Science from History to Future

1. INERTIA

2. Form of the interference field

3. CORRECTED Maswell's equations

4. Corrected Newton´s Laws of Motion

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

Kinetic energy against direction of motion as wave

Tkin ad = mc2 [ln |1+v/c|- (v/c)/(1+v/c)]

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

- **1. INERTIA**
- **Inertial motion is an intrinsic property of matter. Bat no Newton´s , no Einstein´s linear motion is an intrinsic property of matter. Inertial motion is only quasi-circle. It is Galileian´s motion**

- **The atomic theory shows that the electrons and the nucleus circulate around the center of gravity of atom in approximate circles. The body rotating around its own axis (a flywheel) persists in this status.**
- **Similarly, the planets, stars, galaxies, molecules, nuclei and elementary particles rotate around their own axes. Since the uniform straight-line inertial motion cannot be achieved in a microworld, its place here is exclusively in the inertial quasi-circle motion. It is analogous in the macroworld. Each real "straight-line" motion can be replaced by a circle of a huge radius. This discussion results in the following:**

- **"Every mass (atom, molecule, particle, body, vacuum) persists in the status of the quasi-rest or quasi-uniform motion in a quasi-circle as far as it the external forces do not force it to change its status. (This notion is called the generalized law of inertia)."**

- 1.1 Newton in his book "Mathematical Principles of Natural Philosophy":

Every body continues to rest in a state of rest or a uniform and rectilinear movement, until and because it does not force the forces applied to change this state.

In an rotating frame of reference the law of inertia is allegedly incorrect, therefore the Newtonian formulation was replaced by the postulate of the existence of inertial frames of reference (by EINSTEIN !!!).

Galilei´s, Newton´s, Einstein´s movement "along a straight line" is a circle with radius 6378 km!!

No real motion can be straight-line one. It is only mathematical definition.

Mathematics is NO PHYSICS !!!

The postulate of the existence of inertial frames of reference

does not belong to physics. Neither postulate does not belong to physics.

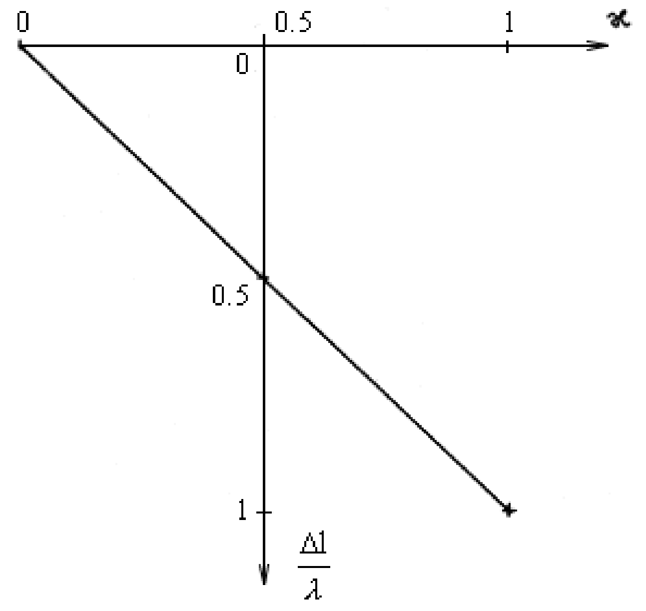
Physics is based on experiments and not on postulates.

"The difference between a good experiment and a good theory is in the fact that the theory gets old quickly and it is replaced by another one, based on more perfect ideas. It will be forgotten quickly. The experiment is something else. The experiment, which has been thought well and performed carefully, will step in the science forever. It will become its part. It is possible to explain such experiment differently in different periods of times."

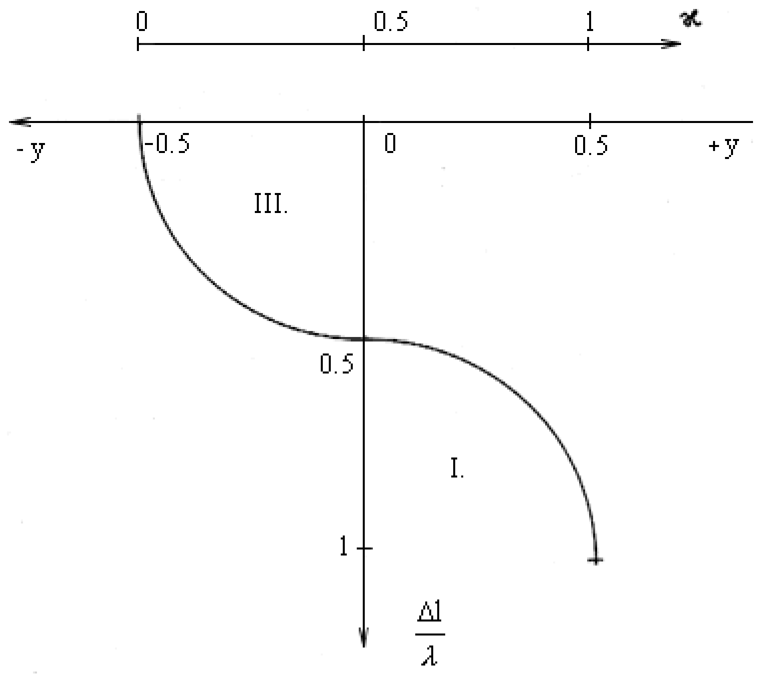
P. L. KAPICA

- 1.2 Galileo Galilei
- The first law (the law of inertia), in a less clear form, was published by Galileo. It should be noted that Galileo allowed free movement **not only along a straight line, but also along a circle (apparently from astronomical considerations).** Galileo also formulated the most important principle of relativity
- 1996: Let's have a real coordinates system firmly connected with a real laboratory on Earth, where all experiments testing the physical theories are performed. We know that this coordinates system moves around the Earth axis during an astronomical day i. e. it performs a quasi-circular motion. During the year it rotates around the Sun approximately in a quasi-circle together with the Earth. During 2*10^8 years it circulates in the quasi-circle around the center of the Galaxy. It performs a quasi-uniform motion in a quasi-circle together with the Sun.
- The Galaxy performs a quasi-uniform and quasi-circle motion around the center within the framework of metagalaxies of star clusters and our laboratory coordinates system on Earth together with it, etc.
- From the experimental testing of the law of inertia it is known that the body moves along the "plane" stated by a waterlevel, i. e. in fact it is not a straight-line uniform motion, but it is the motion in the circle of the Earth radius of R=6378 km.
- The space aeronautics show that space ships, Earth satellites and orbital laboratories move quasi-uniformly in almost a circle around the Earth.

- Linear form of the interference field



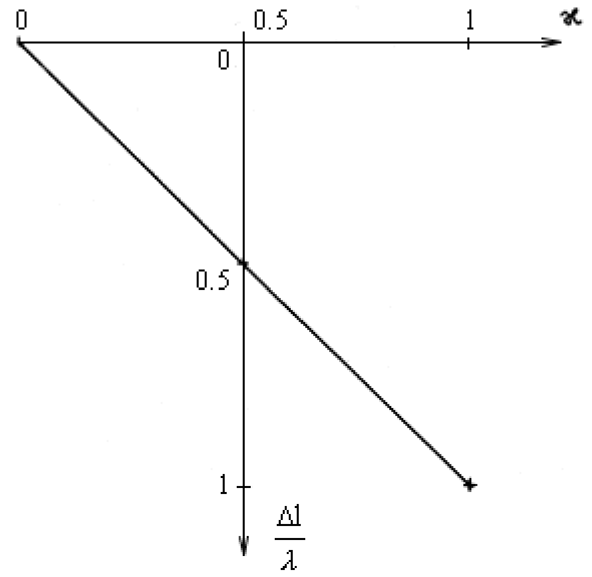
- Non linear form of the interference field



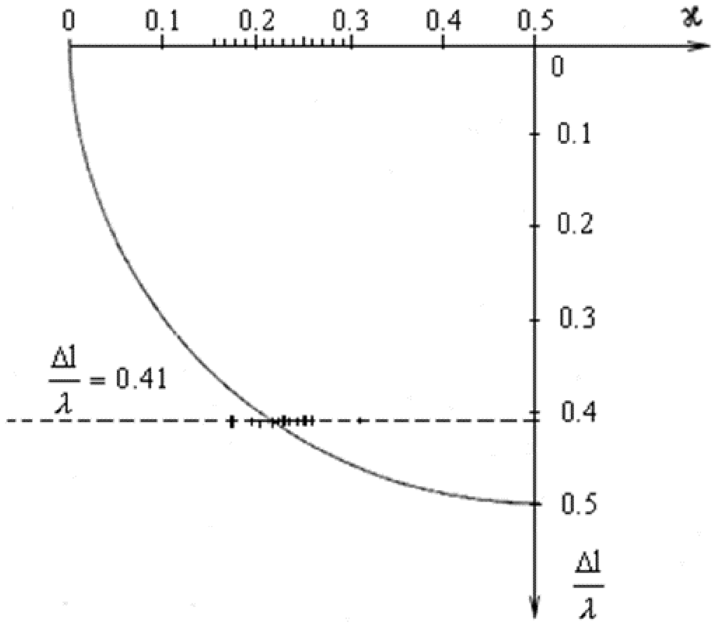
- Linear form of the interference field

Fresnel: α = 0.44 , v- α u, v+ α u, u = 7.059 m/s

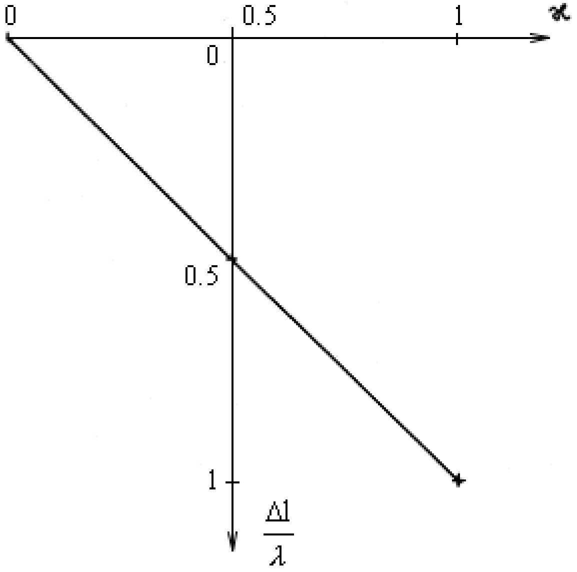
Theory must use drag coefficient α and aether.

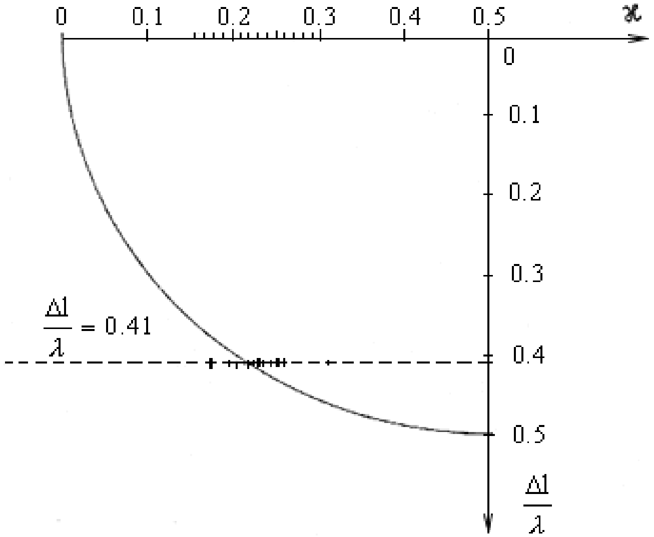
- ***Fizeau's Experiment***
- 

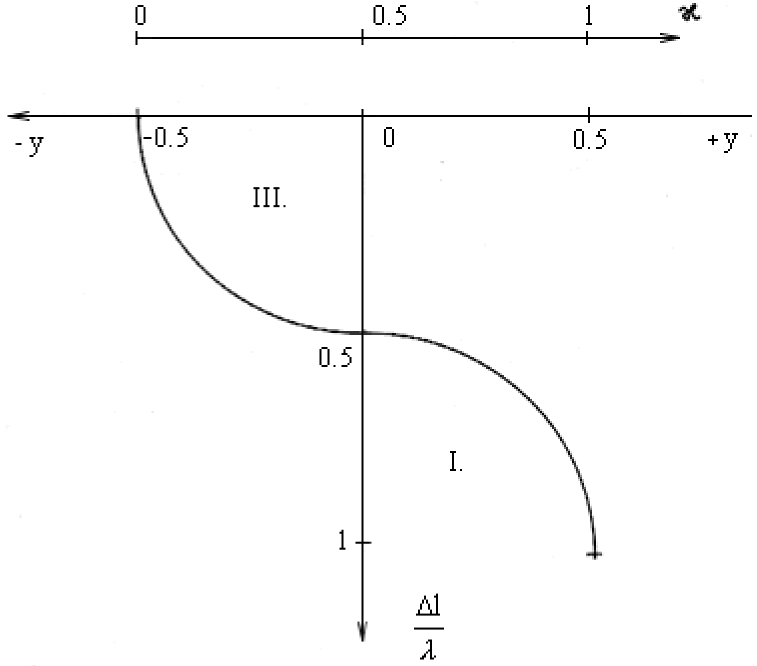
- Non linear form of the interference field
- ***Fizeau's Experiment***
- **We do not need any drag coefficient α .**
- Fizeau's experiment confirms also that the interference field has a non-linear form.



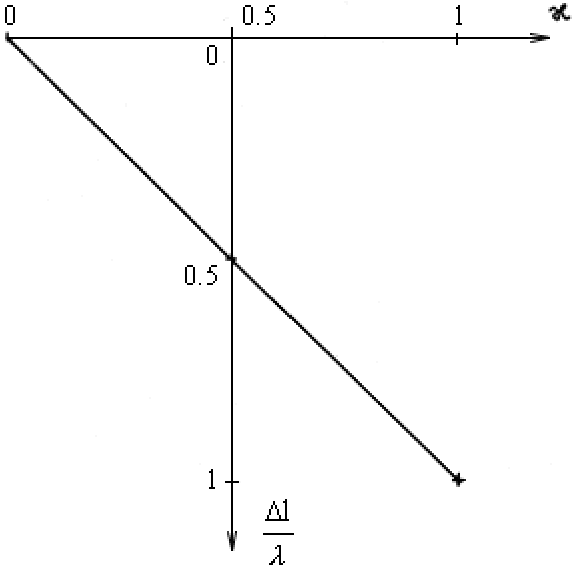
2. Form of the interference field

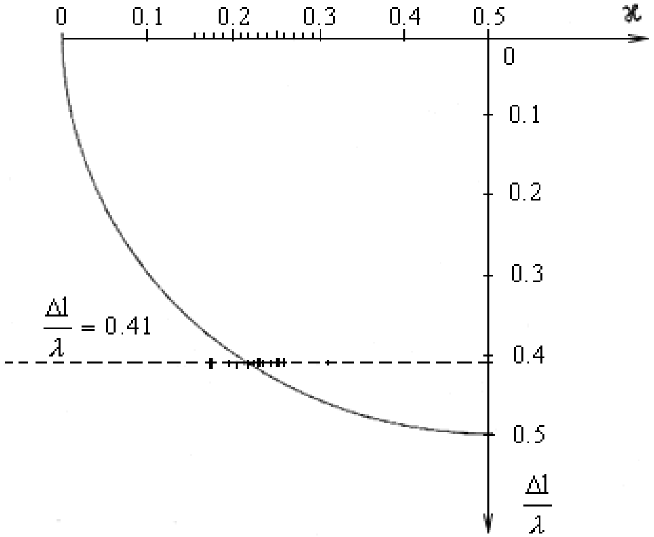


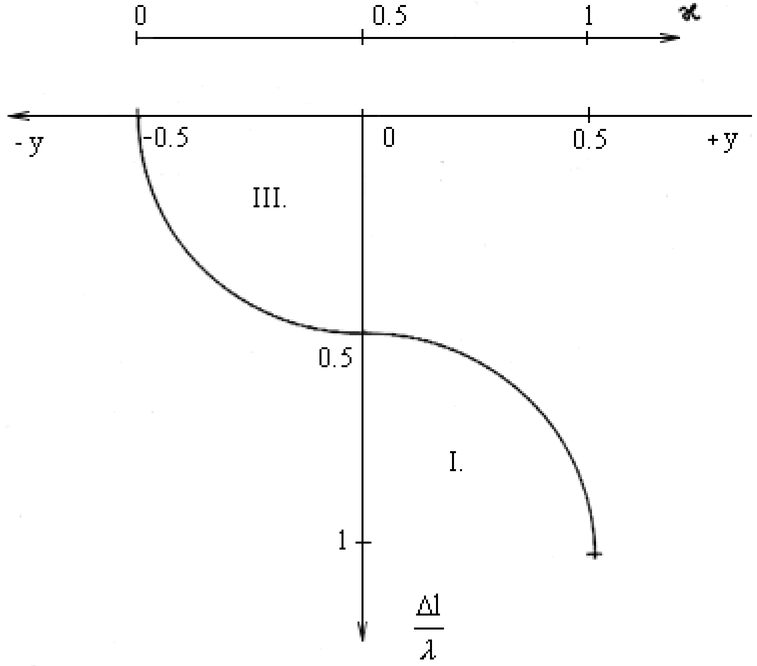




2. Form of the interference field







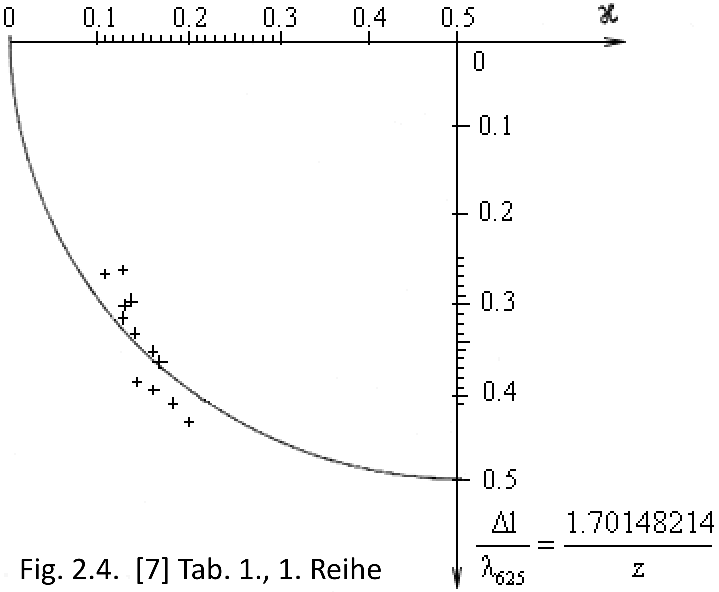
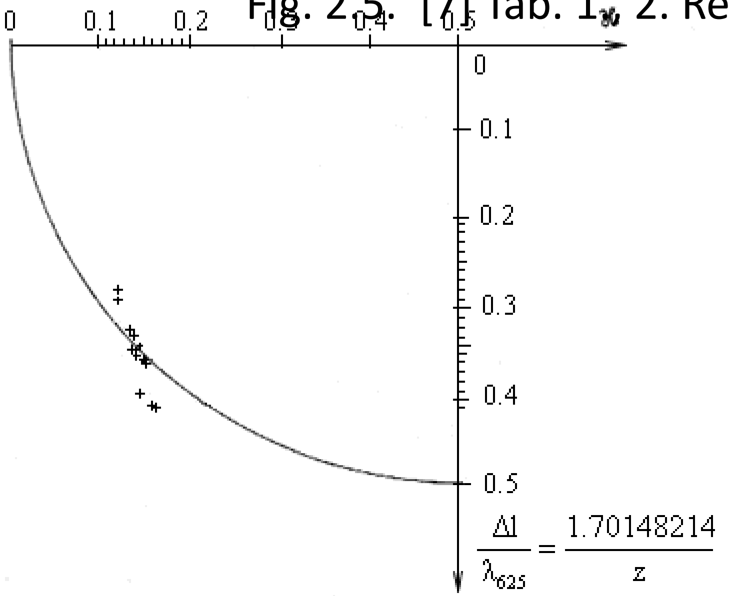


Fig. 2.4. [7] Tab. 1., 1. Reihe

Fig. 2.5. [7] Tab. 1., 2. Reihe

Fig. 2.5. [7] Tab. 1., 2. Reihe



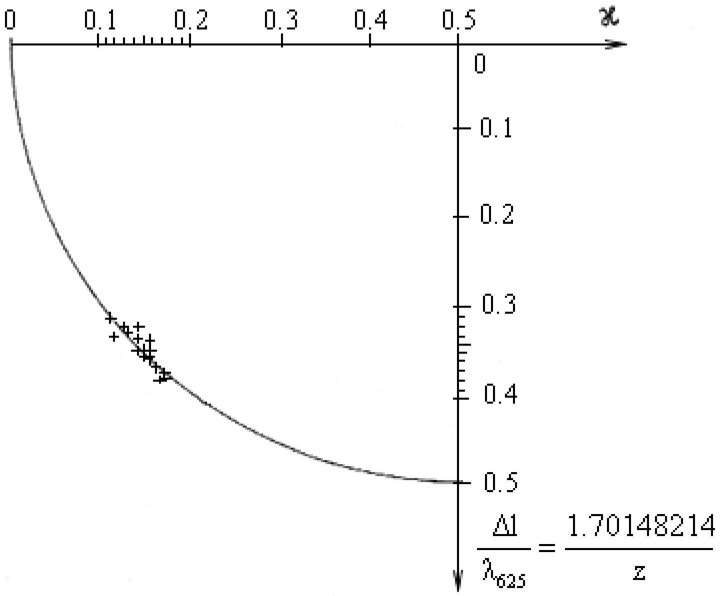
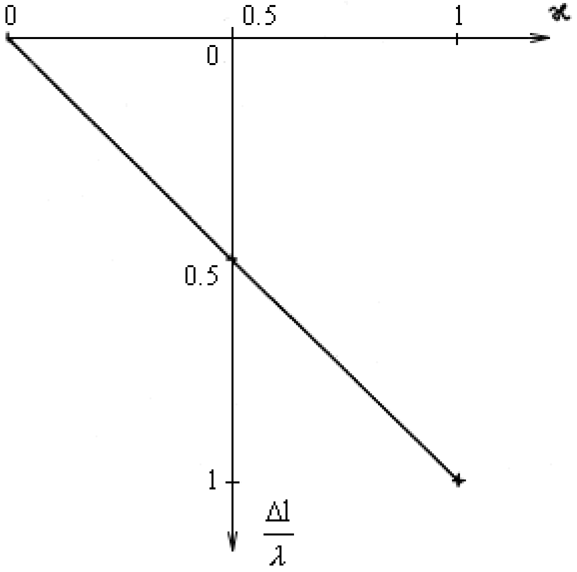
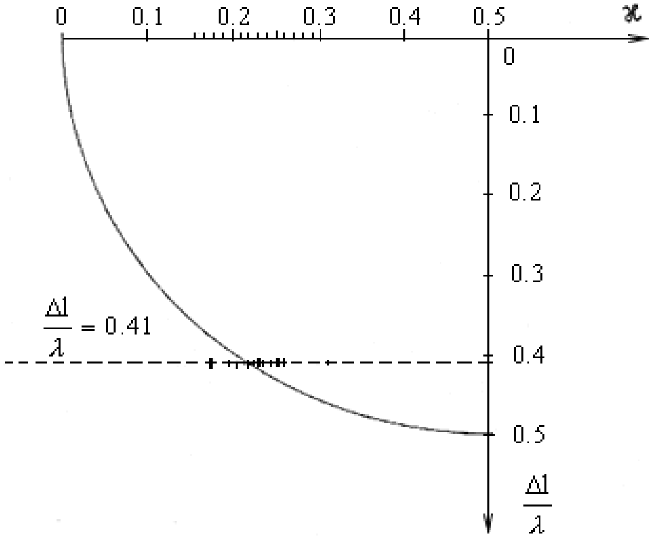


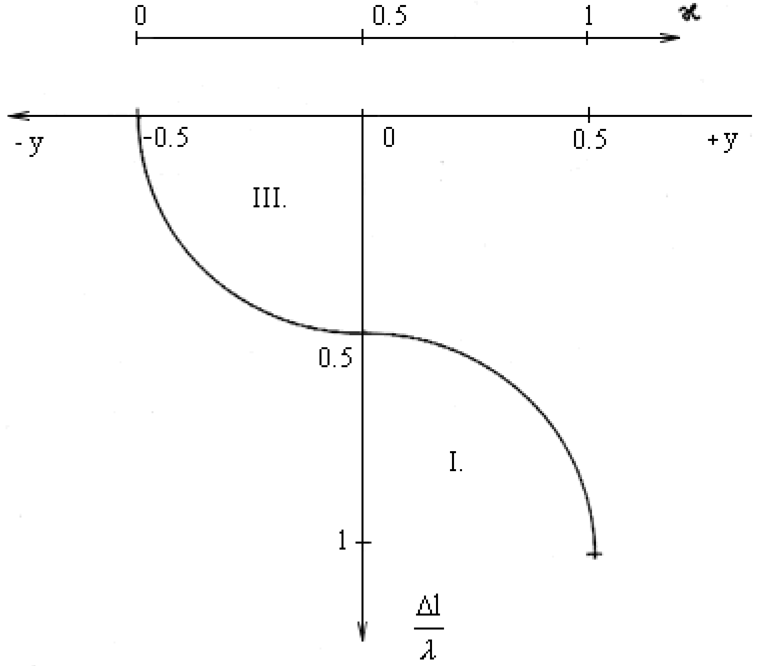
Table 2. Calculation of the kinetic energy T_{kin} of a body moving at the velocity of v according to Vlcek and according to Einstein

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 $T_{kin\ id} = mc^2[\ln\|1-v/c\| + (v/c)/(1-v/c)]$	Einstein´s theory $T_{kin} = mc^2 - m_0 c^2$
0.1	0.00439 mc^2	0.0057 mc^2	0.0050 $m_0 c^2$
0.2	0.0156 mc^2	0.0268 mc^2	0.0200 $m_0 c^2$
0.3	0.0316 mc^2	0.0719 mc^2	0.0480 $m_0 c^2$
0.4	0.0508 mc^2	0.1558 mc^2	0.0910 $m_0 c^2$
0.5	0.0722 mc^2	0.3068 mc^2	0.1550 $m_0 c^2$
0.6	0.0950 mc^2	0.5837 mc^2	0.2500 $m_0 c^2$
0.7	0.1174 mc^2	1.1293 mc^2	0.4010 $m_0 c^2$
0.8	0.1434 mc^2	2.3905 mc^2	0.6670 $m_0 c^2$
0.9	0.1680 mc^2	6.6974 mc^2	1.2930 $m_0 c^2$
0.99	0.1906 mc^2	94.3948 mc^2	6.9200 $m_0 c^2$
1.0	0.1931 mc^2	infinite	infinite

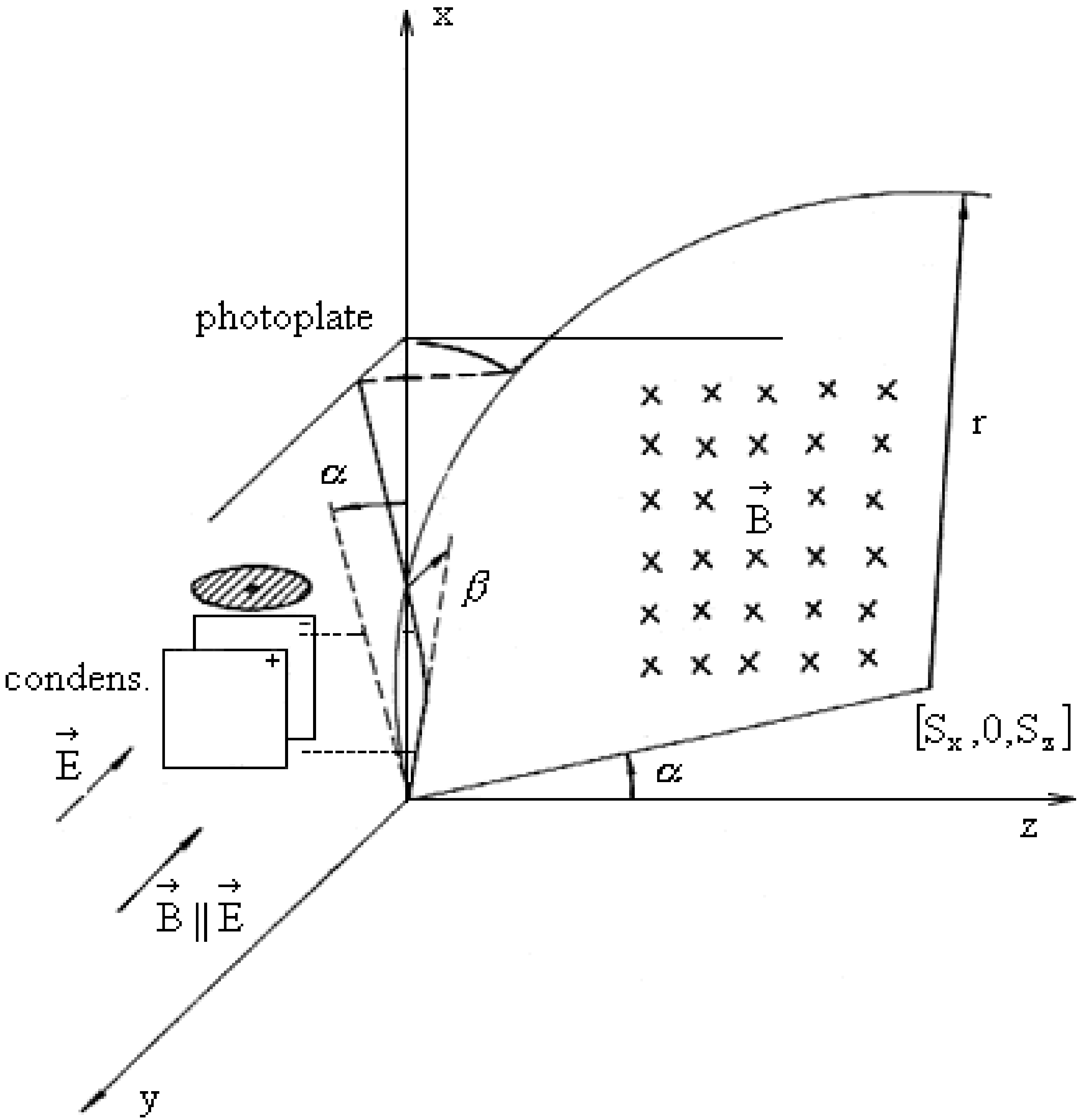
2. Form of the interference field







Kaufmann's Experiment – diagram



Kaufmann's Experiment

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

	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_b[cm] = y_T[cm]			

CORRECTED Maswell's equations

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

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

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

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

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:

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

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

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

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

CORRECTED Maswell‘s equations

Since the forces acting on the moving charge are the same, the equation applies

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

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

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

i.e. $$B=\frac{E_{\text{still}}}{\text{c}}\left(2+\frac{v}{c}\sin\phi\right)$$

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

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

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

Based on $\boldsymbol{E}_{mov} = \boldsymbol{E}_{still} + \boldsymbol{v} \times \boldsymbol{B}$

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

$$\nabla \boldsymbol{E}_{mov} = \nabla(\boldsymbol{E}_{still} + \boldsymbol{v} \times \boldsymbol{B}) = \nabla \boldsymbol{E}_{still} + \nabla(\boldsymbol{v} \times \boldsymbol{B}) = \frac{\rho}{\varepsilon_0}$$

Gauss law ($\nabla \boldsymbol{E}_{still} = \frac{\rho}{\varepsilon_0}$)

$\nabla \boldsymbol{B} = 0$ are no magnetic charges,

in statics: $\nabla \times \boldsymbol{E}_{still} = 0$

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

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

$$\nabla \times \boldsymbol{E}_{still} = 0$$

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

$$\nabla \times \boldsymbol{E}_{mov} = -\frac{\partial B}{\partial t}$$

Faraday's law

Amper's law in statics: $c^2 \nabla \times \boldsymbol{B}_{stat} = \frac{j}{\varepsilon_0}$

Total magnetic field: $\boldsymbol{B}_{dyn} = \boldsymbol{B}_{stat} + \boldsymbol{B}_Q$

$$\boldsymbol{B}_Q = \boldsymbol{B}_{dyn} - \boldsymbol{B}_{stat}$$

$$\boldsymbol{B}_{dyn} = \boldsymbol{B}_{stat} + (\boldsymbol{B}_{dyn} - \boldsymbol{B}_{stat}) = \boldsymbol{B}_{stat} + \boldsymbol{B}_Q$$

$$c^2 \nabla \times \boldsymbol{B}_{dyn} = c^2 \nabla \times \boldsymbol{B}_{stat} + c^2 \nabla \times \boldsymbol{B}_Q \qquad c^2 \boldsymbol{B}_Q = (\boldsymbol{v} \times \boldsymbol{B}_Q) \times \boldsymbol{v}$$

The 4th Maxwell's equation:

$$\boldsymbol{c}^2 \nabla \times \boldsymbol{B}_{dyn} = \frac{\boldsymbol{j}}{\varepsilon_0} + \frac{\partial \boldsymbol{E}_{mov}}{\partial t}$$

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

$$\nabla \times [(\boldsymbol{v} \times \boldsymbol{B}_Q) \times \boldsymbol{v}] = (\boldsymbol{v} \times \boldsymbol{B}_Q)(\nabla \boldsymbol{v}) - \boldsymbol{v}[\nabla(\boldsymbol{v} \times \boldsymbol{B}_Q)] =$$

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

$$\frac{\partial \boldsymbol{E}_{still}}{\partial t} = 0$$

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

Based on $\boldsymbol{E}_{\mathrm{mov}} = \boldsymbol{E}_{\mathrm{still}} + \boldsymbol{v} \times \boldsymbol{B}$

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

$$\nabla \boldsymbol{E}_{\mathrm{mov}} = \nabla\left(\boldsymbol{E}_{\mathrm{still}} + \boldsymbol{v} \times \boldsymbol{B}\right) = \nabla \boldsymbol{E}_{\mathrm{still}} + \nabla\left(\boldsymbol{v} \times \boldsymbol{B}\right) = \frac{\rho}{\varepsilon_0}$$

Gauss law ($\nabla \boldsymbol{E}_{\mathrm{still}} = \frac{\rho}{\varepsilon_0}$

$\nabla \boldsymbol{B} = 0$ ıre no magnetic charges,

in statics: $\nabla \times \boldsymbol{E}_{\mathrm{still}} = 0$

$$\nabla \times \boldsymbol{E}_{\mathrm{mov}} = \nabla \times [\boldsymbol{E}_{\mathrm{still}} + (\boldsymbol{v} \times \boldsymbol{B})] = \nabla \times \boldsymbol{E}_{\mathrm{still}} + \nabla \times (\boldsymbol{v} \times \boldsymbol{B})$$

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

$$\nabla \times \boldsymbol{E}_{\mathrm{still}} = 0$$

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

$$\nabla \times \boldsymbol{E}_{\mathrm{mov}} = -\frac{\partial B}{\partial t}$$

Faraday's law

Amper's law in statics: $c^2 \nabla \times B_{\mathrm{stat}} = \frac{j}{\varepsilon_0}$

Total magnetic field: $\boldsymbol{B}_{\mathrm{dyn}} = \boldsymbol{B}_{\mathrm{stat}} + \boldsymbol{B}_{\mathrm{Q}}$

$$\boldsymbol{B}_{\mathrm{Q}} = \boldsymbol{B}_{\mathrm{dyn}} - \boldsymbol{B}_{\mathrm{stat}}$$

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

$$c^2 \nabla \times \boldsymbol{B}_{\mathrm{dyn}} = c^2 \nabla \times \boldsymbol{B}_{\mathrm{stat}} + c^2 \nabla \times \boldsymbol{B}_{\mathrm{Q}} \qquad c^2 \boldsymbol{B}_{\mathrm{Q}} = \left(\boldsymbol{v} \times \boldsymbol{B}_{\mathrm{Q}}\right) \times \boldsymbol{v}$$

The 4th Maxwell's equation:

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

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

$$\nabla \times \left[\left(\boldsymbol{v} \times \boldsymbol{B}_Q\right) \times \boldsymbol{v}\right] = \left(\boldsymbol{v} \times \boldsymbol{B}_Q\right)\left(\nabla \boldsymbol{v}\right) - \boldsymbol{v}\left[\nabla\left(\boldsymbol{v} \times \boldsymbol{B}_Q\right)\right] =$$

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

$$\frac{\partial \boldsymbol{E}_{\mathrm{still}}}{\partial t} = 0$$

4. Corrected Newton´s Laws of Motion

- **First law:**

"Every mass (atom, molecule, particle, body, vacuum, transmission medium) persists in the status of the quasi-rest or quasi-uniform motion in a quasi-circle, or quasi- elipse (excentricity e –> 0) as far as it the external forces do not force it to change its status. (This notion is called the **generalized law of inertia**).“

- **Third law:**

All movements in physics are based **on principle of action - reaction** and **on velocity** of **stable particles** (**e-, p+,n0, D, He-3, α**).

- Action, as a motion of stable particles (**e-, p+,n0, D, He-3, α**), **is characterized by alternating acceleration and deceleration motion in the source,** along ellipse or quasi- elipse (excentricity e –> 0).

Stable particles of various speed (**leptons μ−, τ−, baryons, mesons**), **bosons W +, W-, Z** (**β electrons**) **are characterized by kinetic energy in direction of motion** $T_{kin\ id} = mc^2[\ln|1-v/c| + (v/c)/(1-v/c)]$

- Reaction creates in the transmission medium, **electromagnetic waves**, as **unstable “particles”** -

neutrinos νe, νμ, ντ , mesons π0, π+ , π- , η , K and gamma rays (**f >10^19 Hz**) **are characterized by kinetic against direction of motion** **as wave** $T_{kin\ ad} = mc^2[\ln|1+v/c| - (v/c)/(1+v/c)]$

Accompanying activity of reaction on movement of stable particles in the transmission medium are **waves, or “unstable particles“** i.e. **neutrinos and mesons.**

4. Corrected Newton´s Laws of Motion

Consequences

Physics is Easy

Leptons (electron, muon, tau), W + - Z bosons and neutrinos (electron neutrino , muon neutrino, tau neutrino) can be replaced with electron moving at different speeds from **0.001c up to 0.999.. c :**

Electron, electron neutrino are in the electron at speed of **electron : from v= 0.001c to v= 0.9 c**

Muon, muon neutrino are in the electron at speed of **electron : v= 0,995308032046c**

Tauon, tauon neutrino are in the electron at speed of **electron : v= 0,99971316674c**

W + - boson and neutrino are in the β electron at speed of **electron : v= 0,99999364465781184c**

Z boson and neutrino are in the β electron at speed of **electron : v= 0,999994396590953c**

Higgs Boson 125300 MeV/c 2 speed of **proton : v= 0,9928305c β electron is radiated from a neutron**

Hyperons, mesons and quarks can be replaced by **proton and neutron ,or alpha particle** respectively, moving at different speeds from **0.1c up to 0.999.. c:**

Lambda hyperón 2286,46 MeV and pion π 0 : 134.9766(6) MeV are in the proton

at speed of proton v= 0,8022863362c

hyperon Chí c (2645)+ 2646,6MeV and pion π ± : 139.57018(35) MeV are in the proton

at speed of proton v= 0,819183027c

hyperon 6,165 GeV and meson K- 493.7 MeV are in the alpha particle

at speed of alpha particle v= 0,7533c

4. Corrected Newton´s Laws of Motion

•Consequences

- **What is Quark?**

Two energies, which are measured in opposite directions, and we consider them as quarks are actually two different kinetic energy of a single proton, the first in the direction of its movement, and the second in the opposite direction. Quarks are actually locked (**confinement**) in proton, as is clear from the individual tables.

-QUARK = proton of different speeds

A pair of quarks of one generation = one speed of proton:

u,d quarks are in the proton at speed of **proton : from v= 0,05875c to v= 0,105065c**

c,s quarks are in the **proton at speed of proton from v=0,713c to v=0,7805c**

t quark is in the proton (neutron) at speed of **proton (neutron):**

v=0,994637c for **top quark: 169 100MeV**

v=0,994766c for **top quark: 173 400MeV/c2**

b quark is in the proton (neutron) at speed of **proton (neutron): v=0,8665c** for **4,2 GeV bottom quark**

4. Corrected Newton´s Laws of Motion

Consequences

A pair of quarks of one generation = one speed of proton:

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t quark is in the proton (neutron) at speed of **proton (neutron):**

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v=0,994766c for **top quark: 173 400MeV/c2**

b quark is in the proton (neutron) at speed of **proton (neutron): v=0,8665c** for **4,2 GeV bottom quark**

u,d quarks are in the proton at speed of proton : from v= 0.05875c to v= 0.105065c

v/c	$T_{kin\ id} = mc^2[\ln\|1-v/c\| + (v/c)/(1-v/c)]$	$T_{kin\ ad} = mc^2[\ln\|1+v/c\| - (v/c)/(1+v/c)]$
0.05875	Down quark $T_{kin\ id}$ = **1.7550 MeV** / p: *[ ]* = 0.0018704988039450329861777626124876	Up quark $T_{kin\ ad}$ = **1.5 MeV** / p: *[ ]* = 0.0015986835148543461794415692315107
0.075	Down quark $T_{kin\ id}$ = **2.92697671 MeV** / p: *[ ]* = 0.0031195396113692225967210545118109	Up quark $T_{kin\ ad}$ = **2.4MeV** / p: *[ ]* = 0.0025532197191610043413170483032269
0.081622	Down quark $T_{kin\ id}$ = **3.5 MeV** / p: *[ ]* = 0.0037302615346601410853636615401917	Up quark $T_{kin\ ad}$ = **2.81404106871 MeV** / p: *[ ]* = 0.0029991740444424494322328316937O2
0.08878	Down quark $T_{kin\ id}$ = **4.18366235 MeV** / p: *[ ]* = 0.0044589013511482922312132108807756	Up quark $T_{kin\ ad}$ = **3.3 MeV** / p: *[ ]* = 0.0035171037326795615947714523093 24
0.094686	Down quark $T_{kin\ id}$ = **4.8MeV** / p: *[ ]* = 0.0051156918494022662432562213837619	Up quark $T_{kin\ ad}$ = **3.72637 MeV** / p: *[ ]* = 0.0039715278483606256196473452168 45
0.105065	Down quark $T_{kin\ id}$ = **6 MeV** / p: *[ ]* = 0.0063947340594173847177662769260429	Up quark $T_{kin\ ad}$ = **4.530260 MeV** / p: *[ ]* = 0.0048283015026596502291040657295924
	Quarks are actually locked (confinement) in proton	**as is clear from the individual tables**

from v= 0.713 c to v= 0.73333c s quark m_0 = 70 – 130 MeV/c2 , 95+5−5 MeV/c2 [1]

m_0 = 80-130 MeV/c2, Theorized Murray Gell-Mann (1964) George Zweig (1964) Discovered 1968, SLAC

[1] Citation: J. Beringer et al. (Particle Data Group), PR D86, 010001 (2012) (URL: http://pdg.lbl.gov)

c quark Theorized Sheldon Glashow, John Iliopoulos, Luciano Maiani (1970)

Discovered Burton Richter et al. (SLAC)(1974) Samuel Ting et al. (BNL)(1974)

c quark m_0 = 1.16–1.34 MeV/c2 , m_0 = 1.29+0.05 −0.11 GeV/c2[1] Decays into Strange quark (~95%), Down quark (~5%)[2][3]

v/c	$T_{kin\ id} = mc^2[\ln\|1-v/c\| + (v/c)/(1-v/c)]$	$T_{kin\ ad} = mc^2[\ln\|1+v/c\| - (v/c)/(1+v/c)]$
0.713	**charm quark $T_{kin\ id}$ = 1.160 GeV / p: [ ] = 1.236047494268773255524413529431**	**strange quark $T_{kin\ ad}$ = 114.485493763640 MeV / p: [ ] = 0.122017381046594648248703501967 26**
0.72585	**charm quark $T_{kin\ id}$ = 1.270 GeV / p: [ ] = 1.3535582771630143437838209404184**	**strange quark $T_{kin\ ad}$ = 117.41941 MeV / p: [ ] = 0.12514431408438967945446850497659**
0.73333	**charm quark $T_{kin\ id}$ = 1.340 GeV / p: [ ] = 1.4281572732698825869678018468163**	**strange quark $T_{kin\ ad}$ = 119.1311 MeV / p: [ ] = 0.12696860023316592749751861919307**
	Quarks are actually locked (confinement) in proton	**as is clear from the individual tables**

t quark to b quark are in the proton at speed of proton : from v= ... c to v= 0...... c

t quark m_0 = 172.44 ± 0.13 (stat) ± 0.47 (syst) GeV/c^2[1] ,

m_0 = 173.4 MeV/c2, Theorized Makoto Kobayashi and Toshihide Maskawa (1973) Discovered CDF and DØ collaboratic

Decays into : bottom quark (99.8%), strange quark (0.17%), down quark (0.007%)

v/c	$T_{kin\ id} = mc^2[\ln \|1\text{-}v/c\| + (v/c)/(1\text{-}v/c)]$	$T_{kin\ ad} = mc^2[\ln \|1+v/c\| - (v/c)/(1+v/c)]$
0.994766	top quark $T_{kin\ id}$ = 173.4 GeV / p: [ ] = 184.80781431716241834344 54	$T_{kin\ ad}$ = 179.9968678 MeV / p: [ ] = 0.19183868355887822 8973
0.994637	top quark $T_{kin\ id}$ = 169.1 GeV / p: [ ] = 180.2249215745799592957129	$T_{kin\ ad}$ = 179.96660877927 MeV [ ] = 0.191806433786441122906
0.8665	bottom quark $T_{kin\ id}$ = 4.2 GeV / p: [ ] = 4.4763138415921693024363 94	$T_{kin\ ad}$ = 149,961333459543879 MeV [ ] = 0.15982714099050308721 7669575
	t -> b -> c -> s -> u <-> d This decay of quarks actually means a reduction of the speed of proton	

v/c	$T_{kin\ id} = mc^2[\ln \lvert 1-v/c \rvert + (v/c)/(1-v/c)]$	$T_{kin\ ad} = mc^2[\ln \lvert 1+v/c \rvert - (v/c)/(1+v/c)]$
0.994766	top quark $T_{kin\ id}$ = 173.4 GeV / p: [ ] = 184.8078143171624183434454	$T_{kin\ ad}$ = 179.9968678 MeV / p: [ ] = 0.191838683558878228973
0.994637	top quark $T_{kin\ id}$ = 169.1 GeV / p: [ ] = 180.2249215745799592957129	$T_{kin\ ad}$ = 179.96660877927 MeV [ ] = 0.191806433786441122906
0.8665	bottom quark $T_{kin\ id}$ = 4.2 GeV / p: [ ] = 4.476313841592169302436394	$T_{kin\ ad}$ = 149,961333459543879 MeV [ ] = 0.159827140990503087217669575
0.73333	charm quark $T_{kin\ id}$ = 1.340 GeV / p: [ ] = 1.4281572732698825869678018	strange quark $T_{kin\ ad}$ = 119.1311 MeV / p: [ ] = 0.12696860023316592749751861919307
0.72585	charm quark $T_{kin\ id}$ = 1.270 GeV / p: [ ] = 1.3535582771630143437838209404184	strange quark $T_{kin\ ad}$ = 117.41941 MeV / p: [ ] = 0.12514431408438967945446850497659
0.713	charm quark $T_{kin\ id}$ = 1.160 GeV / p: [ ] = 1.236047494268773255524413529431	strange quark $T_{kin\ ad}$ = 114.485493763640 MeV / p: [ ] = 0.12201738104659464824870350196726
0.105065	Down quark $T_{kin\ id}$ = 6 MeV / p: [ ] = 0.0063947340594173847177662769260429	Up quark $T_{kin\ ad}$ = 4.530260 MeV / p: [ ] = 0.0048283015026596502291040657295924
0.08878	Down quark $T_{kin\ id}$ = 4.18366235 MeV / p: [ ] = 0.0044589013511482922312132108807756	Up quark $T_{kin\ ad}$ = 3.3 MeV / p: [ ] = 0.003517103732679561594771452309324
0.05875	Down quark $T_{kin\ id}$ = 1.7550 MeV / p: [ ] = 0.0018704988039450329861777626124876	Up quark $T_{kin\ ad}$ = 1.5 MeV / p: [ ] = 0.0015986835148543461794415692315107