The mystery "did not-sameness" the speeds of light in nature

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It is shown, that the measured speed of light (and the phase and group) everywhere on Earth, and in near-Earth of air atmosphere, and in cosmic vacuum, has the same of variative characteristic, like y many natural phenomena. For describ of constant value of tempo of relativistic processes need quite another measure. She is named here "tempo aether-permeability" of **e**lectro**m**agnetic **w**aves (EMW) through light-carrying medium.

Because of the refusal from aether, in SRT in more 100 years did not know "mechanism aether-permeability" space EMW and have no to him of interest. Instead this mechanism being imposed erroneous declaration of "sameness" of phenomena and velocities of EMW in the "vacuum" of still and moving **i**nertial **r**eference of **s**ystems (IRS). Created in 1870th aether-dinamic theory EMW (Maxwell's) has revealed only a unity electric and the wave nature of light phenomena , but not "sameness" speed and procedural characteristics of their implementation, strongly emphasizing the variety of speeds to implement them in the expanse of the world.

Formed on the basis of Maxwell's theory in the period 1890-1904^s efforts Lorentz and Poincare aether-dinamic theory of relativity (ADTR) was based on more accuracy wording of "postulates relativity movements". According them: 1) the speed of light in different IRS is is not constant, but only is finite as well as unattainable for infinite accelerating objects, since particles was considered "clusters" the aether; 2) only the formulas of laws in different ways of moving IRS is identical (Lorentz-invariant), but not their proces implementation. Namely ADTR, not his the "without-aether kinematic copy" of SRT, with efforts of genius of relativists 20th century gives the successful development of industrial applications. On this of worthy the basis we is explain, how to maintain the moment of EMW at different speeds ($c^*=c/n$) by propagation in a medium with a refraction $n\neq1$. This resolves a long-standing dilemma of the Abraham-Minkowski and to prove invariance the radical of the Lorentz transformations not only for $n=1$, but also in the mediums with $n\neq1$.

1. Homogeneity and isotropy of the aether

(experimentally proved by the Michelson interferometer method)

In Maxwell's theory (TM) experience of studying the electromagnetic and optical phenomena of nature intuitionistic took shape in three unspoken postulates:

1) The propagation of electromagnetic waves (EMW) in stationary aether without particles is carried out by polarization-magnetizing of processes, which are describ in TM measure of the "aether-permeability" ($\varepsilon_o\mu_o$= const.), "ruling pace" propagation of EMW through homogeneous and isotropic of bowels in aethereal substrat;

2) Stationary aether apriori presupposes the *absence* phenomena his *motion in general*, and absence entrainment of one it parts relative of others. In TM opened a unique phenomenon according to which y aether as whole and y his of parts separately there is no space for moving (to-aether, and off-aether there is no "empty space"). In fact, in TM a aether first discovered not only a carrier of EMW, but also a *carrier spatiality* in world.

3) In relations with the particles aether super-permeability, i.e. at motion of particles through aether absent a process of dissipation their the kinetic energy, and also absent a process dragging of aether by particles. The presence in the aether of inertial particles , organized in free-moving of atoms (objects, of body), the molecular or crystalline systems angers constant permeability ($\varepsilon_o\mu_o$=const.) of aether additional polarization-magnetizes process ($\Delta\varepsilon\mu$=var) in the bowels themselves of particles. This makes a complete permeability ($\varepsilon\mu$) EMW through substantiality "mixtures" particles with of aether not-constant ($\varepsilon\mu=\varepsilon_o\mu_o+\Delta\varepsilon\mu$=var).

In forming in 1890÷1904 of "aether-dinamic theory relativity" (ADTR) of optical mediums, as is well known, Lorentz and Poincare not concentrate attention on the constancy and isotropic of the speed of light in "pure" vacuum (without particles). They believed them natural consequences of postulate constancy in TM ($\varepsilon_o\mu_o|_{aether}$=const) of the permeability EMW through aether without loss ($tg\delta_{aether}=0$). So in ADTR not been drawn due attention on non-constant "pace-permeability"=$\varepsilon\mu^{-1/2}=(\varepsilon_o\mu_o+\Delta\varepsilon\mu)^{-1/2}$ of EMW through "binary mixture" aether with particles. Probably why not received the theoretical development and idea Maxwell (1878) on the existence of anisotropy of the speed of light in that "mixture", and his idea of detecting anisotropy of the speed of light with an interferometer with orthogonal shoulders. These "gaps" is not accidental completely present in Einstein's SRT, in which repeated in 1905, almost all the ideas ADTR [1] in the special conception "without the aether". In SRT appears void "without bench

mark", as y Galileo, in which the particles do not excite at motion reactions, similar to those which expected in ADTR in form "aether wind" [1].

The next 50 years (until 1955), Einstein constantly repeating (being puzzled by positive results of experiments Miller), that vacuum is isotropic. Why Einstein namely so was bursting into the open door almost of obvious of propositions Maxwell's theory, of developed by Lorentz and Poincare in ADTR, so far no one has explained [1, 2]. After all, in Maxwell's theory, and, consequently, in ADTR, aether without particles is priori: homogeneous, polarizing, pervasive and isotropic. Although direct experimental evidence is isotropic of aether in 1905 was not, would be scientific wisdom would patiently wait for them as progress is made of experimental physics. Reality confirmed this [2].

Only in the late 1960^s [1, 2], by means of experiments on interferometers of Michelson with light-carrying mediums: air, other gases, of laboratory vacuum (rarefied air), it was found that the direct evidence of isotropy "of aether particle-free" general do can not be. This because when pumping out gas from the light-carrying zones Michelson interferometer (MI) already at concentrations of particles ~10^{15} pt./sm^3 (i.e. <0.001 bar), he loses its sensitivity. With the discovery this of hidden properties MI by me was found by of ***method a Michelson interferometry*** indirect experimental evidence of isotropy "of aether particle-free". This was proved by extrapolating the results of measurements of positive shift of the fringe on MI with light-carrying medium with of different mixtures of aether with particles (i.e., n>1 and $\Delta\varepsilon$>0) to a state $\Delta\varepsilon\to 0$, characteristic of the "pure aether" (see Fig.1). But and today this the experimental proof of Maxwell's ideas is not recognized y apologists SRT.

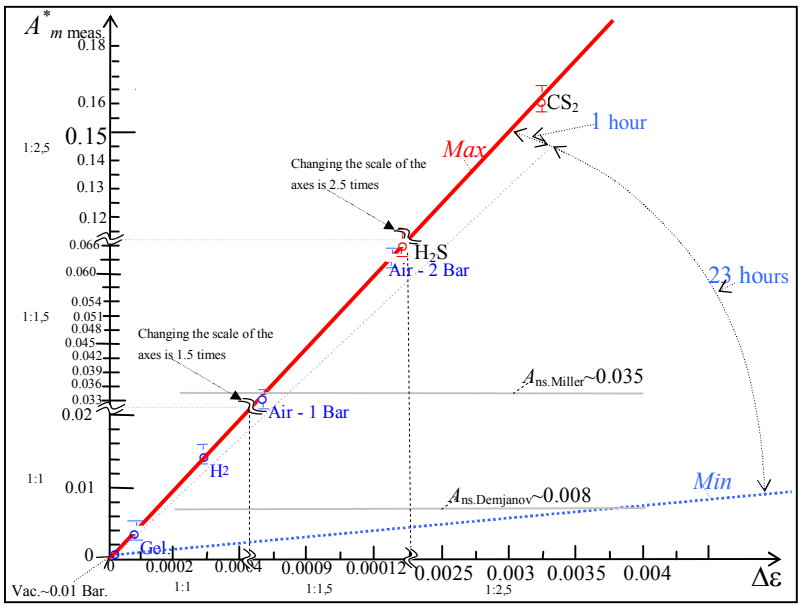

Fig.1. The dependence of the $A_m(\Delta\varepsilon)$ amplitude A_m of the interference fringe shift from the polarization contribution $\Delta\varepsilon$ particles in the total permittivity ε=**1**.+$\Delta\varepsilon$ light-carrying gaseous medium Michelson interferometer (MI), which have been discovered by me in 1968 [2]:

Max (480 km/s) and *Min* (140 km/s) – lines of maximum and minimum shift of the fringe on the daily trend of $A_m(T)$ [2***] for different light-carrying medium MI, where T – local time. Parameters of MI: the length of the rays in gases mediums: $l_\perp$=$l_{||}$=7 m and length of wave λ=6·10^{-7} m, at normal pressure of gases (air humidity ~ 40%). Point Vac. corresponds to the rarefaction of the air 10^{-2} Bar., point Air 2 Bar. corresponds to the high pressure air. A_{ns} – average amplitude jitter noise interference fringe at the Miller and Demjanov. The shift of the fringe on the MI with the helium medium (Hel.) is barely visible into the noise even at the "daily-peak shift of the fringe", and the shift of the fringe on the MIwith the evacuated (Vac.~10^{-2} Bar) light-bearing zones is practically not observed in the noise.

In the late 1960^s, I put the question rethink the principle work of MI [2]. In the focus of atention of new of interpretation of princip work of MI I put forward at the time, arising from the Maxwell theory effect the joint polarizability of aether with particles of matter, which demanded to consider any light-carrier mediums, as "relativistic mixture". In this mixture, dielectric phase of aether in Maxwell's theory has a constant permeability ($\varepsilon_o\mu_o$=const.), which defines a constant speed of light (c=$\varepsilon_o\mu_o^{-1/2}$) in a "pure aether". Another, "dielectrical fraction" of this "mixture" has a fundamentally variadic permeability ($\Delta\varepsilon\mu$=$\varepsilon\mu$–$\varepsilon_o\mu_o$=var), which proportional to the concentration of particles in the aether. Magnitude $\varepsilon\mu$ is full measure of the permeability of EMW through "light-carrying" medium, which is a variative due to changes $\Delta\varepsilon\mu$=var. Conse-

quently, the speed of EMW in luminiferous medium with permittivity εμ fundamentally is a variable ($c^*=\varepsilon\mu^{-1/2}$= var). Latent character polarizations manifestations of "light-carrying relativistic mixtures" of particles with by aether Michelson did not understand in 1881, nor in 1887, nor later. The refusal from aether in 1905, Einstein at all deprived himself and others who agreed with him, though somehow to study polarization manifestation of aether in mediums. On such a shaky foundation of SRT still continue to "unintentionally falsify" experiments on MI, as "negative" [1].

Thus, for experimental proof of the isotropy of pure vacuum require in the beginning prove positive experience of Michelson [2], with the help a reliable measurement of the linear trend $A_{m\ meas.}(\Delta\varepsilon)$, shown on Fig.1. Namely translational motion of the particles in beams of MI is excited {through interaction polarizability aether (ε_{aether}=**1**), and the polarizability of the particles Δε} spatial anisotropy of a total optical permittivity ε($c\cdot\upsilon$) "light-carrying medium" MI. I found (1968) formula $\upsilon=c\cdot(A_{m\,изм.}\lambda/2l\cdot\Delta\varepsilon)^{1/2}$ for gases light-carriers MI (with Δε<<1) [2]), which correctly render this interaction polarizabilities of the particles and aether. She transforms device MI, in detector of anisotropy light speed to the translational motion of gas atmosphere its orthogonal rays in the horizontal plane of the Earth. In this case would detectable anisotropy $|\upsilon|=|c_\perp-c_\parallel|$ by the above formula is not equal units of km/s (as is y Michelson and Miller), but would hundreds of km/s [2], in accordance with the logic of the TM and astronomical observations of magnitude $|\upsilon|$, which in ~20 times more the orbital velocity of the Earth around the Sun [2].

2. Relationship collaborative of polarizability "of substance aether" and particulates of matter

In relations electrodynamic of polarizability of rotational elements of aether and atomic systems of particles of matter are hidden almost all the secrets of "relativism phenomena" nature, many of whom are identified by Lorentz and Poincare in ADTR after 1990 year {they are listed in the list (3) [1]$_{\text{online "Ether-noo", see № 16}}$}. At study of the internal causes of different speeds of propagation EMW in mediums, the Maxwell's theory showed additive character influence of the two polarized (proportional ε) and magnetized (proportional μ) environment-forming subsystems, determining independently "tempo aether-permeability (εμ)" of EMW through light-carrying mediums. "Aether-permeability" EMW through the light-carrying mediums turns out two-part: {$\varepsilon\mu=\varepsilon_o\mu_o+\Delta(\varepsilon_{pt.}\mu_{pt.})$}. First polarization-magnetizes system ($\varepsilon_o\mu_o$) in Maxwell's theory is related with substrate non-inertial light-carrying aether, the second $\Delta(\varepsilon_{pt.}\mu_{pt.})$ – with the reactions of the inertial polarization and magnetization of the material particles. The total the ability of these two "dielectrical" subsystems be carrying EMW with a speed, proportional to $(\varepsilon\mu)^{-1/2}$, is called by the form and of the type atoms, that form the light-carrying medium.

In practical calculations the absolute permeability of the medium in the Maxwell theory {$\varepsilon\mu=\varepsilon_o\mu_o+\Delta(\varepsilon_{pt.}\mu_{pt.})$} was convenient to express in relative of form. To do this, all three members of absolute permeability εμ divided by a constant member ($\varepsilon_o\mu_o$), which is associated with the reactions of "pure aether" with EMW, and eventually receive: $\varepsilon_r\mu_r=$**1**.$+\Delta(\varepsilon_{pt.}\mu_{pt})/\varepsilon_o\mu_o=$**1**.$+\Delta(\varepsilon_{pt.r}\,\mu_{pt.r})$, where **1**.$=\varepsilon_o\mu_o/\varepsilon_o\mu_o$. In the range of wavelengths of light is always the case: $\mu_r=1$ and $\Delta\mu_r=0$, which greatly simplifies the expression for the structure of the relative permeability of light through medium: $\varepsilon_r=$**1**.$+\Delta\varepsilon_{pt.r}$. Here and in my other works all indices "$_r$" and "$_{pt.r}$" omitted for simplicity. In this case, the expression for the structure of relative of permeability of light medium, takes the simple form: ε=**1**.+Δε, in which the value of ε_{aether}=**1**. and Δε>0 determine the independent ("orthogonal") polarizations contributions from aether and particles in its total optical permittivity light-carrying medium (ε>1). With a coefficient of refraction Fresnel relative permeability media related condition: $\varepsilon=n^2$. For gases $\Delta\varepsilon\ll1$ valid of the relations: $n=\sqrt{1+\Delta\varepsilon}\approx1+\Delta\varepsilon/2=1+\Delta n$. "Orthogonal" polarization contributions (ε_{aether}=**1**.) aether and particles (Δε>0) is the basis for understanding the causes of spatial dispersion ("dynamic anisotropy") of natural mixtures of the aether with particles.

3. Seeming "constancy" the speed of light in the real of aether-spatiality

By taking into account the specifics of the materiality of the electromagnetic Maxwell equations, the speed {$c^*=(\varepsilon\mu)^{-1/2}$} of the propagation of electromagnetic waves (EMW) now has well-known expression through of polarization-magnetizing permeability (εμ) mediums, which carry EMW (and

light). Almost obvious property of the functional expressions of the propagation velocity of electromagnetic wave $c^*(\varepsilon\mu)$ in Maxwell's theory is its volatility (its non-constants), due to different concentrations of particles, which give different permeability of the different regions of space ($\varepsilon\mu$=var.). This variability has proved very misleading (see Fig.2).

Relative permeability ($\varepsilon_r\mu_r \approx \varepsilon = \mathbf{1}.+\Delta\varepsilon$) in areas where $\Delta\varepsilon << 1$, is determined primarily by the constant aether permeability ($\varepsilon_{aether} = \mathbf{1}.$=const.). It causes small variations in c^* due to small changes $\Delta\varepsilon$. In areas with high concentrations of particles ($\Delta\varepsilon/\varepsilon \to 1$) the speed of light c^* can changed many-times. Obviously, that with these two substances (aether and particles) translucent constitute a huge variety of mixtures with non-constant light transmission. Thus, the speed of light in EMW-translucent regions of space, in strict theory, is not constant and can not play the role of cosmogonic constants of the world:

$$c^* = (\varepsilon\mu)^{-1/2} \approx c\cdot(\mathbf{1}.+\Delta\varepsilon)^{-1/2} \approx c\cdot(\mathbf{1}.-\Delta\varepsilon/2) \neq \text{const.}\,, \qquad (1)$$

where $c = (\varepsilon_0\mu_0)^{-1/2}$. Essence of the matter is clear from Fig.2 and 3.

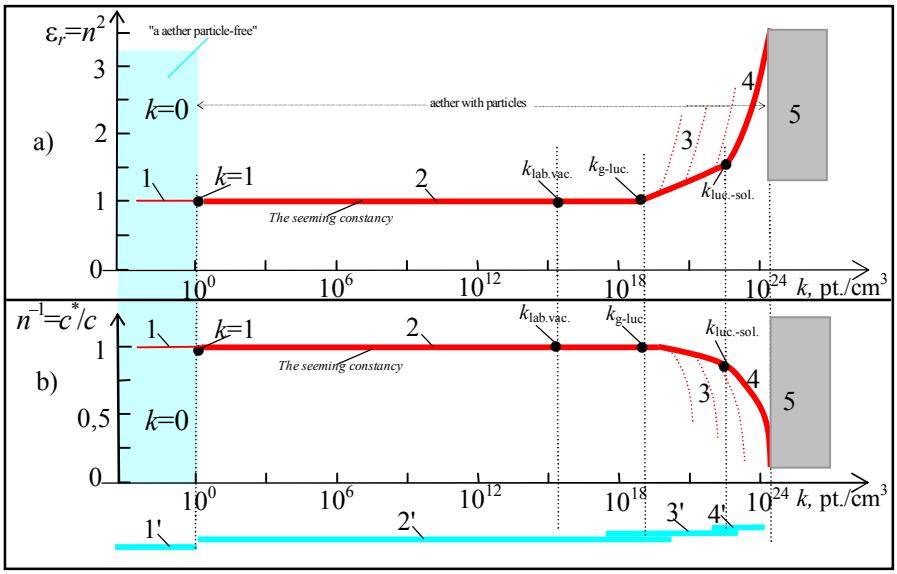

Fig.2. By understanding the "hidden parameter" SRT, associated with the neglect of the influence of the material-inertial of the atmosphere of IRS on the propagation EMW. Perverted (because of the linear axes scale of ordinates) presentation of "independence" of the dielectric constant– (a), and of "independence" of the speed of EMW – (b) from the concentration of particles of gases of atmospheres IRS:

1. 2 – areas (segments) of depending $c_n(k)/c$, respectively, in ("a aether particle-free"), the stationary gases atmospheres IRS_o seeming constant for linear of scale ordinate axis ε_r – (a) and c_n/c – (b) 3, 4 - the same for liquid and solid phases of light-carrying mediums ; 1 ', 2', 3 ', 4' – respectively, the region of zero (a pure vacuum), vacuum-gas, liquid and solid of particle concentrations in the atmosphere IRS_o; 5 - prohibited area particle concentrations under terrestrial conditions .

On Fig.2 on the axis abscissa on a logarithmic scale postponed concentration (k, pt./cm3) material particles (strictly speaking, the concentration polarized by the light proton-electron pairs in the atoms of the medium), which was found in studies different parts of the world. Given that polarization contribution ($\Delta\varepsilon$) of particles in the dielectric permeability (ε) optical media is proportional to the concentration of particles: $\Delta\varepsilon_i = \alpha_i k$, where α_i – polarizability of a one or another sort of particles in atoms, we can assume that on k-abscissa a certain scale plotted the values of $\Delta\varepsilon$ optical media. On the axes of ordinates postponed on a linear scale: in Fig.2a – of the full relative permittivity ($\varepsilon = \mathbf{1}.+\Delta\varepsilon$) of mixtures aether and particles; and the Fig.2b – of the relative speed of light (c^*/c) at propagation EMW in through these mixtures.

Thus obtained of functional dependences $\varepsilon(k)$ and $c^*(k)/c$ give a picture of apparent "constancy" the speed of propagation of light in a mediums in the huge range ($1 \div 10^{18}$ *pt./cm*^{3}) concentrations polarizable particles (Fig. 2). Scientific-rigorous picture of $c^*(k)$ on Fig.3 refutes this visual effect of "constancy" the speed of light in the real world, y which in vacuum have particles. These ABC of the of "material equations" Maxwell's I have to explain in as much detail because the in SRT is completely ignored Maxwell's binary structure $\varepsilon = \mathbf{1}.+\Delta\varepsilon$ of full a relative permeability ε optical media. Indeed, in the SRT is ignored polarization aether, which in the gases and "non-pure vacuum" (i.e. in rarefied mixture of particles with aether) determine "core polarization" contribution ($\varepsilon_{aether} = \mathbf{1}. >> \Delta\varepsilon$) in full permeability ($\varepsilon$) mediums on Earth and in space.

4. The factual non-sameness of the speed of light in the real expanse of aether

So, the real world is almost everywhere aether-space inhabited by particles, representing a mixture aether-dinamic polarizable stationary aether and translational moving particles in it with varying concentration in different regions of space. Maxwell's theory revealed to us the mystery (this not fully aware of until now) that the aether substrate and a collection of particles independently polarized himself from EMW (including light), providing, respectively, the relative contributions of the two private of permeability: $\varepsilon_{aether}=\mathbf{1}$. and $\Delta\varepsilon>0$ in the full permeability $\varepsilon=\mathbf{1}.+\Delta\varepsilon$ light-carrying medium.

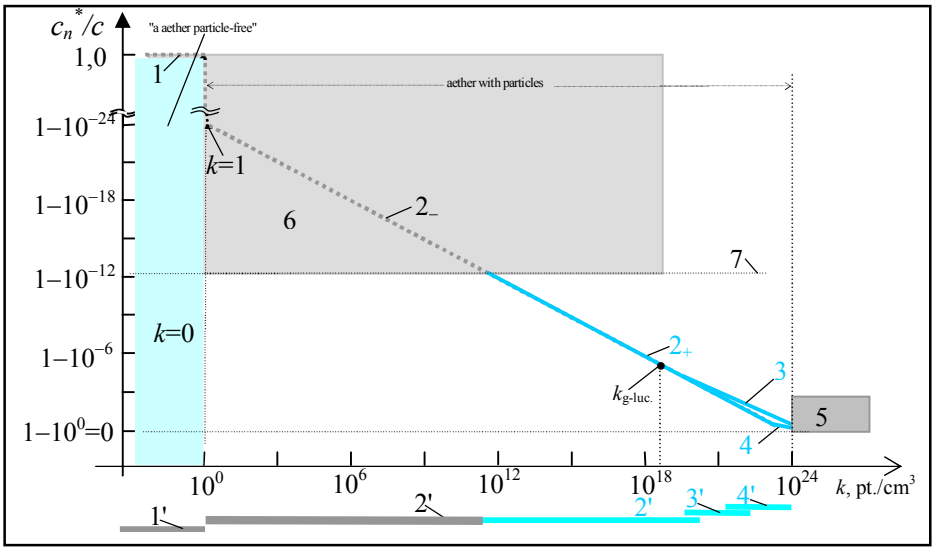

Fig.3. By understanding the non-constantly velocity of propagation of EMW in real (of cosmic space, in near-earth, terrestrial and in laboratorial) of mediums in atmospheres IRS. The dependence of the relative speed $c_n^*(k)/c$ propagation of EMW from the concentration k of neutral particle pairs in the atoms in the atmospheres a stationary IRS$_o$, which presented in a dubl-log-log axes ordinate – c_n^*/c, and axes abscissa – k . Here is accepted that in the aether-dinamic of Maxwell's theory: $c_n^*=c\cdot(\varepsilon_r)^{-1|2}$ {for gas $\Delta\varepsilon<<1$, $c_n^*\approx c\cdot(1-\Delta\varepsilon/_2)$}.

1,2,3,4 - areas (segments) depending $c_n^*(k)/c=n^{-1}$, respectively, in a perfect vacuum ("a aether particle-free", n=1), gas, liquid, and solid-phase (all n> 1) in atmospheres a stationary IRS$_o$;

1 ', 2', 3 ', 4' – respectively, the region of zero (a pure vacuum), vacuum-gas, liquid and solid of particle concentrations in the atmosphere IRS$_o$; 5 – prohibited area particle concentrations under terrestrial conditions.

Based on the model inserted into each other substrates free particles and stationary aether, Maxwell's theory gives an adequate description of all allocated immobile aether relativistic phenomena of nature, which are excited from relative motion of particles in it. From (1) it follows that for n>1 in the aether is always (always!) are present inert particles with their of polarizing reaction $\Delta\varepsilon>0$. With particles can be associated, firstly, the real IRS' (rather than abstract , like thinking in SRT), and, secondly, to determine the absolute velocity υ its movement in the a stationary of aether with help material means of measurement υ [2] on IRS'. Abstractness of the IRS in SRT noticed another Brillouin [3]. But he does not resolved the contradiction between the abstract-mental image IRS in SRT and inertial-functional her appointment in theory relativity ADTR type. Her decision had planned by Poincare and Lorentz, but they was resolved only in my works [1, 2] (see Fig.1 and Fig.3).

Even a cursory glance at the experimental study of the dependence of the speed of light (green parts of the curves 2, 3, and 4 in Fig.3) reveals a paradoxical picture. In the world real light-carrying mediums of zero concentration of particles in the aether **no** (except for the ideal region 1 with a value of $k=0$, at which only and there is a "constancy" speed of light, i.e. speed independ from k=0). When $k\neq 0$, on the contrary, there is a huge variety (but not "sameness", as in SRT) percolation speeds of the physical processes in the actual IRS, which are different in nature. About what kind of constancy of the speed of light speaking Einstein (and still argue today's apologists SRT), if in the modern world there is no place (even from the most distant stars, and, especially, in the vicinity of the Earth), in which the aether would be "free" from the particles? But all the known experiments of Michelson (even those performed in a laboratory vacuum) in a light-bearing zones of MI have particle concentrations from 10^{18} pt./cm^3 (air normal pressure) to 10^6 pt./cm^3

(laboratory vacuum with depression ~10^{-12} bar). That is why the "mixture" of the aether with translational moving (along with the Earth) of anisotropic particles, is systematically detects by Michelson interferometer in all known terrestrial and near-Earth experiments with non-zero of shift of interference fringes [2].

On Fig.3 shows of the green part of 2+, 3, 4 of curves, which is today measured experimentally, and the gray portions of the curves 1 and 2 – are not yet available for experiments on Earth (because even on satellite orbits no laboratory vacuum in which absent particles). Fortunately, Maxwell's theory, developed today at the microscopic level ADTR, fully describes all the trend depending $c_n^*(k)$ (in all areas of 1, 2, 3 and 4 in Fig.3). In the theory of Fresnel the index of mediums $n = \sqrt{\mu\varepsilon / \mu_o\varepsilon_o}$ seemed a holistic (monolithic), in it no distinguish contribution polarizabilities aether (n_{aether}=**1**.) and particles (Δn?), because phenomenon double "of aether-permeability=εμ" by light mediums was not known. The additive composition of two polarized by light substrates optical mediumsn became differ only in the Maxwell theory: ε_{aether}=**1**. and Δε (see Section 2), each of which in its own way is involved in the process propagation of EMW. Through the analysis of relations between these two substrates polarizability is became possibly to the mathematical description of the processes in MI.

As noted above, a synthetic index of refraction (n) in Fresnel's theory is associated with of relative permeability ($\varepsilon_r\mu_r$) environments by Maxwell's theory (see Fig.3) by the relation:

$$c_n^*/c = n^{-1} = (\varepsilon_r\mu_r)^{-1/2}, \qquad (2)$$

where c and c_n^* – the speed of light in "aether particle-free" and in "of mixture" aether with particles, respectively. It turns modularly expandable values and $n \cdot c_n^*$, multiplying each other, forming the "relativistic constante" ($n \cdot c_n^*$=const), who have noticed in optics about 400 years ago in the study of the laws of refraction (Snellius), but the relation of these laws with the theory of relativity was not paid due attention neither ADTR, nor, of course, in the SRT. We will be see here that, actual, this is latent the universal constant of the world.

5. "Ruling pace aether-permeability" propagation of EMW through differents "mixtures" aether and particles

Relativistic "sameness" kinetic states of objects in the mediums has nothing to do with the declaration of the 1st postulate SRT "of sameness" of natural phenomena in the mobile and fixed IRS, allegedly provided them "by voids space". Relativistic "sameness" (including of Lorentz-invariance formulas) can not be understood without accounting the aethereal "part" of the refractive index (n_{aether}=**1**.) in the total index (n>1) refractive light-carrying materials with particles. I'll prove it on the basis of the *fundamental principle of the theory of Maxwell*, which was known in the optical experiences for more than 400 years – from the time of the Snellius. Indeed, today, no one doubts that the angle of incidence of light is equal to the angle of refraction because the speed of light in the medium is the fall not equal of the speed of light in a medium refractive. Take a look at how the law Maxwell-Snellius horizon expands understanding aether-dynamic theory of relativity, and puts the "cross" on the theories, that deny the aether.

Consider any of the propagation path of EMW (eg, of light) in a particular part of the "space" (the passage of light in the laboratory setting, on a line of ground radio and satellite communication systems or interstellar part of the Universe). A characteristic feature of almost all of these routes is that they are not free from the presence of the translational moving particles of matter that make these routes dielectrically heterogeneous: $\varepsilon_{var.}$>1 and $n_{var.}$=$\sqrt{\varepsilon_{var.}}$>1, Fig.2. And on farthest of space part unlikely have even not extensive sections propagation EMW, on which absent particles (Δε=0). But never a relative permeability (ε=**1**.+Δε) of these sections space does not fall below the value of ε_{aether}=**1**. [1].

I investigate the propagation path of light from the initial zone "of space" of the free from particles ("pure" aether with n'_{const}=**1**.), through a few (i) heterogeneous areas with particles n_i>1), to the end-zone, in which the same absent particles with n''_{const}=**1**. We write the iteration-transitive relations Snellius-Maxwell, which determined of laws consecutive transformation speed-characteristics of the pulse of light through these fixed, relative to the aether, zone [1] (for simplicity, does not affect the generality of the findings, consider of the zero angles of incidence of light on the boundary between the zones):

$$\mathbf{1}\cdot c_{(n'=\mathbf{1}.)} = n_1 \cdot c_1^* = n_2 \cdot c_2^* = n_3 \cdot c_3^* = \ldots\ldots = n_k \cdot c_k^* = \mathbf{1}\cdot c_{(n''=\mathbf{1}.)} = 1/\sqrt{\varepsilon_o\mu_o} = \text{const.}, \qquad (3)$$

where c_1^*, c_2^*, c_3^*,……, c_k^* – *unequal* speeds of light on the spans with of varying the concentration of particles (i.e. with changing values n_i, see Fig.3). Obviously, all the c_i^* speed of light on the flight with $n_i>1$ is less than the speed of light in a "clean" vacuum (i.e. "aether particle-free"): $c_{(n=1.)}=\mathbf{1}\cdot c=c$, but always less so, that the product $n_i \cdot c_i^*=c$ remains constant. Law (3) is reversible. According to (3), the multiplication $n_k \cdot c_k^*=1/\sqrt{\varepsilon_o\mu_o}$=const. is complex-parameter of "sameness", "ruling pace" aethereal of permeability of EMW (of photons) at through different optical mediums (including arther without particles). Namely such of logic "of sameness" formulas phenomena in different IRS postulated the Poincare in the second of postulate ADTR [5, p. 162]. In law Snellius-Maxwell (3) this expressed in the of sameness "of tempo aether-permeability"($n \cdot c^*=c$) EMW through different mediums, that are dormant together with aether. Thus, according to (3):

- speed of propagation c_i^* EMW in different mediums always characterized "of non-sameness" value , but the formula "of tempo aether-permeability" ($n_i \cdot c_i^*$) remains the same in *all mediums* as it "tempo-normalized" constant $1/\sqrt{\varepsilon_o\mu_o}$ of aether substratum, which is included in all mediums;
- this rule will probably to spread in the same conditions and on mediums with $n_i<1$, identify in specific cases of realization $c_i^*>c$ (because in Maxwell's theory there is no limit on the size and sign of index $n=\sqrt{\varepsilon\mu}$).

Change the speed c_i^* propagation EMW always predetermined, according to (3), variation of characteristics permeability n_i^2 EMW through the mediums. At the transition EMW from the real vacuum with one indicator $n_1\neq1$ in a real vacuum with another indicator of $n_2\neq1$ stream EMW forgets speed c_1^* and continues to move at a speed of $c_2^*\neq c_1^*$. Saving only *formula* "of tempo aether-permeability" $n_1 \cdot c_1^* = n_2 \cdot c_2^*$, normalized in (3) to a constant value of: $1/\sqrt{\varepsilon_o\mu_o}$. This a prompt me to "ekzo-kinematic" mechanism deceleration of EMW in mediums with $n>1$ [10, *p.2*], which schematically represented on Fig.4.

Under the mechanism in Fig.4, in "mixture" aether with the particles, path length of EMW is longer, than the path of the same EMW in a "pure aether without the particles". Skilled electronics and cybernetics, this mechanism would be especially understands when one considers that the particles in Fig.4 serve as unique of nanoscopic "delay lines". The more of them will be in the path of the EMW (i.e., the greater k), the greater the path length must overcome the EMW through of bowels particles, the more time it will spend to overcome dimensional of distance Δr, which we measuring in our experiments without accounting (δr) way of EMW in the bowels of each particles. The group velocity of EMW, measured by us in the mediums, will be determined when help familiar relation $c_{gr.}=\Delta r/\Delta t$, where Δr – is the "seeming" to us of distance, which includes only diameter of the particles (~10^{-13} cm), while as EMW propagating through "bowels" the particles are many times longer path (up to 10^{14}-fold [10, *part 2*]), than the diameter of the particles (see Fig.4).

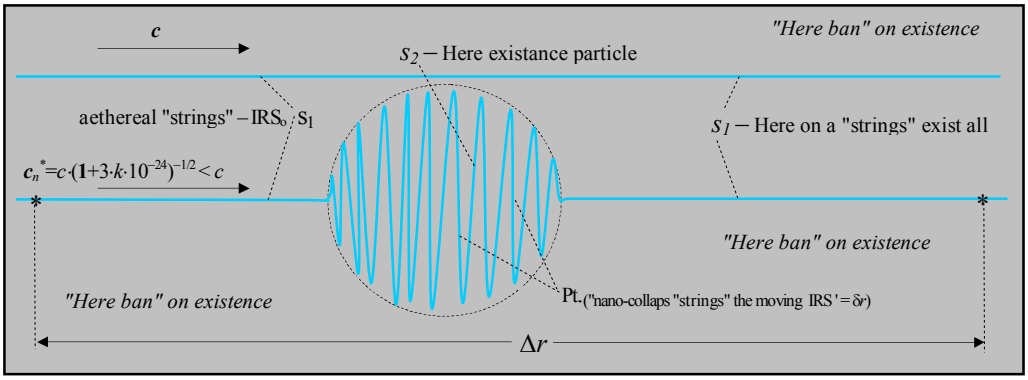

Fig.4. Model propagation EMW along cosmic strings (for the zone, where k=1 pt./cm^3), forming a thin-Planck fibrous structure of aether [2, 10]. For free from particles plots superstrings s_1 EMW propagation with speed $c\approx300000$ km/s, and through a "local collapse" of the superstrings s_2 in the particle (pt.) – with the reduced speed $c_n^*=c\cdot(1+3\cdot k\cdot10^{-24})^{-1/2}<c$. In the post-resonance region of the inertial reaction of particles of EMW do not penetrate into the depths of the particles s_2 and the speed of EMW at these frequencies is equal to c (EMW carry only areas superstrings s_1).

In the 1960^s, the phenomenon described above, I used to explain the existence of the "phenomenon of ferroelectricity", due to which in natura there is a unique material with a dielectric constant $\varepsilon\sim10^6$, the group velocity of EMW through which can be reduced to ~300 km/s, i.e. is 1000 times lower, than speed EMW in the air (~300,000 km/s). I measured such the group velocity in special experiments on ferroelectric rods [10-12], but their aether-dinamic interpretation is not recognized. These substances now are widely used as a delay line EMW, as I predicted in [11].

In Maxwell's theory the phase velocity c^* of propagation of the "plane wavelength" of light in a stationary medium in to approximation geometrical optics (rays, as on Michelson interferometer) coincides with the group velocity $c_{gr.}\approx c^*$ and, in view made above simplifications records, can determine a simple equation:

$$\{c_{gr.}\approx c^*=(\varepsilon\mu)^{-1/2}=c/n\} < \{c=(\varepsilon_o\mu_o)^{-1/2}\}, \quad (4)$$

where c – speed of light in a "pure" vacuum (in "aether particle-free"). According to law Snellius-Maxwell (3), the speed of EMW on the superstrings is the body of aether outside of the particle mass (s_1, Fig.4) always is constant ($n_i{\cdot}c_i^*=\mathbf{1}.{\cdot}c$=const.), where $\mathbf{1}.=n_{aether.}$ But in the presence of particles on the testimony available to us the method of experimental measurement of the speed of EMW ($c_{gr.}=\Delta r/\Delta t$), the group velocity has of latently "slowing" in concert with the Maxwell's formula: a: $c^*=(\varepsilon\mu)^{-1/2}\approx c_{gr.}$.

The mystery it of "latently slowing" of group velocity of EMW in mediums with particles becomes understand when you consider that we measure Δr without lengthening δr way of EMW in micro-particle; and in the experiment a measured time of the mileage EMW Δt, which always (and is inseparable) includes the time spent on full mileage ($\Delta r+\delta r$) EMW with speed c (Fig.4). As a result of (4) is always is obtained experimental underestimate value $c_{gr.}=\Delta r/\Delta t \approx c^* < c$., in which the numerator (Δr) is measured by the experimenters without "of lengthening the path" (δr) inside the particles (since he the has no direct access to the measurement to hidden path value δr), and the denominator (Δt) always involves delay EMW in "superstring maze" inside the particles. If be the experimenter knew lengthening the way δr EMW flow inside the particles for this or that a given concentration given concentration, he himself can be convinced of the constancy of the velocity of the flow of EMW along the length of aethereal superstrings:

$$c=(\Delta r+\delta r)/\Delta t = \text{const}. \quad (5)$$

As long as modern science considers all of particles "is points" that have no structure, the proposed approach to the interpretation of law Snellius-Maxwell will be unavailable.

Thus, latently "slowing" of group velocity of EMW in mediums with permeability $n^2>1$ was disclosed by Snellius-Maxwell (3):

$$n_i{\cdot}c_i^*=\mathbf{1}.{\cdot}c=\text{const}. \quad (6)$$

Relativistic meaning of this law formulated follows: *"the speed of EMW $c_i^*\approx c_{gr.}$ in medium with permeability $n_i^2>1$ slowed as many times as the number of times the index of refraction of this medium is greater refractive index "aether particle-free" ($\mathbf{1}.=n_o$), i.e. in a many times as of times n_i greater than* **1**.". With the help of the law (6) the experimenter is able to determine using the index n_i the elongation of way δr propagating EMW in mediums with particles. It is easy to show that $\delta r/\Delta r=n-1$. By the law (6), multiplication $n_i{\cdot}c_i^*$ not simply constant, but and is always a equal constant speed of EMW in a vacuum without particles: $\mathbf{1}.{\cdot}c$.

Considered by in Fig.4 model slowing spread of EMW in the presence of particles in the aether is the first step to penetrate the mysteries of latent in processes occurring inside of "particle-point" of matter. Will be shown below how these ideas explain the incomprehensible phenomenon of "accelerating" speed c_i^* to the value of c at the transition of EMW from a medium with $n>1$ to medium of pure vacuum c exponent $n=\mathbf{1}$. Becomes very clear of *latently-kinematic* realization in nature conservation of law of momentum conservation light flux in the mediums with different relative permittivity $\varepsilon_r=n^2>1$, so that achieved the solution old "of dilemma of Abraham-Minkowski".

6. The relativistic velocity addition law, which does not contradict the postulates ADTR but contains evidence of the existence of light speed anisotropy $|\upsilon|=|c_\perp-c_\parallel|\neq\mathbf{0}$ in real space, disproving the second postulate of SRT.

Given that $\varepsilon=n^2$, we obtain the expression contribution of particles light-carrying medium through index refractive n in the theory of Fresnel: $\Delta\varepsilon = n^2-1$. Hence, the "formula drag coefficient" by Fresnel $f=(1-n^{-2})=(n^2-1)/n^2$ has a simple interpretation of Maxwell's theory: $f=\Delta\varepsilon/\varepsilon < 1$. Here it's takes an entirely different meaning – of the coefficient partial ($f{\cdot}\upsilon < \upsilon$) polarizing drag (acceleration or deceleration), the speed of light with translational movement of the particles of the optical medium, moving at a speed υ relative to the stationary aether. This purely relativistic factor is obtained from the **r**elativistic **v**elocity **a**d-

dition law (RVAL), discussed in detail in [1]. A fact the opening of the relativistic factor $f=\Delta\varepsilon/\varepsilon$ by the Fresnel in 1820 year (almost 100 years before SRT) out of a mechanical model of a continuous medium (as if a binary mixture of "free aether" and "etherial clots the matter"), i.e. even before the creation of the Maxwell's theory and its development in ADTR in, and then in SRT, can be called a "miracle" intellectual of of epiphany Fresnel. Consider an amazingly simple mechanism to implement RVAL (without violating tenets ADTR and SRT), which operates owing of independents polarised actions of mobile of substratum particles (with contribution $\Delta\varepsilon$) and to stationary of substratum aether (with contribution $\varepsilon_{aether}=1$.).

Formed thus optical the "mediums-mixtures" aether with particles always has speeds $c^*<c$. In the analysis of the relativistic addition rule of two speeds:

- of the propagation of light in the stationary IRS_o in aether ($c^*=c/n$);
- of translational motion of the particles in a moving light medium $IRS'(\upsilon)$, a use the formula:

$$c^*=c/n\oplus\upsilon\,, \tag{7}$$

in which the sign $\oplus$ – operator RVAL. Expressing (7) through the traditional in classical mathematics of signs for two opposite directions of relative motion: $\boldsymbol{c}\cdot\boldsymbol{\upsilon}/|\boldsymbol{c}\cdot\boldsymbol{\upsilon}|=\pm1$, we obtain (after decomposition in row by small parameter $\upsilon/c<<1$):

$$c^*=c/n\oplus\upsilon=\frac{c/n\pm\upsilon}{1\pm\frac{\upsilon\cdot c/n}{c^2}}\approx\frac{c}{n}\cdot\left[1\pm f\cdot\left(\frac{\upsilon}{c}\cdot n+\frac{\upsilon^2}{c^2}\pm\frac{\upsilon^3}{c^3}n^{-1}+\frac{\upsilon^4}{c^4}n^{-2}\pm....\right)\right], \tag{8}$$

where $f=1-n^{-2}$. The first two terms of the series give the well-known "classic" formula Fresnel for velocity addition (1820):

$$c^*_{Fr.}\approx c/n\pm f\cdot\upsilon\,. \tag{9}$$

We note that according to (7) the speed of light in a medium ($n>1$) is always "at the beginning" is reduced in "n" times (up to the value $c_n^*=c/n<c$) after which the to the relation c/n, may be added positive value ($f\cdot\upsilon$), without fear of exceeding the sum of ($c/n+f\cdot\upsilon$) of constant c. Due to the structure of the relativistic factor of Fresnel ($f=1-n^{-2}=\Delta\varepsilon/\varepsilon$), the first postulate ADTR (or second postulate SRT) is not violated even for the sign "+", as $(c/n+f\cdot\upsilon)<c$.

Michelson did not know neither RVAL (7), nor the 2st postulate SRT and just of folding the speed on the based of the "ballistic hypothesis Ritz":

$$c^*_{Mich.}\approx(c\pm\upsilon)>c\,. \tag{10}$$

In (10) does not take into account the index n and therefore violated (with the sign "+") first postulate ADTR [5, *p. 162*] (which y Einstein's becomes second in postulate of STR [1, 2]). The use of (10) led to erroneous of formula Michelson for the speed of the "aether wind" [2]:

$$\upsilon=c\cdot(A_{m\ meas.}\lambda/2l)^{1/2}. \tag{11}$$

Formula (11) was used by him and his followers to test the second postulate of SRT (as results measured by the amplitude $A_{m\ meas.}$ shift of the fringe of MI). But the second postulate of STR prohibits of sum (10), giving for the sign "+" speed $c^*_{Mich.}>c$. A vicious circle, which does not want to admit apologists SRT. In this vicious cycle of forming and use of (11) is hidden the main reason the 1600-fold errors, which overestimated the amplitude $A_{m\ exp.}$ the expected shift of the fringe 2-order υ/c, and 40-fold of underreporting the speed υ of "aether wind" [1, 2].

I proposed else in 1968 a another interpretation of the experiments of the Michelson type [2]. In it instead erroneous formulas with $c^*_{Mich.}$ (10) I used is Lorentz invariant (as it turns out now) formula Fresnel $c^*_{Fr.}$ (9) for the effects of the 1st order υ/c. Intuitively when I her corrected (1968 [2]) by means of a factor of order υ^2/c^2 {over due to typing in the proof of (12) Lorentz-contraction and the amendment on the "triangle of Lorentz"}, for gaseous of mediums ($\Delta\varepsilon<<1$) was obtained the consenting with experiments (Fig.1) for the following formula speed of "aether wind" [1, 2]:

$$\upsilon\approx c\cdot(A_{m\ meas.}\lambda/2l\cdot\Delta\varepsilon)^{1/2}. \tag{12}$$

Formula (12) takes into account the contribution of the polarizability of the particles ($\Delta\varepsilon$) in full permeability ε light-carrying medium of MI. All who ever measured amplitude ($A_{m\ meas.}\neq0$) the nonzero of shift interference fringe to MI in air medium, they all received by the formula Michelson (11) speed υ units km/s. The same measurements $A_{m\ meas.}\neq0$ for handling in to (12) give values υ hundreds of km/s [2].

In particular, my measurements at the latitude of Obninsk, presented in Fig.1, a given by (12) for the fringe shift of the daily maximum (*Max*) – 480 km/s, and for the band shifts daily minimum (*Min*) – 140 km/s [2]. This proves simultaneously three facts:

1) the ***positives*** of the experiments on MI;

2) the ***existences*** , in full agreement with Maxwell (1877), of ***anisotropy*** $|\upsilon|=|c_{\perp}-c_{\parallel}|$ of aether space, populated numerous translational moving particles with speed $|\upsilon| \approx 600$ km/s;

3) ***refutation*** of the 2nd postulate of SRT ***sameness*** velocities of light in all directions in the real vacuum of space, which never completely free from particles.

7. Resolution the dilemma of Abraham-Minkowski

Maxwell's theory (TM) provides the only intelligible mechanism propagation of EMW – owing to polarizing excitations of permeability in mediums-mixture aether with particles ($n^2>1$), because light equally polarizes of the particles and aether. So, naturally, the limiting case of "a aether particle-free" ($n^2=\mathbf{1}$.) – this is the ideal environment. On the fertile soil of TM, which entirely based on a aether, Lorentz and Poincare opens a new parameter ($\beta_L=\sqrt{1-\upsilon^2/c^2}$) in the transformation of coordinates from the mobile IRS′ in stacionary IRS_o and back ($\beta_G=1$).

In classical theory relativity by Galileo this parameter was a hidden ($\beta_G=1$). Denial in SRT off the aether became the ideological basis of the denials from substantialist causes of birth and propagation of EMW in the aether-carrying of mediums. In STR understanding of the medium has been perverted beyond recognition. Light-carrying mediums became are understood as "materialy interference (noise)" for the propagation of light in a "pure emptiness." Without particles, in space is "remained only emptiness", in him is no is nothing, that can be of EMW. Understanding the unreality of such a state of peace, Einstein put forward the idea of a "field-space".

But the "country setting being of the world" turned insolvent during yet at life the of Einstein [12, 13]. Neither "void", nor "field" of the permeability of medium do not possesses. I tested this experimentally [10]. Indeed, the pumping of "field" with a power of 1 microwatt to 100 kilowatts (i.e. the change in density of "field" on 80 dB!) in vacuum (0,01 bar) capacitor does not change the capacitance of the capacitor, but when we do 2-fold increase number of residual particles in the condenser (from 0,01 bar up to 0,02 bar), then the allways felt to increasing the capacitance. Due to the triumphant development of applied fields TM regardless of SRT arose conflicting views on the laws of motion of relativistic objects (including EMW and light) in a real mediums with permeability $n^2>1$. Therefore, besides of unproven "negatively" experiments type Michelson and erroneous "exceptions" from the physics of aether, there are other controversial issues [6-8]:

1) Changes or no the formula of radical's $\sqrt{1-\upsilon^2/c^2}$ Lorentz transformations, obtained in the "perfect vacuum" ($n_o^2=\mathbf{1}$.) in the transition of EMW in the real mediums, having at ***different*** concentrations of particles of different permeabilities $n^2>1$?

$$\text{"in void" without particles } (n^2=1)\text{:}\quad \sqrt{1-\upsilon^2/c^2}\,; \quad \text{"in void" with particles } (n^2>1)\text{:}\quad \sqrt{1-\frac{\upsilon^2}{(c/n)^2}}\,? \tag{13}$$

2) Persists does in the mediums with changing in the space value of n magnitude of momentum (p_v) of flux EMW?

$$p_v=m_v\cdot c_{gr.}\,, \tag{14}$$

where m_v – dynamic mass of flux EMW; c and $c_{gr.}$ – speeds EMW in "vacuum without particles" and in a vacuum with particles, respectively. More than 100 years this dilemma Abraham-Minkowski does not get solutions . Recently, the authors of [6-8] again tried to proved that in inhomogeneous mediums with different n Lorentz-radical $\sqrt{1-\upsilon^2/c^2}$ change appearance and no persisting of momentum (p_v) of EMW flux. They argued that only in a perfect vacuum ($\varepsilon_o\cdot\mu_o/\varepsilon_o\cdot\mu_o=n_o^2=\mathbf{1}$.) formula (13) persist the form $\sqrt{1-\upsilon^2/c^2}$, and in (14) is persist momentum EMW: $p=h/\lambda_o=m_v\cdot c_{gr.}=$const., where $m_v=e/c^2$ and $c_{gr.}=c/n_o=c$.

When light propagates in the zones with changing the refractive index n, as in (3), the authors [6-8], how thinks the Abraham and Minkowski, try to recognize changing of the Lorentz-radical in the depending from permeability of the medium with $n^2>1$: $m_v=e/c^2$

$$\sqrt{1-(\upsilon/c_n{}^*)^2}=\sqrt{1-\frac{\upsilon^2}{(c/n)^2}}=\mathrm{var}(n)\,. \qquad (15)$$

Similarly at the logic of SRT, from which they take the formula $m_v=e/c^2$, off they do change the momentum of EMW flux at different $n>1$:

$$\widehat{p}=m_v{\cdot}c_n{}^*=\frac{e}{c^2}\cdot\frac{c}{n}=\frac{e}{c\cdot n}=\mathrm{var}(n)\downarrow\,. \qquad (16)$$

However, such determination of momentum in (16) contradicts another of his definition by de Broglie's formula ($p=h/\lambda$), which gives the growth momentum of EMW flux with increasing n, since in environments with $n>1$ wavelength $\lambda=\lambda_o/n$ decreases:

$$\breve{p}=h/\lambda=\frac{h\cdot\nu}{(\lambda_o/n)\cdot\nu}=\frac{e\cdot n}{c}=\mathrm{var}(n)\uparrow\,. \qquad (17)$$

Getting mutually exclusive results indicate, that the use in (16) and (17) formulas $c_n{}^*=c/n$ and $\lambda=\lambda_o/n$, although it is supported by others experimental observations, here requires a deeper analysis.

SRT can not refute the logic of artifacts (15) and (16), although the relativistic practice tacitly (and unproven) is based on the principle of the identity of the Lorentz-radical $\sqrt{1-\upsilon^2/c^2}$ coordinate transformations at IRS, and unchanging of momentum of flux EMW by propagation in refractive-heterogeneous mediums. The only thing speculative "evidence" artefactual (15) and (16) in the SRT reduces to the demagoguery that $c_n{}^*=c/n$ – this the phase-speed (not the group-speed) of EMW, so de variation of n in values (15) and (16) should be considered as the alleged "seeming". Quantum theory can not refute the logic artifact (16) for the same reasons.

Stated above presentation of constant complex-parameter=$n{\cdot}c^*$, "ruling pace" propagation of EMW in dilemma Abraham- Minkowski, fundamentally of based on law Snellius, aether-dinamic essence (3) of which has been thoroughly developed in the theories of Fresnel (1820) and of Maxwell's (1870). Indeed, consider by nobody of not disputed experimental results of passage EMW (light), through three regions of space with three of relative permeabilities: $n_1{}^2=1$, $n_2{}^2=4$, $n_3{}^2=1$. Let each of the three spans of these plots and two the boundaries between them are equipped by metrological sensors to measure group velocity of EMW (on spans), of the angles of incidence and refraction (at the borders). For this experimental task today known rigorous theoretical solutions, which repeatedly verified experimentally in the 18-20 centuries.

In terms of the angles of incidence and refraction of this is laws are known for more than 300 years, in the following formulation:

1) The angle of incidence θ_1 EMW flow from the first spans on the border of the second will be greater, than the angle of refraction in the second a span ($\theta_1>\theta_2$), and the angle of incidence θ_2 EMW flow from the second spans on the boundary of the third will be smaller than a angle of refraction on the third span ($\theta_2<\theta_3$). At this, turns $\theta_3=\theta_1$. We can say that the flow of EMW in the transition from the first spans on the second spans "forgets" the direction of the preceding movement, and the flow of EMW in the transition from the second to the third portion of the space is though and "forgets" the direction of the angle θ_2, but in such a way that he "remember" direction of the first spans ($\theta_3=\theta_1$), because $n_3=n_1$.

In terms of the phases velocities, propagation of EMW these laws are known for about 200 years in the following formulation:

2) The phase velocity of EMW in the second span: $c_{n2}{}^*=c/2$ is less than the phase velocity of EMW on the first span: $c_{n1}{}^*=c/\mathbf{1}$. This "slowing down" clear – because $n_2>n_1$ in 2 time. Less clear how the phase velocity of EMW on the third span of the newly "accelerate" to the value $c_{n3}{}^*=c/\mathbf{1}$. and becomes greater than the phase velocity of EMW on the second a span (i.e. $c_{n3}{}^*>c_{n2}{}^*$).

In this case, it turns out: $c_{n3}{}^*=c_{n1}{}^*$. This phenomenon is interpreted as follows: the flow of EMW in the transition from the first span on the second span "forgets" its previous speed $c_{n1}{}^*$, and at the transition from the second span of the space on the third span again forget $c_{n2}{}^*$, but in a way that "remembers" the its original speed $c_{n1}{}^*=c_{n3}{}^*$. However, this populist interpretation, and not more.

On fact, the flow rate of EMW on all three spans is sameness. Differ only in the length of the kinematic path of EMW on seemingly sameness of dimensional intervals Δr of perfect vacuum (aether with-

out particles) and in the real vacuum (aether with the presence particles), as shown schematically in Fig.4. You would think that my kinematic model "once more" confirm a kinematic concept SRT. It is not. In SRT Einstein proceeded from the externals "exo-kinematic relations" between a pair of objects through "void" of space (as y Galileo), and in the model on Fig.4 is represented aether-dinamic the concept of hidden endo-kinematic of the propagation of EMW within the particles. The model in Fig.4 discloses the mikro-kinematic relationship "cosmic strings"-structure on free spans of aether (s_1) and in hidden of the spans in the particles (s_2). Ekzo-kinematik SRT denies the highlighted reference system and the observability of the absolute motion of material objects, and our endo-kinematic concept comes from the existence of fixed of highlighted microstructures out of cosmic aethereal strings. They are organically connected with the ***absolute motion*** of the particles on aethereal strings network, ***which*** (through processes polarizability by light) due of microparticles bring out on the macro-level macroscopic object (which of dislocated and organized on the basis these microparticles) [10, p.2].

In SRT is suggesting, that these collisions only occur with the phase velocity of EMW, which allegedly similar behavior "constant modulus=$|c|$" (the group velocity) and its variability "projection" ($0 \le c^* \le |c|$) – the phase velocity. However, in [9, 12] I received special experimental evidence that in most cases by the geometric-optical propagation of EMW the phase-speed ($c_n^*=c/n$) and group-speed ($c_{gr.}=\Delta r/\Delta t$) of flow of quasi-planar of EMW is always coincide within experimental accuracy.

Therefore actual of measuring slowing speed $c_n^*=c/n$ propagation of EMW in the media with $n^2>1$ incorrectly reject over due to reference to "seeming indications" against fazo-metrical methods [9]. From this point of view, SRT is the most anti-relativity by theory, because almost all relativistic phenomena she interprets as "seeming". And Lorentz contraction: $l'=l_o\sqrt{1-(\upsilon^2/c^2)}$, and slowdown time: $t'=t_o/\sqrt{1-(\upsilon^2/c^2)}$, and weight increase: $m'=m_o/\sqrt{1-(\upsilon^2/c^2)}$, and all the phenomena, affecting the so-called "dilemma Abrahm-Minkowsky" – in SRT referred to as "seeming" [13, 14]. I know over 40 years in this issue of SRT, and now I can not to name any scientific works (except Poincaré, 1908 [6]), which recognizes the reality of the named above relativistic phenomena of nature. I have no doubt that in historical perspective, the most consistent realists relativism remain Poincare and Lorentz.

In [1] have been shown, when I given aether-dinamic of interpretation of recent experiments [4] with a relativistically moving source of EMW, that the nature of the "ruling pace" propagation of EMW by rule (3) can not be broken even the moving of the source of EMW at relativistic speeds $\upsilon \approx c$, for example, in the zone deceleration of a relativistic electron in medium with index refraction $n_1 \ge 1$. The experiment, described in [4] , has shown that the moving with speed $\upsilon \approx c$ relativistic electron, excite in the medium with $n_1 \approx \mathbf{1}$. flux of EMW, which propagation not with the speed $c^* \approx 2c$, and, according to (3), with speed $c^*=c/n_1 \approx c$.

This position (3) is so important to ADTR, that I prefer say the following analogy of the law (3) as at example of excitation of sound waves in a water. In particular, at any speed υ movement (stone, bullet, lightning) to the center of excitation of the sound wave in the water, the speed of the emerging sound-waves (~ 1.5 km/s) will be determined only by the properties of the water and does not depend nor from speed, nor on the boundary and initial conditions, nor on the intrinsic properties of the object, which excite wave in the water. Such is the deterministic of essence of constant-parameter=$n \cdot c^*$, "ruling pace" propagation of EMW in mediums.

Conclusion

Presented here relativistic analysis the history of formation of scientific knowledge, embracing by about 500 years ago down for our time, shows organic link of times "classical physics" (~ 350 years until 1877, when Maxwell first suggested the anisotropy of aethereal space, of populated by particles) with the era of formation of relativistic physics (from 1877 to the present day). I will turn attention to the "hidden variables" theories of relativity (TR), which has been hidden all these 500 years. The hypothesis relationships of mobile objects in the "emptiness" in the 1st TR (Galilee) cannot know electrodynamic objects. Therefore, in it was hidden finite velocity c^* propagation of EMW and light. Suspicion not arise because what theory Galileo is well described by the motion of inertial of objects with nearearth speeds $\upsilon << c^*$.

Once the "hidden logic" of relations electromagnetic objects in TM was identified and on place "emptiness" Galileo's confidently was found a aether (1820-1870), by Maxwell been noted (1877) the existence of anisotropy of the vacuum of space. Never being free from inertial particles, polarizability from the light, aethereal space is (together with the polarizability of the aether) gives full permeability media: $\varepsilon_r\mu_r=n^2>1$. Maxwell proposes the idea of detecting the anisotropy of the space. The next (1885) finding themselves "hidden variable" ($\beta_i=\sqrt{1-\upsilon_i^2/c^2}$) the new (2nd TR) aether-dinamic theory relativity. Thanks of constructing (1895) on of his the basis new (Lorentz) transformations of the coordinates of moving objects, transformation TR of Galileo turned their asymptotic approximation for $\upsilon/c\to0$. Lorentz transformations have opened the previously unknown phenomenon of nature: "Lorentz contraction" inertial-moving bodies proportionally β, "slowing on them of the time" and "the growth of the masses" – inversely proportionally β. Note, in ADTR these phenomena understood as a real and processual!

Einstein in 1905 proposed a 3rd option TR (i.e. SRT), which borrowed from ADTR formal appearance Lorentz-transformations coordinate of moving inertial objects. However, first, from the SRT of Einstein was "ruled out" aether and these was returning to the logic TR by Galilee by a lack of the IRS, secondly, – he introduced a new parameter external kinematic coordinate transformations ($\beta_{ij}=\sqrt{1-\upsilon_{ij}^2/c^2}$), for which required the presence of an external *j*-object for display by the logic of Galileo state of motion *i*-object. These two "innovations" Einstein so far (**I stress, – so far**!) is not confirmed by any experiments [1].

Indeed, according to the material part of the Maxwell-equations, which established himself as one of the most reliable tools of modern science, the speed $c^*=(\varepsilon\mu)^{-1/2}=(\varepsilon_o\mu_o+\Delta\varepsilon\mu)^{-1/2}$ of EMW through the bowels of the world space can not be explained without considering the relations in the system$_{(\varepsilon\mu)}$="aether$_{(\varepsilon_o\mu_o)}$+particles$_{(\Delta\varepsilon\mu)}$".With this general theoretical point of view TM and ADTR, postulate SRT the "absence" of the aether is erroneous. Experiment for determine the effects of anisotropy of the 2nd order of the ratio υ/c system$_{(\varepsilon\mu)}$, initiated by Maxwell (1877) and implemented by Miller (1903-1930) on interferometer the Michelson-type [2], also indicate the existence of anisotropy effects system$_{(\varepsilon\mu)}$= "aether$_{(\varepsilon_o\mu_o)}$+particles$_{(\Delta\varepsilon\mu)}$". The existence of a subsystem of particles$_{(\Delta\varepsilon\mu)}$ in the world is undeniable. Consequently, the existence of a subsystem aether$_{(\varepsilon_o\mu_o)}$ is also real, as aether not be called, because system$_{(\varepsilon\mu)}$ is not conceivable without the "hidden polarization reactions" aether$_{(\varepsilon_o\mu_o)}$ with particles$_{(\Delta\varepsilon\mu)}$ (see Fig. 4).

As seen from the Maxwell model temponomicheskoy system$_{(\varepsilon\mu)}$ $\{(\varepsilon\mu)^{-1/2}=(\varepsilon_o\mu_o+\Delta\varepsilon\mu)^{-1/2}\}$, and from my of experiments (Fig.1), the subsystem "aether$_{(\varepsilon_o\mu_o)}$" is not directly observable (i.e. she hidden). Only in the asymptotic limit as $\Delta\varepsilon\mu\to0$ real system$_{(\varepsilon\mu)}$ is committed to the ideal of aethereal subsystem$_{(\varepsilon_o\mu_o)}$, which in the modern world non exist in a "pure" form without particles. Is why, in [10] I proposed a plausible model of evolution (evalektiki) of the world, according to which the universe temporarily reaches clean of aethereal state$_{(\varepsilon_o\mu_o)}$ without particles only through about 35 billion years old, and then again should curl into a state$_{(\varepsilon\mu)}$, similar to today's world.

Even more convincingly tells this relativistic interpretation of the law of refraction of EMW, known for over 400 years, which I called of the law Snellius-Maxwell (3). According to it, the speed $c^*=(\varepsilon\mu)^{-1/2}=(\varepsilon_o\mu_o+\Delta\varepsilon\mu)^{-1/2}$ of EMW through the bowels of the world space weakly of the statistical nature, irregular, **non-constant** on different of overflights. Is why to claim, that the speed of light c^* universal constant of "real vacuum$_{(\varepsilon\mu)}$", that does not exist without the particles, is **incorrect** for different it spans. In the present state$_{(\varepsilon\mu)}$ parameter of the Universe "sameness" of all its regions, according to (3), describes the "tempo-aethereal of permeability=$n\cdot c^*$" of EMW through the environment$_{(\varepsilon\mu)}$:

$$n\cdot c^*=\mathbf{1}.\cdot c=(\varepsilon_o\mu_o)^{-1/2}=\text{const}. \qquad (18)$$

From (18) immediately follows: 1) Lorentz invariance parameter $\beta_i=\sqrt{1-\upsilon_i^2/c^2}$ in the mediums with any of value of *n* (since $n\cdot c^*=c$=const); 2) flow pulse of EMW is saved in an environment with any value of the index *n*, because "tempo-aethereal of permeability"=$n\cdot c^*$, according of formula (3) and Fig.4, allways equal to $\mathbf{1}.c$.

I guess now, when "hidden parameters" of dilemma Abraham-Minkowski disclosed, from Bell's theorem about the "hidden of parameters" strictly follows the evidence, that the statement of the SRT

about "constancy of the speed of light" **is false**, because y the universe constant only "tempo-aethereal of permeability"=$n \cdot c^{*}$=const, but speed light in the universe is fundamentalist variadic.

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