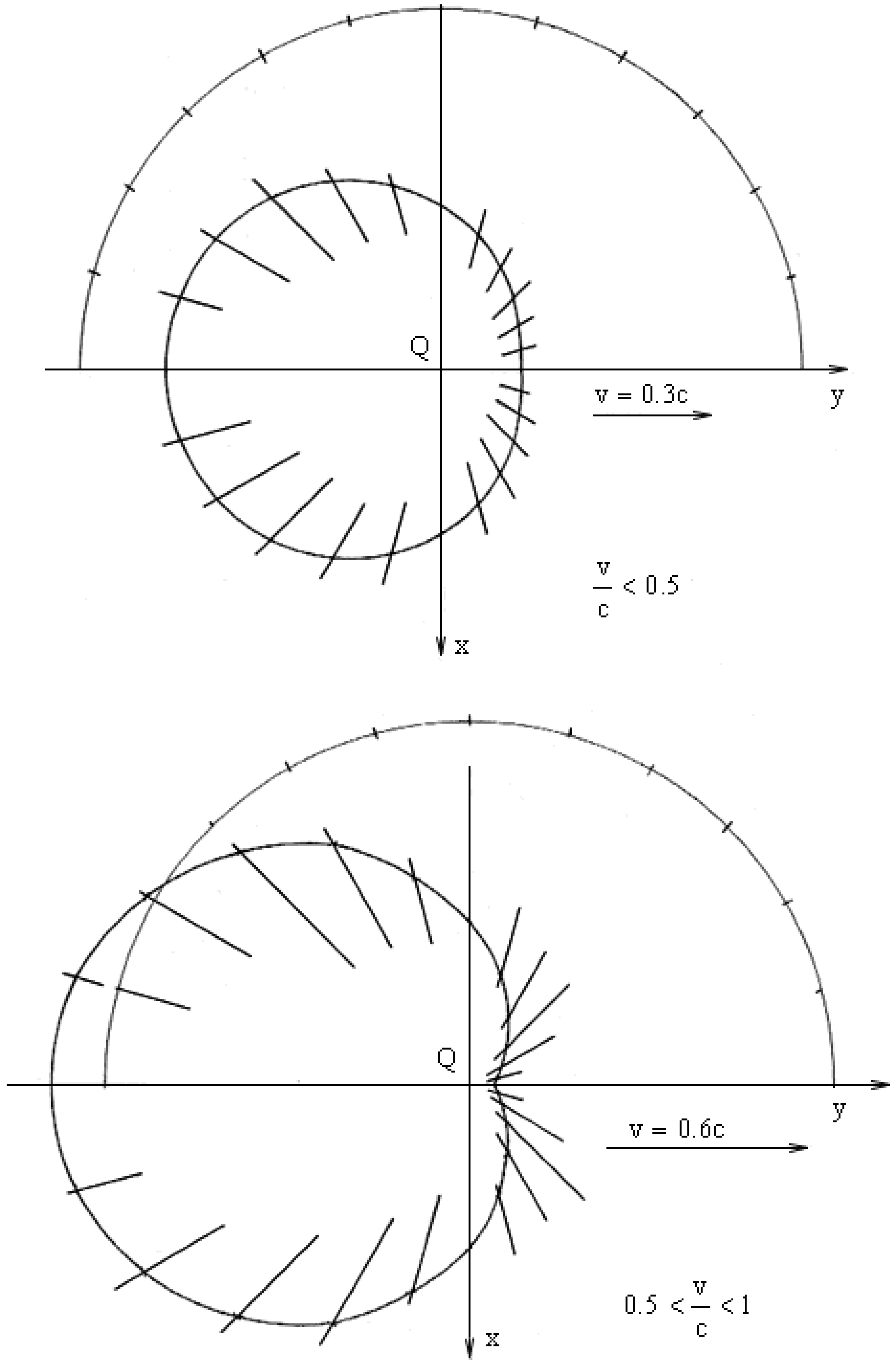
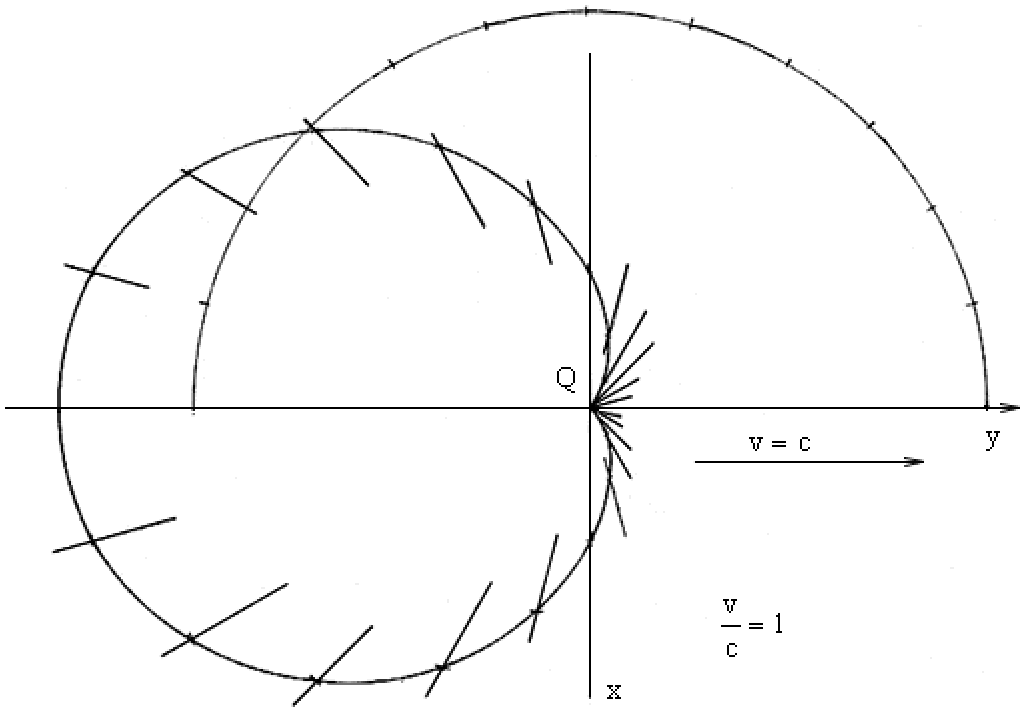


Fig. 2.7, 2.8. At level *(x, y)* section of the "hyperoloid" of the intensity for various speeds of the moving charge have a shape of all types of Pascal's screw stocks with charge at the beginning of the coordinates



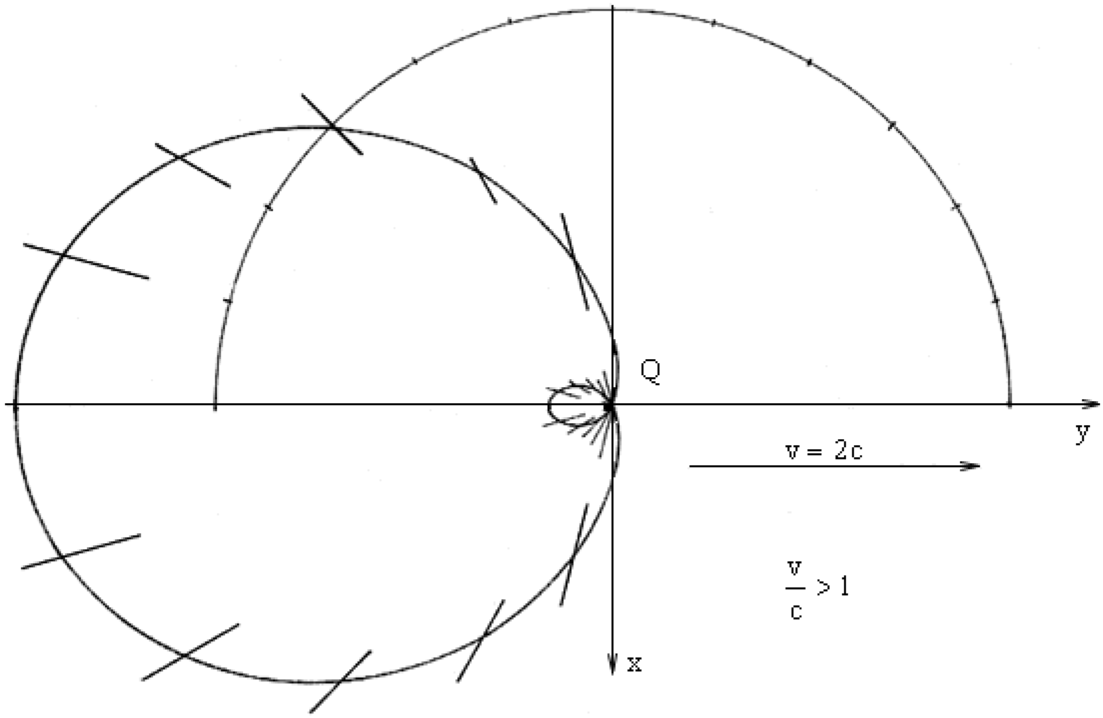


Fig. 2.9, 2.10. At level *(x, y)* section of the "hyperoloid" of the intensity for various speeds of the moving charge have a shape of all types of Pascal's screw stocks with charge at the beginning of the coordinates

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 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 2.1.2 - 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 [8]

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.

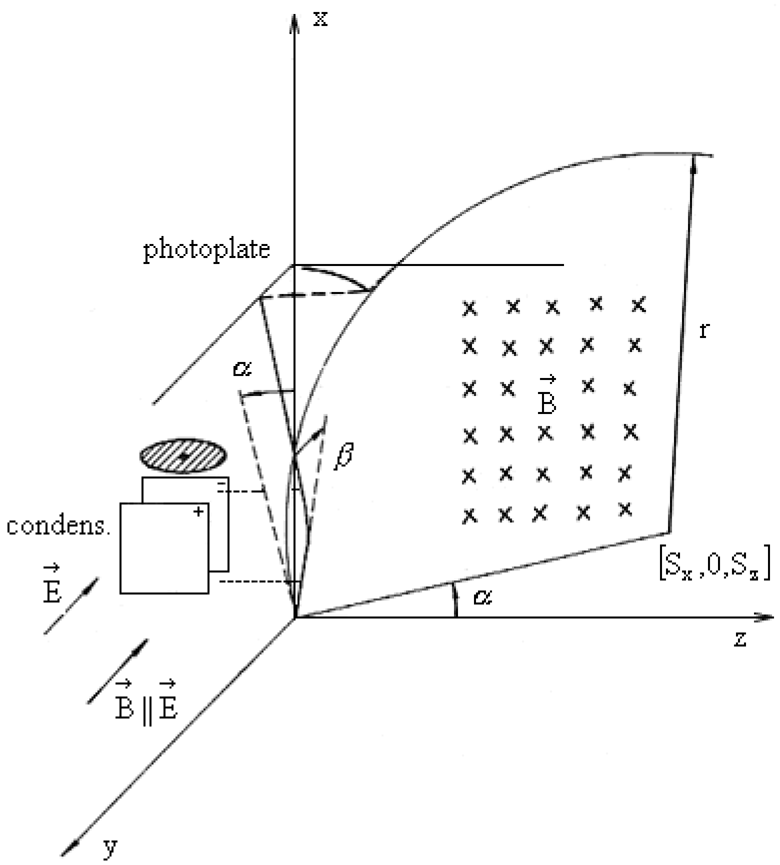


Fig. 2.11. Kaufmann's Experiment - diagram

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

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

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

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 $\beta \in < 1°35', 5° >$ 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 $E_{\text{mov}}^{\text{id,ad}}$ 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. concerning the intensity of the moving charge of the electric field may be regarded experimentally confirmed.

Table 1.

	1631 V	2603 V	3250 V
y_b[cm]	0.1236 0.1119	0.1493 0.1302	0.1664 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
y_T-theoretical value (our new theory): $y_T \sim y_b$			

---

[8] KAUFMANN, W.: Annalen der Physik, Vierte Folge, Band 19, Leipzig 1906, Verlag von Johann Ambrosius Barth, page 487-552

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)[2]. 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.

In the case of electromagnetic waves, see

2.1.3 The electromagnetic field. Maswell's equations, p. 28[2] electric field intensity *E* and the magnetic induction *B* are both associated with the intensity of a moving charge

$$\boldsymbol{E}_{\mathrm{mov}} = \boldsymbol{E}_{\mathrm{still}}\left(1-\frac{v}{c}\cos\vartheta\right)^2 = E_{still} + \mathrm{B} \quad \text{where} \quad B = \frac{E_{\mathrm{still}}}{\mathrm{c}}\left(2+\frac{v}{c}\sin\phi\right)$$

The force acting on the moving electric charge is

$$\boldsymbol{F} = Q\boldsymbol{E}_{\mathrm{mov}} = Q\boldsymbol{E}_{\mathrm{still}}\left(1-\frac{v}{c}\cos\vartheta\right)^2 = Q\boldsymbol{E}_{\mathrm{still}}\left(1+\frac{v}{c}\sin\phi\right)^2 =$$
$$= Q\boldsymbol{E}_{\mathrm{still}} + Q\boldsymbol{E}_{\mathrm{still}}\left(2+\frac{v}{c}\sin\phi\right)\frac{v}{c}\sin\phi$$

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

$$\boldsymbol{F} = \boldsymbol{F}_{\mathrm{el}} + \boldsymbol{F}_{\mathrm{m}} = Q\boldsymbol{E} + Q(\boldsymbol{v}\times\boldsymbol{B})$$

What is the relationship Lorentz derived from the asymmetrical form of the intensity of the moving charge. To derive it we do not need Lorentz's transformations equations, that is 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, by a Maxwell thinks up and not derived !

The electromagnetic field. Maswell's equations. (Cited from [2] pages 27 – 30):

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

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

The force acting on the moving electric charge is

$$\begin{aligned}\boldsymbol{F} = Q\boldsymbol{E}_{\mathrm{mov}} &= Q\boldsymbol{E}_{\mathrm{still}}\left(1-\frac{v}{c}\cos\vartheta\right)^2 = Q\boldsymbol{E}_{\mathrm{still}}\left(1+\frac{v}{c}\sin\phi\right)^2 = \\ &= Q\boldsymbol{E}_{\mathrm{still}} + Q\boldsymbol{E}_{\mathrm{still}}\left(2+\frac{v}{c}\sin\phi\right)\frac{v}{c}\sin\phi\end{aligned} \tag{2.22}$$

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 $\boldsymbol{B}_q$. 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 $\boldsymbol{B}$ and in the electric field of the following intensity $\boldsymbol{E}$ it is valid:

$$\boldsymbol{F} = \boldsymbol{F}_{el} + \boldsymbol{F}_{m} = Q\boldsymbol{E} + Q(\boldsymbol{v} \times \boldsymbol{B}) \tag{2.23}$$

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

Intensity $\boldsymbol{E}$ of the electric field according to Lorentz equals to our intensity $\boldsymbol{E}_{still}$.

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

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

With regard to the fact that both the direction $\boldsymbol{E}_{still}$ and the direction of the vector $\boldsymbol{v} \times \boldsymbol{B}$ 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 $\boldsymbol{v}$ 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

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

Where from

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

The intensity of moving charge comprises in itself also the magnetic field induction $\boldsymbol{B}$ created by the charge moving at speed v.

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

1.

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

because $\nabla\left(\boldsymbol{v}\times\boldsymbol{B}\right) = 0$ (2.29)

2. $\nabla \boldsymbol{B} = 0$ .... there are no magnetic charges (2.30)

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

becose in the statics $\nabla\times\boldsymbol{E}_{\text{still}} = 0$

further $\nabla\times\left(\boldsymbol{v}\times\boldsymbol{B}\right) = \boldsymbol{v}\left(\nabla\boldsymbol{B}\right) - \boldsymbol{B}\left(\nabla\boldsymbol{v}\right)$

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

$$\nabla\cdot v = \frac{\partial}{\partial t} \tag{2.31}$$

Then

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

4. Amper's law in statics

$$c^2\nabla\times\boldsymbol{B}_{\text{stat}} = \frac{\boldsymbol{j}}{\varepsilon_0} \tag{2.33}$$

$$\boldsymbol{B}_{\text{dyn}} = \boldsymbol{B}_{\text{stat}} + \left(\boldsymbol{B}_{\text{dyn}} - \boldsymbol{B}_{\text{stat}}\right) = \boldsymbol{B}_{\text{stat}} + \boldsymbol{B}_{\text{Q}}$$

Total magnetic field

$$\boldsymbol{B}_{\text{dyn}} = \boldsymbol{B}_{\text{stat}} + \boldsymbol{B}_{\text{Q}} \tag{2.34}$$

where

$$\boldsymbol{B}_{\text{Q}} = \boldsymbol{B}_{\text{dyn}} - \boldsymbol{B}_{\text{stat}} \tag{2.35}$$

Let's calculate $c^2\nabla\times\boldsymbol{B}_{\text{dyn}} = c^2\nabla\times\boldsymbol{B}_{\text{stat}} + c^2\nabla\times\boldsymbol{B}_{\text{Q}}$

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

$$c^2 \boldsymbol{B}_Q = (\boldsymbol{v} \times \boldsymbol{B}_Q) \times \boldsymbol{v} \tag{2.36}$$

$$\nabla \times [(\boldsymbol{v} \times \boldsymbol{B}_Q) \times \boldsymbol{v}] = (\boldsymbol{v} \times \boldsymbol{B}_Q)(\nabla \boldsymbol{v}) - \boldsymbol{v}[\nabla(\boldsymbol{v} \times \boldsymbol{B}_Q)] =$$
$$= \frac{\partial(\boldsymbol{v} \times \boldsymbol{B}_Q)}{\partial t} = \frac{\partial(\boldsymbol{E}_{\mathrm{mov}} - \boldsymbol{E}_{\mathrm{still}})}{\partial t} = \frac{\partial \boldsymbol{E}_{\mathrm{mov}}}{\partial t}$$

because $\nabla(\boldsymbol{v} \times \boldsymbol{B}) = 0$, $\nabla \cdot v = \frac{\partial}{\partial t}$, $\boldsymbol{E}_{\mathrm{mov}} = \boldsymbol{E}_{\mathrm{still}} + \boldsymbol{v} \times \boldsymbol{B}$

and because $\frac{\partial \boldsymbol{E}_{\mathrm{still}}}{\partial t} = 0$ (2.37)

i.e. $$\boldsymbol{c}^2 \nabla \times \boldsymbol{B}_{\mathrm{dyn}} = \frac{\boldsymbol{j}}{\varepsilon_0} + \frac{\partial \boldsymbol{E}_{\mathrm{mov}}}{\partial t} \tag{2.38}$$

what represents the 4th Maxwell's equation“.

Consequence : Form of Intensity of the Moving Charge Electric Field is asymmetrical.

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 $\frac{23}{100} \cdot \frac{\lambda}{2}$.

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.

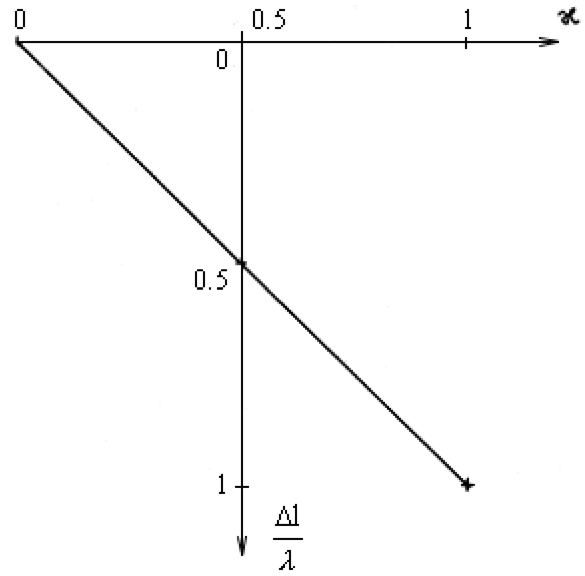


Fig. 2.12. The "linear" form of the interference field

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:

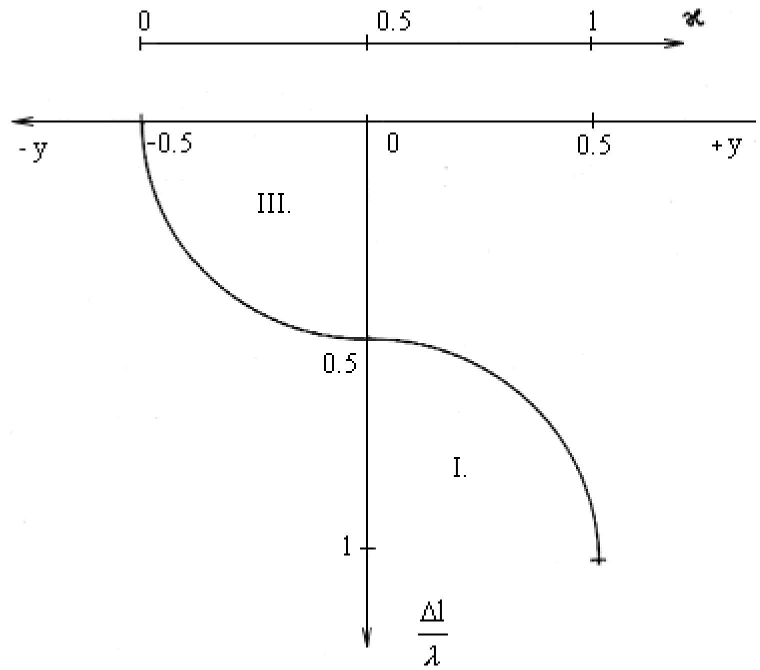


Fig. 2.13. The non-linear form of the interference field

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

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

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

In the shifted 1st quadrant

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

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

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 [6] 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 $\frac{\Delta l}{\lambda} = 0.4103$ 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 [7] 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 [7], if the drag coefficient $\varkappa = \alpha$ 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 $\frac{\Delta l}{\lambda}$ to (2.46) we get

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

According to the experiment $\kappa_{\text{Harres}} = 0.132$ 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 Fig. 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.

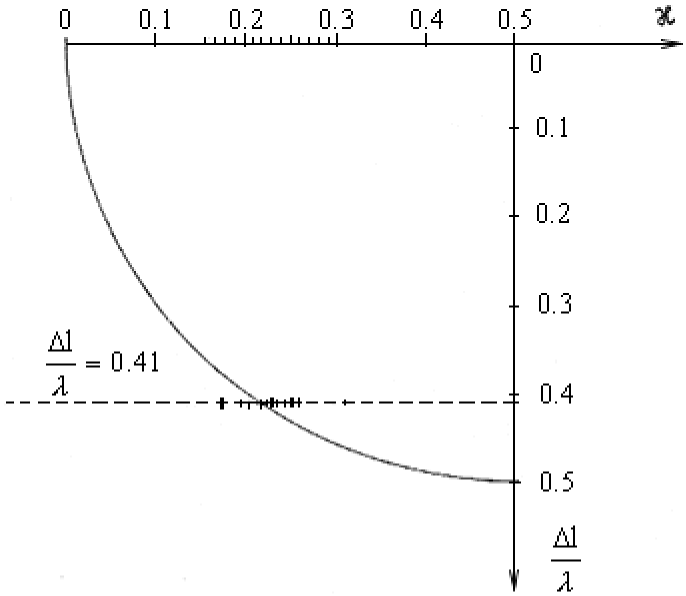


Fig. 2.14. Fizeau's experiment [6] p. 392

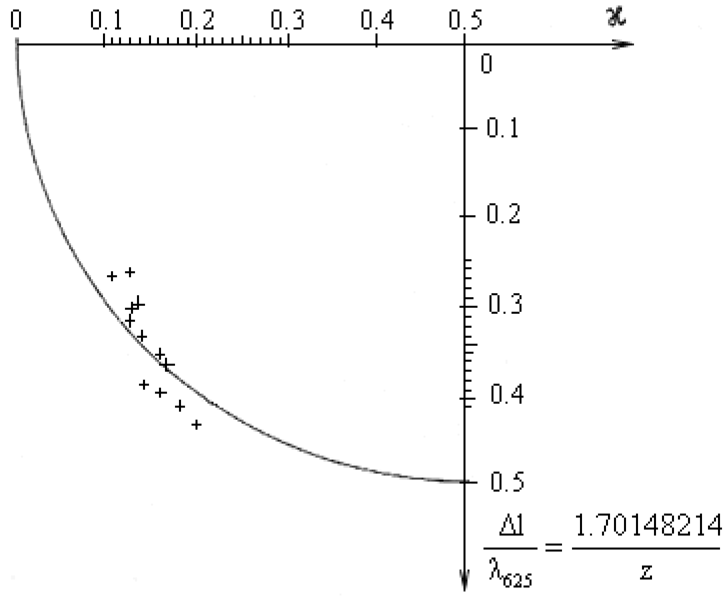


Fig. 2.15. [7] Tab. 1., 1. Reihe

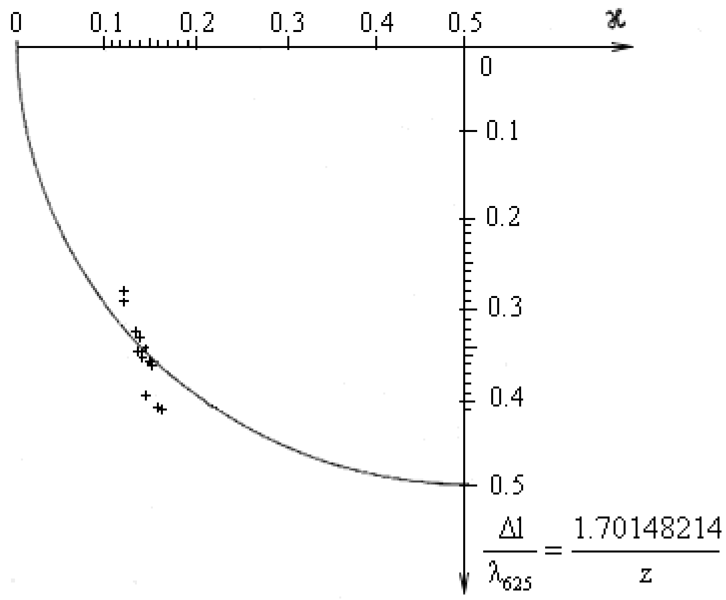


Fig. 2.16. [7] Tab. 1., 2. Reihe

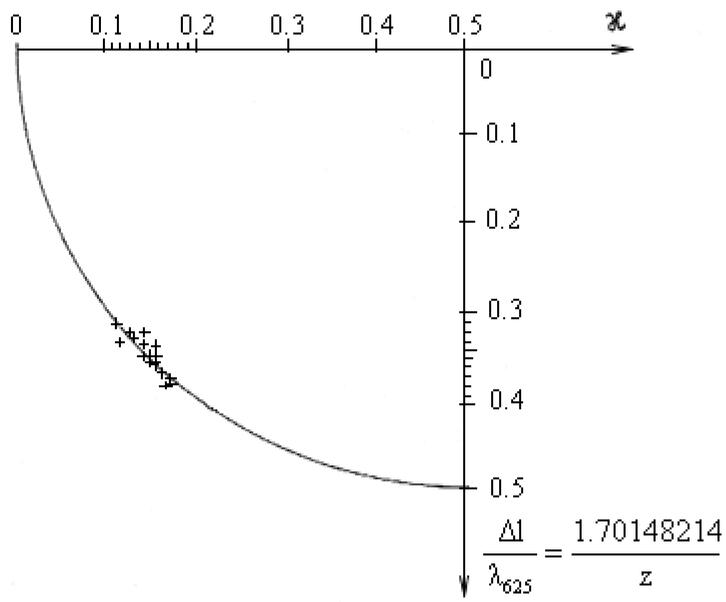


Fig. 2.17. [7] Tab. 1., 3. Reihe

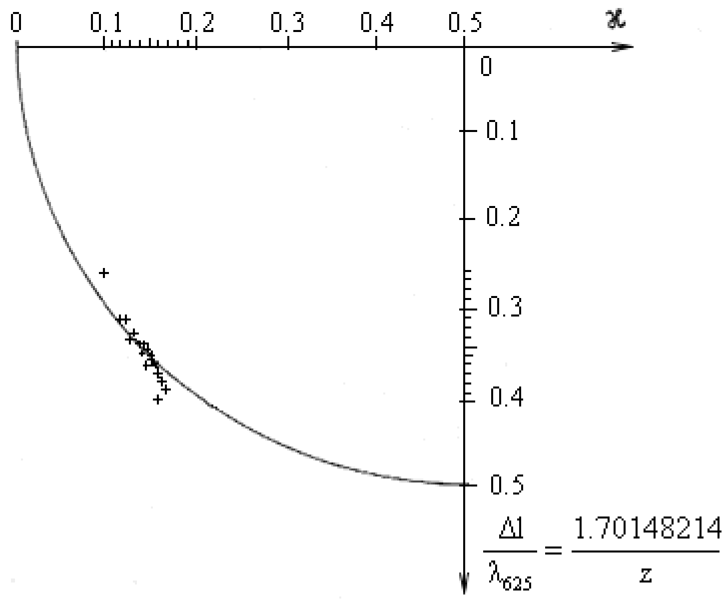


Fig. 2.18. [7] Tab. 1., 4. Reihe

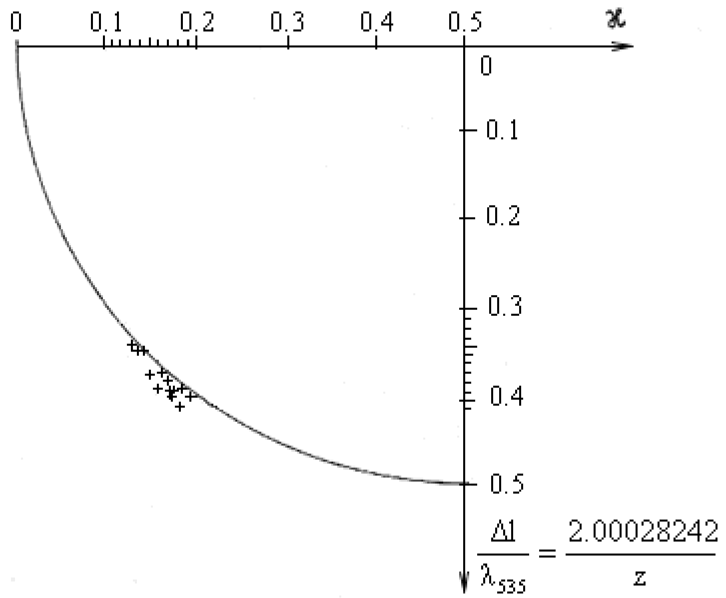


Fig. 2.19. [7] Tab. 2., 1. Reihe

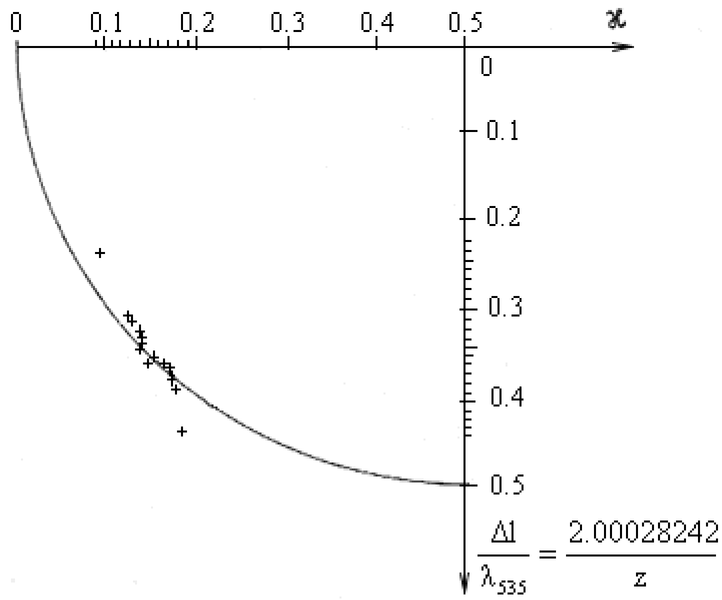


Fig. 2.20. [7] Tab. 2., 2. Reihe

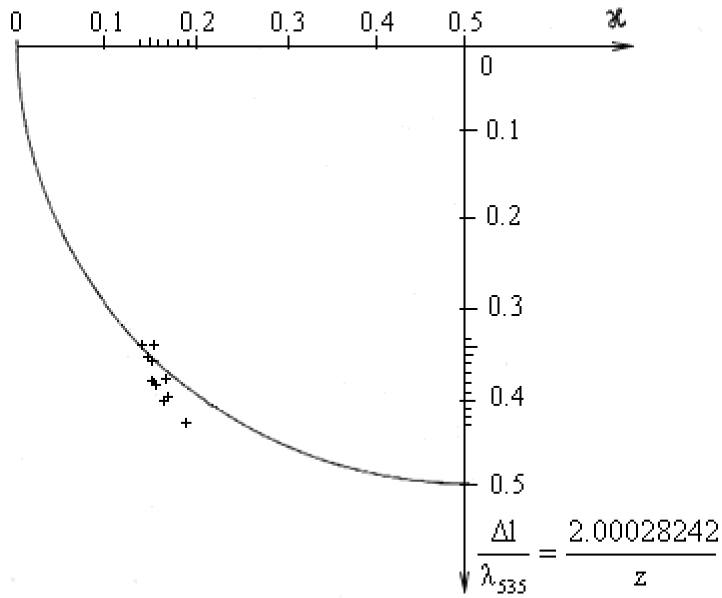


Fig. 2.21. [7] Tab. 2., 3. Reihe

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.

Consequence : Form of the interference field is non-linear: (from [2] pages 34 – 39).

3. Calculation of the kinetic energy T_{kin} 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:

$$g_{\text{mov}} = g_{\text{still}}\left(1 - \frac{v}{c}\cos\vartheta\right)^2 \tag{3.1}$$

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

$$\mathrm{d}W_{\mathrm{p}} = m g_{\text{still}}\,\mathrm{d}h \tag{3.2}$$

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

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

By substituting $g_{\text{mov}} = \frac{\mathrm{d}v}{\mathrm{d}t}$, $\frac{\mathrm{d}h}{\mathrm{d}t} = v$

we get

$$T_{\text{kin}} = m\int_0^v \frac{v\mathrm{d}v}{\left(1 - \frac{v}{c}\cos\vartheta\right)^2} \tag{3.3}$$

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

we get

$$T_{\text{kin}} = \frac{mc^2}{\cos^2\vartheta}\left[\ln\left|1 - \frac{v}{c}\cos\vartheta\right| + \frac{\frac{v}{c}\cos\vartheta}{1 - \frac{v}{c}\cos\vartheta}\right] \tag{3.4}$$

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

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

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

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

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

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

utilizing the series $\ln(1 \pm x)$ $(1 \pm x)^{-1}$

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

complying with the Newton's mechanics. In Table 2 the values of the kinetic energy are

$T_{kin_{ad}}$, $T_{kin_{id}}$. The total energy according to Einstein $\frac{m_0c^2}{\sqrt{1-\frac{v^2}{c^2}}}$.

Table 2. Calculation of the kinetic energy T_{kin} of a body moving at the velocity of *v* according to Einstein and according to Vlcek

v/c	Vlcek ´s theory - **kinetic energy** against direction of motion as wave $T_{kin\ ad}$ = $mc^2[\ln\|1+v/c\|-(v/c)/(1+v/c)]$	Vlcek ´s theory – **kinetic energy** in direction of motion as particle $T_{kin\ id}$ = $mc^2[\ln\|1-v/c\|+(v/c)/(1-v/c)]$	Vlcek ´s theory $m = m_0 = const$ $(T_{k\ ad} + T_{k\ id})/2$	Einstein ´s theory $T_{kin} = mc^2 - m_0c^2$
0.1	0.00439 mc^2	0.0057 mc^2	0.0050 $m\ c^2$	0.0050 $m\ c^2$
0.2	0.0156 mc^2	0.0268 mc^2	0.0212 $m\ c^2$	0.0200 $m\ c^2$
0.3	0.0316 mc^2	0.0719 mc^2	0.0517 $m\ c^2$	0.0480 m

				c^2
0.4	0.0508 mc^2	0.1558 mc^2	0.1033 $m c^2$	0.0910 $m c^2$
0.5	0.0722 mc^2	0.3068 mc^2	0.1895 $m c^2$	0.1550 $m c^2$
0.6	0.0950 mc^2	0.5837 mc^2	0.3393 $m c^2$	0.2500 $m c^2$
0.7	0.1174 mc^2	1.1293 mc^2	0.6233 $m c^2$	0.4010 $m c^2$
0.8	0.1434 mc^2	2.3905 mc^2	1.2669 $m c^2$	0.6670 $m c^2$
0.9	0.1680 mc^2	6.6974 mc^2	3.4327 $m c^2$	1.2930 $m c^2$
0.99	0.1906 mc^2	94.3948 mc^2	47.294 $m c^2$	6.9200 $m c^2$
1.0	0.1931 mc^2	infinite	infinite	infinite

Direct measurement of the speed in the experiments Kirchner[3], [4], Perry, Chaffee [5]

For v/c = 0.08-0.27 can not yet prove the validity of Vlcek's theory[2] or Einstein's theory[1].

Consequence.

The main differences between Einstein's theory [1] and the latest knowledge [2] are:

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

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

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

Kinetic energy of charge

Tkin id =mc2 [ln |1-v/c|+ (v/c) / (1-v/c)] in direction of motion of charge

where v is velocity of charge.

Kinetic energy of charge

Tkin ad = mc2 [ln |1+v/c|- (v/c) / (1+v/c)] against direction of motion of charge

where v is velocity of charge.

These are the main differences between Einstein's theory and the latest knowledge.

For example:

Lambda hyperon 2286.46 MeV in direction of motion and pion $\pi 0$: 134.9766(6) MeV against direction of motion are in the proton at speed of proton v = 0,8022863362c

hyperon Chi c (2645)+ 2646.6MeV in direction of motion and pion π_0 : 139.57018(35) MeV against direction of motion are in the proton at speed of proton v = 0,819183027c

hyperon 6,165 GeV in direction of motion and meson K- 493.7 MeV against direction of motion are in the alpha particle at speed of alpha particle v = 0,7533c

Electron in direction of motion, electron neutrino against direction of motion are in the electron at speed of electron :
from v= 0.1c to v= 0.9 c

Muon in direction of motion, muon neutrino against direction of motion are in the electron at speed of electron : v = 0.995308032046c

Tauon in direction of motion, tauon neutrino against direction of motion are in the electron at speed of electron : v = 0.99971316674c

W + - boson in direction of motion and neutrino against direction of motion are in the electron at speed of electron : v = 0.99999364465781184c

Z boson in direction of motion and neutrino against direction of motion are in the electron at speed of electron : v = 0.999994396590953c

See you please Decay modes in

K Nakamura et al (Particle Data Group) 2010 J. Phys. G: Nucl. Part. Phys. 37 075021

http://www.trendsinphysics.info/data/Great_table_of_elementary_particles.pdf

Shortened great table of elementary particles. http://www.trendsinphysics.info/

Consider the experiments at CERN and particle decay mode see [9] , [10] and [11].

Table 3. Kinetic energy in direction of motion and **Kinetic energy** against direction of motion

v/c	**Front of electron, proton, neutron, deuteron, He-3, α-particle** $\left[ln\vert 1-\frac{v}{c}\vert+\frac{\frac{v}{c}}{1-\frac{v}{c}}\right]$	**Behind of electron, proton, neutron, deuteron, He-3, α-particle** $\left[ln\vert 1+\frac{v}{c}\vert-\frac{\frac{v}{c}}{1+\frac{v}{c}}\right]$	**Decay modes**
v/c	**Kinetic energy** in direction of motion as particle $T_{kin\ id} = mc^2[ln\ \vert 1\text{-}v/c\vert + (v/c)/(1\text{-}v/c)]$	**Kinetic energy** against direction of motion as wave $T_{kin\ ad} = mc^2[ln\ \vert 1+v/c\vert - (v/c)/(1+v/c)]$	Decay modes
Electron **0.0027171** **It is v/c in the direction of motion (id)**	**3.704855**7712523575587814e-6 **1.8931773275045679448456131 eV** **Lambda$_{id}$ (v/c=0,0027171) = hc/E$_{k,id}$ = =654.900051928391151 nm** **4.5776826**11525892171951**e+14 Hz** **1.8931773**275 **eV**		
Electron **0.0027212** **It is v/c against the direction of motion (ad)**		**3.6890835**634754294761e-6 **1.8851177**46 **eV** **Lambda$_{ad}$ (v/c= 0,0027212)=hc/ E$_{k,ad}$ =** **= 657.69999384 nm**	

Proton 0.075	***Down quark / p:*** **0.0031195396** ***Down quark:*** **2.92697 MeV**	***Up quark / p:*** **0.0025532197** ***Up quark:*** **2.4MeV**	
Proton 0.081622	***Down quark / p:*** **0.00373026153466** ***Down quark:*** **3.5 MeV**	***Up quark / p:*** **0.00299917404444** ***Up quark:*** **2.814 MeV**	
Proton 0.08878	***Down quark / p:*** **0.004458901351** ***Down quark:*** **4.18366 MeV**	***Up quark / p:*** **0.0035171** ***Up quark:*** **3.3 MeV**	
Proton 0.094686	***Down quark / p:*** **0.0051156918494** ***Down quark:*** **4.8MeV**	***Up quark / p:*** **0.00397152784836062561964734521 68** ***Up quark:*** **3.72637 MeV**	
Neutron 0.584840845 6 2020497175	**K_0/n $_0$: 0.529621473**4 **K_0 497.614 MeV**	**γ+γ/n_0:** **0.09146217425** **85.934692341921 MeV** **f = 2.0778917e+22 Hz** **gamma rays γ + γ**	**π± + e∓ + νe or π± + μ∓ + νμ or π0 + π0 + π0 or π+ + π0 + π−**
Neutron 0.59983529	**η/n0: : 0.58309194** **Eta meson η 547,853 MeV**	**γ /n0 :** **0.0949650261957629** **89.22585075 MeV** **f=2.1574715663e+22Hz…gamma rays γ + γ**	**γ + γ or π0 + π0 + π0 or π+ + π0 + π−**
Neutron 0.6849950 294204886	**η'(958)/n0: : 1,019**38622 **Eta prime meson η'(958)** **957.78 MeV**	**γ + γ /n0 :** **0.115236174677** **108.27192004399 MeV** **f = 2.61800349e+22Hz gamma rays γ + γ**	**π+ + π− + η** or **(ρ0 + γ) / (π+ + π− + γ) or π0 + π0 + η**
Proton 0,713	**c quark / p:** **1.2360474942687732555244135294 3** **c quark: 1160 MeV** **1.16–1.34 GeV**	**s quark / p:** **0.12201738104659464824870350196 72** **s quark=114.485493763640 MeV**	
Proton 0.72585	**c quark / p:** **1.3535582771630143437838209404 1** **c quark: 1270 MeV** **1.16–1.34 GeV**	**s quark / p:** **0.12514431408438967945446850497 66** **s quark: 117.41941 MeV**	
Proton 0.73333	**c quark / p:** **1.4281572732698825869678018468 1** **c quark: 1340 MeV** **1.16–1.34 GeV**	**s quark / p:** **0.12696860023316592749751861919 30** **s quark= 119.1311MeV**	
Alpha particle 0.74079510 8978806110 189	**Λ0b5620,2/α:** **1.5078154480**36779679 45 **bottom Lambda Λ0b 5620.2MeV**	**/α:** **0.12879211144543390135241844828 11** **480.0570425830862480785 MeV**	**See Λ0b decay modes**

Alpha particle **0.7533042 89775682**	**Ω−b /α:** **1.65397712**4861525696970279 **bottom Omega Ω−b 6165 MeV**	**K+ /α:** **0.13185382624286629129216216386 68** **491.469214760347149777 MeV/*c*²** **2.20778523965285 MeV/*c*²** less than **K+ mezón 493.677 MeV/*c*²**	**(Ω− +J/ψ seen)**
Alpha particle		**K+ 493,677/α:** **0.13244614197078588654692405272 93**	**μ+ + νμ or** **π+ + π0** **or** **π0 + e+ + νe**
Alpha particl **0.76**	**1,73955031102652091827762535859**	**0.13349562723187859551307097261 09**	
Neutron **0.810366824**	**Σ+c//**n0 **:** **2.610675166**291363936 **2452.9 MeV/c²**	(**π0**/n0: **0.14365855017701599472942 6** **(** π+ **/**n0 **: 0.1485475979299)** **0.14590373087681143063739535698 88** **137.08609408352 MeV/*c*² pion π0**	**Λ+c + π0**
Proton **0.810526365**	**Σ+c/** p+ **:** **2.614273770**499822 **2452,9 MeV**	**0.14594317894483805192194380156 3** **136.934405138965 MeV pion π0**	**Λ+c + π0**
Neutron **0.821091179**	Ω0c //n0 **:** **2.868560360**466584 **Charmed Ω0c 2695.2 MeV**	π+ **/**n0 **:** **0.148557194855674546931345 1** **139.57**919697 **MeV/*c*² pion π +,π −** π **- = 139.57018 +- 0.00035 MeV**	**See Ω0c decay**
Proton **0.821245175**	Ω0c **/** p+ **:** **2.87251443916512034719619** **2,87251449930788853** **2.695.2±1.7** MeV **6.9±1.2×10−14 s**	**Proton** **v/c= 0.82188** π+ **/** p+ **:** **0,14875235875885830238195117 24** **139.5701751 MeV** **139.57 = π- +**	**See** Ω0c decay
Proton **0.9928305**	**Higgs Boson /p:** **133.54335827671029218747501724** **Higgs Boson 125300 MeV**	**0.19135481327900503397500506877 4** **179.542872167240022072** MeV	
Proton **0.994637**	***Top quark* /p:** **180.22492157457995929571 29** ***Top quark:* 169 100MeV**	**/p:** **0.19180643378644112290601** **179.9666087792708 MeV**	
Proton **0,994766**	***Top quark* /p:** **184.80781431716241834344 54** ***Top quark:* 173 400MeV**	**0.19183868355887822897300444 04** **179.996867838181577 MeV**	
Electron **0.995308032**	**Muon/e:** **206.768282237446856567** **Muon 105.658366838 MeV =** **= kinetic energy of elektron in directi** **motion of electron**	**Muon neutrino /e:** **0.1919741907309481 Muon neutrino** **98.0986022063665 keV = kinetic energy** **elektron** against **direction of motion of** **< 170 keV**	
Electron **0.996425584 54502**	**π-/e- :** **273.13204749023558573115849192** **139.5701835 MeV/*c*²** **pi minus π- 139.57 MeV**	**νμ/e- :** **0.192253577576789948957123447070 72** **98.2413720670523951317 keV/*c*² =** **energy of elektron** against **direction** **of electron < 170 keV Muon neutrino v**	**μ+ + νμ**
Electron	**Tauon/e:**	**neutrino /e:**	

0.99971316€	**3477.18894397593998486635332040** **Tauon 1776.84±0.17 MeV = kinetic en elektron in direction of motion of ele**	**0.19307547223543705549505792712O1 neutrino 98,0988323306154745516 keV energy of elektron** against **direction of moti electron < 170 keV** **Tauon neutrino ντ < 15.5 MeV**	
Electron 0.99999364	**W+ BOSON/e: 157334.97358013414086695519224S** **W+ BOSON = 80 398±0,25 MeV**	**neutrino/e: 0.19314559172439827476506281953 28 neutrino 98.69718683716025935823051 16066 keV keV** **Tauon neutrino ντ < 15.5 MeV**	
Electron 0.99999439€	**BOSON Z/e: 178449.69572422000527027492336 1** **BOSON Z = 91 187.6 MeV = 91. 1876 G**	**neutrino/e: 0.19314577970768356308259999253 neutrino 98,697282896414134737232 44731 keV keV** **Tauon neutrino ντ < 15.5 MeV**	

Consider the experiments at CERN and particle decay modes see [9] , [10] and [11].

Einstein's theory of relativity can not explain ...

1. Movement principles of the fast-spinning pulsars,

2. **Nuclear Fusion ,**

3. Wave - Particle Duality as Kinetic Energy Against and In Direction of Motion

4. the 4th Maxwell's equation,

5. Lorentz equals without the help of Space-Time,

6.Confinement of quarks

7. **Great Table of Elementary Particles**

8. **Spectral line Hα**

9. Neutrino Oscillations

10. *Form of the interference field must be non-linear.*

11.Form of Intensity of the Moving Charge Electric Field must be asymmetrical.

12.Kinetic energy of a charge moving at the velocity of v has two different values:
Kinetic energy *against direction of motion* ***as wave***

$T_{kin\ ad} = mc^2[ln\ |1+v/c| - (v/c)/(1+v/c)]$

Kinetic energy** in direction of motion **as particle

$T_{kin\ id} = mc^2[ln|1-v/c| + (v/c)/(1-v/c)]$

*13. **Yukawa potential***

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