SUPERLIGHT TECHNOLOGY - A BREAKTHROUGH INTO THE FUTURE

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- All that is allowed to Jupiter is not permitted to the ox that,

- Although the cow is allowed to Jupiter.
Latin proverb

More and more often from laboratories come news about the registration of superluminal velocities of particles and light. The dawn of a new era - superluminal - has ignited, which will transform accelerators and rockets in the same way that supersonic technology has transformed aircraft. Ironically, E. Mach, who laid the foundations of the theory of supersonic (remember the Mach number), also laid the foundations of the theory of relativity (SRT), which forbade superluminal speeds. Many regarded SRT as an attack by the Catholic Church against Galileo and Newton, whose discoveries dealt a serious blow to religion. And the theory of relativity with quantum mechanics and the Big Bang theory were revenge on the part of pupils of Catholic universities (for example, the idealist Mach graduated from the University of Vienna - the Jesuit nest). Hence the sudden rise of these theories, immediately supported by the Vatican, which controls a number of banks, monopolies and the media, especially in the United States, where Catholics introduced the Big Bang theory and even banned Darwin's theory! In an effort to preserve world domination, religious leaders start "crusades" in science (the theory of "creation" of the Universe in the Big Bang, invented by the Vatican Abbot Lemaitre, is called "world expansion") and fight heresy, especially if it can deprive them of their flock in the event creation of superluminal ships to reach distant planets. J. Bruno was burned for the idea of other planets, where they believe in other gods.

In this regard, the recent experiment carried out in Italy, in the homeland of Bruno and Galileo, is indicative, where neutrinos were registered in the OPERA underground laboratory in Gran Sasso, flying with a speed c' 7.5 km/s higher than the speed of light $c=3\cdot10^8$ m/s (Fig. 1). The experiment had good accuracy, its results were checked and rechecked for two years. But, as soon as the result of the experiment was made public, a wave of indignation arose in the world and fell upon the scientists who dared to obtain a result that contradicted the SRT, and who dared to publish it in 2011. Scientists reported excessive mental pressure: attacks exhausted people, and criticism acquired a political connotation - the Vatican is nearby. But two hundred participants in the OPERA project simply reported experimental facts, and correctly, without sensational statements and pointing out the possibility of error and the need for verification in other laboratories. And yet many of the group, including the head of the project A. Ereditato and his deputies, were fired, and the rest,

following the example of Galileo, were forced to renounce their result and declare that all this was a measurement error from inaccurate docking of the fiber-optic connector. But to everyone who is versed in fiber optics, it is clear that the inaccuracy of fiber splicing is fractions of a millimeter, and neutrinos, according to measurements, arrived 60 nanoseconds earlier than light, which would have lagged behind during this time by 18 meters, which is much higher than the errors of fiber splicing.

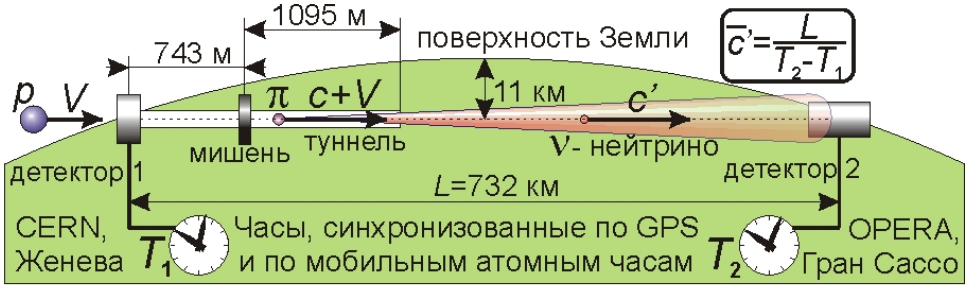

Рис. 1. Схема нейтринного эксперимента: измерение времени пролёта нейтрино в подземном лабиринте.

Fig. 1. Scheme of a neutrino experiment: measurement time of flight of neutrinos in the underground labyrinth.

And six months later, ICARUS, another group from Gran Sasso, led by Nobel laureate K. Rabbia, hastened to declare that its measurements disproved the OPERA result - neutrinos flew exactly at the speed of light c (although this is also impossible in SRT). For some reason, no one doubted their result, although they biasedly rejected the OPERA result before verifying it, and the ICARUS experiment was hastily prepared, was not tested and contradicted both the OPERA results and the MINOS laboratory in the USA, where in 2007 they also found neutrinos with a speed excess of about 10 km/s. As the historian of science T. Kuhn noted, it is no longer experience that judges theory, but theory determines which facts are acceptable and rejects them in case of contradiction to dogma [1]. It is even considered "indecent" to mention such facts: C. Fort called them "damned by science." Einstein, creating the theory of relativity, said: "If the facts contradict the theory, so much the worse for the facts." Here is the OPERA data and rejected before it was verified. The name of the ICARUS group is also instructive - by the name of Icarus, who, according to legend, was a prisoner of the underground labyrinth of King Minos, knew his secret and tried to escape from Crete on his wings and reach the Sun, but with an approach to the star he collapsed and died in the sea waves. Like, it will be so with everyone who dares to reveal the secret of underground laboratories, leave the Earth, catch up with the light and reach the stars. As they say, what is allowed to Jupiter ... And in order to divert attention from the superluminal sensation, in 2012 "made the planned discovery" of the Higgs boson - "particles of God" - another evidence that the church is ordering

music in science, and only those" discoveries are "accepted and encouraged that strengthen religion."

It was noted earlier [2, 3] that, according to classical physics, the measured energies of particles in powerful accelerators and cosmic rays correspond to superluminal velocities. And only a calculation according to the theory of relativity creates the illusion of a limited speed of energetic particles. Nobody looked for their real velocities V, although for this it is enough to measure the time of flight of particles of distance L by the difference T of the moments of registration by high-speed detectors (say, semiconductor or scintillation, with a time resolution of 10^{-9} s=1 ns [4]) set in the beginning and end of the path L. However, this pulse-transit method of measuring the velocity $V=L/T$ is used only for slow ions flying at a speed much less than the speed of light, when the predictions of the theory of relativity and classical physics coincide. It can be seen that measurements at near-light speeds contradicted SRT, and the method was no longer used. Instead, velocities are determined from the curvature of the trajectories of particles in a magnetic field, from their energies, from Cherenkov radiation. But all these methods are based on SRT, and the estimated speed was not compared with the real one.

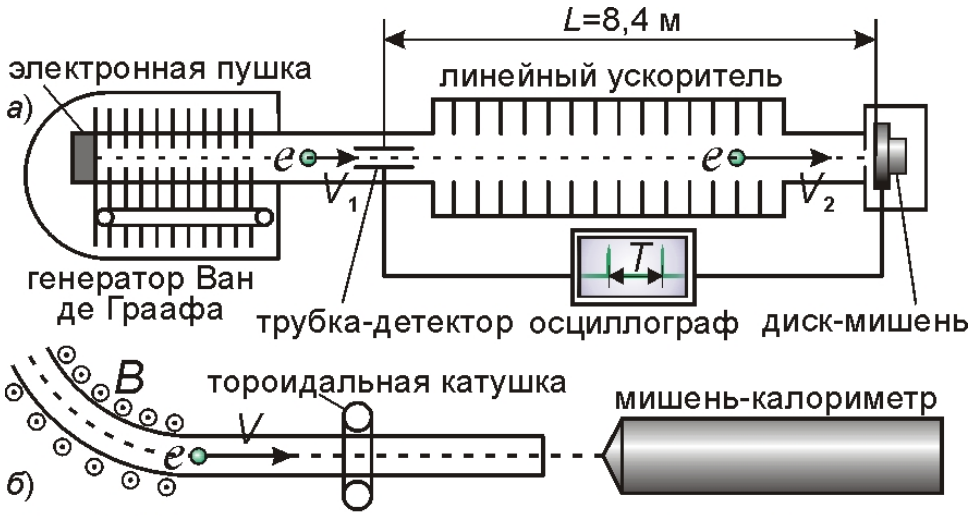

Рис. 2. Схема измерения скорости электронов *e* (пролётным методом) и их энергии (калориметрическим методом) в опыте Бертоцци [5] (*а*) и в опыте на стэнфордском ускорителе [6] (*б*).

Fig. 2. Scheme for measuring the speed of electrons e (in transit method) and their energy (calorimetric method) in the experiment Bertozzi [5] (a) and in the experiment at the Stanford accelerator [6] (b).

Only once in 1964, in Bertozzi's experiment, the electron velocity was measured by the flyby method at a length L=8.4 m (Fig. 2.a) and compared with SRT, allegedly confirming it [5]. Five measurements at energies of electrons from 0.5 to 15

MeV showed that their speed $V=L/T$ only approaches the speed of light c (Fig. 3). However, experience contains obvious errors. The first three measurements at energies of 0.5; 1 and 1.5 MeV still inspire confidence (and the van de Graaff generator could not give electrons a speed higher than c [2]). And the next two are doubtful, because in them, after the generator accelerated to the speed V_1, the speed was still increased with a linear accelerator right on the flight base L. As a result, the speed varied within the baseline, and we found not the final V_2, but the average speed $V=L/T<V_2$. In addition, at an energy of 15 MeV, the first pulse for some reason changed its shape (Fig. 3): it became triangular, the current oscillations (ringing) disappeared. Either this is a false impulse, or the generator began to tell the electrons the speed $V_1<<c$, which is why even at $V_2>>c$ the average speed $V=L/T\approx c$ was obtained. Even if the speed $V_1=2.9\cdot10^8$ m/s (at 1.5 MeV), the measured $V=(V2+V1)/2\approx c$ means that at the end of the path L the electron speed is superluminal: $V_2=2V-V_1>c$. Then, at an energy of 15 MeV, we obtain $V_2=3.1\cdot10^8$ m/s or higher (if $V_1<2.9\cdot10^8$ m/s). It turns out that Bertozzi's experience refuted the SRT!

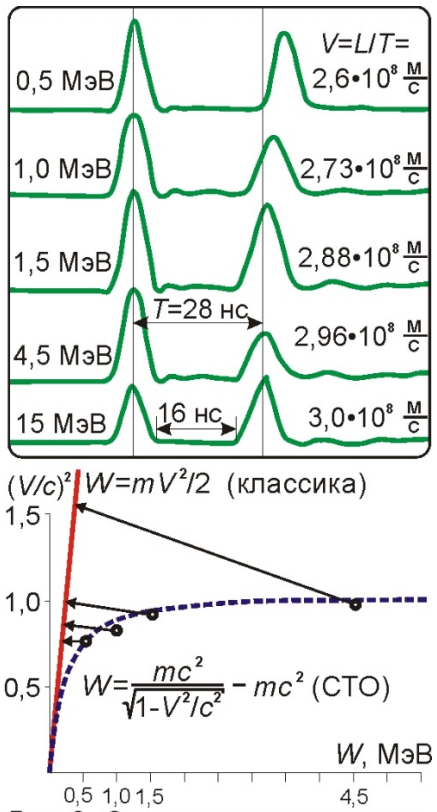

Рис. 3. Осциллограммы сигналов и графики $V(W)$ в опыте Бертоцци.

Fig. 3. Signal oscillograms and graphs V (W) in Bertozzi's experiment.

Even if the first pulse corresponds to the flight of particles with $V_1=2.9\cdot10^8$ m/s through the first detector, and the second through the second, the triangular shape

of the pulses means that the particles flew at different speeds, and the delay between the pulse peaks gives the speed of the particle bunch ... And the speed of its individual particles, judging by the minimum delay between pulses $T=16\cdot10^{-9}$ s=16 nanoseconds, is higher and reaches $V=L/T=5.3\cdot10^{8}$ m/s, ie. almost twice the speed of light (the same - and at 4.5 MeV). However, according to classical estimates, the electron velocity is even higher and at an energy of W=15 MeV it is $V=c(W/W_0)=30c$, where the "rest energy" $W_0=mc^2$=0.511 MeV [2]. But then the delay between the pulses is $T=L/V$=1 ns, that is, the first and second impulses will merge (perhaps that is why the pulse changed its shape), and the shift was not noticed. Then it is clear why Bertozzi did not provide values for the velocity for energies intermediate between 4.5 and 15 MeV, where the approach of pulses would be noticeable before they merge. To eliminate ambiguity, it is necessary to use a two-channel oscilloscope, which gives separate signals from two detectors, or use fast detectors and short pulses of particle current. Finally, the particles should be sorted by their velocities by the magnetic field in order to measure the velocity of individual electrons, and not the average velocity of the bunch.

Bertozzi plotted the experimental dependence of the velocity V on the electron energy W (Fig. 3). There are only four points on the graph that supposedly fell on the curve calculated by the SRT. But in reality, as has been noted more than once, Bertozzi found two points in the experiment, where he directly measured the energy (by the calorimetric method) and the speed (by the flight method), and even then inaccurately. In other cases, the energy was not measured, but calculated from the voltage U in accelerators - as $W=eU$. But this estimate of the energy at near-light speeds does not work, since the electric field coming from the electrodes in the form of a stream of rheons with a speed of c is more and more difficult to catch up with the electron and push it [2]. Therefore, the real energy of electrons is $W<eU$, and the points, if the energies are correctly estimated, will exactly fall on the classical curve (Fig. 3).

How did the two points (1.5 and 4.5 MeV) get on the curve, where the electron energy was measured directly, by the heating of the target, measured by a thermocouple? An electron beam was deposited on the target, the total energy of which was found from the amount of heat Q in the target. Then the energy of each electron is $W=Q/z$, where $z=q/e$ is the number of electrons found from the charge q obtained by the target. But, as V.S. Veprintsev, a thin target disk could not hold all electrons with energies of 1.5 and 4.5 MeV - this is only due to the forces of a long target. To hide this, Bertozzi did not indicate the mass, nor the dimensions, nor the heating of the aluminum target. But, if one division ΔQ~0.8 J [5] corresponded to the typical accuracy of the thermocouple ΔT~0.5 ºC, then with the heat capacity of aluminum c_p = 0.88 J/(g · ºC) the target mass $m=\Delta Q/\Delta Tc_p$~2 g, and its thickness is

about 5 mm. Then, with a path length of ~1 cm in aluminum, 1.5-4.5 MeV electrons absorb only a part of them, which sets the target charge q and the number of "stuck" particles $z=q/e$. And the heating of the target Q is produced by all electrons, even those having passed through it and heating it during collisions, ionization, and bremsstrahlung. As a result, the measured electron energy $W=Q/z$ turned out to be overestimated, and only for this reason it fell on the relativistic curve. For 0.5–1 MeV electrons, which the target could delay, Bertozzi did not provide data, and they would have confirmed the classical formula $W=mV^2/2$. In addition, for an energy of 4.5 MeV, a linear accelerator was turned on (Fig. 2), where some of the electrons were accelerated, and some were decelerated, falling into the decelerating phase of the field [2]. That is, we measured the average energy of slow and fast electrons, which give the main heating Q. As a result, for slow electrons, which are more and which generate a second current pulse, the measured energy $W=Q/z$ is greatly overestimated. To eliminate these effects, it is necessary to measure the speed and energy of the particles only after sorting (separating) them according to their velocities in a magnetic field, and also to use a massive target.

Direct measurements of energies practically do not lead [3], and Bertozzi's experiment is a rare exception, and even then unsuccessful. Another exception is the experiment at the Stanford SLAC accelerator [6], where the electron energy was measured by the heating of the massive target (Fig. 2.b), and the particles, with their trajectories in the magnetic field B, had equal velocities; the shortcomings of Bertozzi's scheme disappeared. Experience has shown that the energies of the particles correspond to SRT. But there was another drawback: the charge q absorbed by the target was measured not directly, but by the current induced by particles flying through the toroidal coil. Since the particle velocities are high, the relationship between the induced current and the passing charge is different from the predictions of Maxwell's electrodynamics. According to Ritz's theory, when charges move at a speed $V=\gamma c$ (where the gamma factor $\gamma=p/mc\approx 4\cdot 10^4$ [6]), their effect grows, as the degree of ionization [2] shows, and they induce $\gamma/2$ times more current. This overestimates the charge q absorbed by the target by a factor of $\gamma/2$ and overestimates the number of electrons $z=\gamma q/2e$. As a result, the energy of each electron $W=Q/z=2Qe/\gamma q=\gamma mc^2$ is greatly underestimated. The real energy of electrons is noticeably higher $W=Qe/q=\gamma^2 mc^2/2$, in agreement with the BTR [3].

As you can see, only false, indirect estimates of the parameters make it possible to reconcile the experiments with the SRT formulas. And direct measurements immediately reveal the falsity of the SRT, but are rarely announced, being under the ban of censorship. In this sense, the result of the measurement of the energies and velocities of particles, carried out in 2009 in China, is interesting, the institutions of which are not subject to the influence of religion. Therefore, the data of

the experiment at the accelerator of the Shanghai Institute of Applied Physics not only revealed the falsity of SRT [7], but were also published. The measurements were carried out according to the Bertozzi scheme, but correctly: a massive target was used, the particle beam was separated by velocities, and its energy was found in three ways - by the curvature of the trajectories, calorimetrically, and by the accelerating voltage. It turned out that the measurements of the speed V by the flyby method corresponded to the classical energy $W=mV^2/2$ and diverged from the SRT (Fig. 4). In addition, the measured energy W was noticeably lower than the operating energy of the accelerator eU (at $U\sim10^6$ V), which the accelerator should impart to the particles, which was correctly interpreted as the decay of the effect on mobile particles according to the law $F'_{-}=F(c-V)^2/c^2$ [2], which follows from Ritz's theory [8]. This experiment proved that the experiments of relativists [5, 6] are false, and showed the ineffectiveness of current accelerators, where the calculation by SRT formulas and disregarding the dependence $F'_{-}=F(c-V)^2/c^2$ limits the speed and energy of particles accelerated by the accelerator ... That is, according to the classical ballistic theory of Ritz (BTR), in such linear accelerators, the speeds could not exceed c, and therefore it is pointless to use them to confirm SRT.

параметр \ № опыта	1	2	3	4	5
$V=L/T$, замер скорости	0,313c	0,369c	0,412c	0,449c	0,480c
$W=eU$, рабочая, МэВ	0,025	0,035	0,045	0,055	0,065
$W=mV^2/2$, классика, МэВ	0,025	0,035	0,043	0,052	0,059
$W=mc^2(\gamma-1)$, СТО, МэВ	0,027	0,039	0,05	0,061	0,072

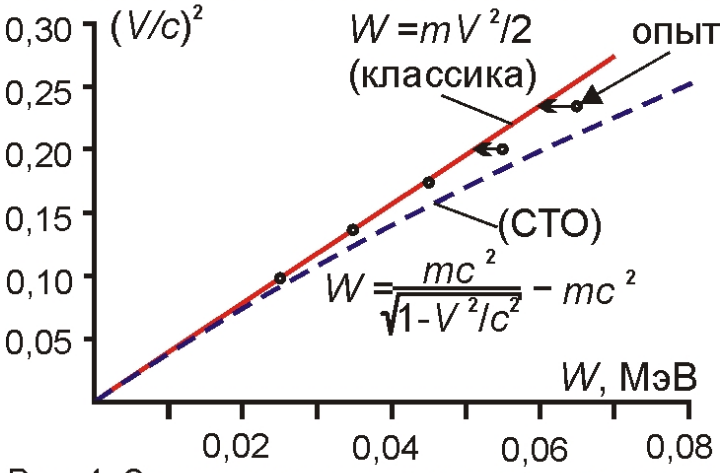

Рис. 4. Экспериментальные и теоретические данные для скорости и энергии электронов, измеренных на Шанхайском ускорителе.

Fig. 4. Experimental and theoretical data for the speed and energy of electrons, measured at the Shanghai accelerator.

One gets the impression that the efficiency of accelerators is deliberately limited, as long as they comply with the SRT. As noted [2], direct-action accelerators

(based on a Van de Graaff generator), where particles are accelerated by the electric field E of the electrodes with a potential difference U, are ineffective, since it is more and more difficult for rheons R, exerting an electrical effect, to catch up with the electron and push it when it the speed approaches their speed c (Fig. 5.a). And at the light speed of an electron, the field cannot catch up with it and accelerate at all (so the effect of light decreases according to the Doppler effect when the receiver moves away from the source). Because of this, and not from an imaginary light barrier, in such accelerators it is impossible to accelerate electrons to superluminal speed. If, however, not only "push" the electrons from behind with the negative electrode, but also "pull" them from the front with the positive electrode, then the electrical effect can be significantly increased (Fig. 5.b). After all, rheons (more precisely, antirheons [8]) coming from the positive electrode fly towards the electron with a relative speed $c+V$. Therefore, their effect $F'_+=F(c+V)^2/c^2$ increases as the electron velocity V increases (so the effect of light increases according to the Doppler effect when the receiver approaches the source). That is, the efficiency of the accelerator grows and does not decrease during acceleration, despite the decrease in the efficiency of the negative electrode, because the total force $F'= F'_++F'_-=2F(1+V^2/c^2)$ increases during acceleration. As a result, the electron will accelerate to an energy $W>eU$, and at near-light speeds the effect on the particle depends not only on the voltage U, but also on the geometry of the electrodes, on the distribution of charges and their sign, as Ritz noted.

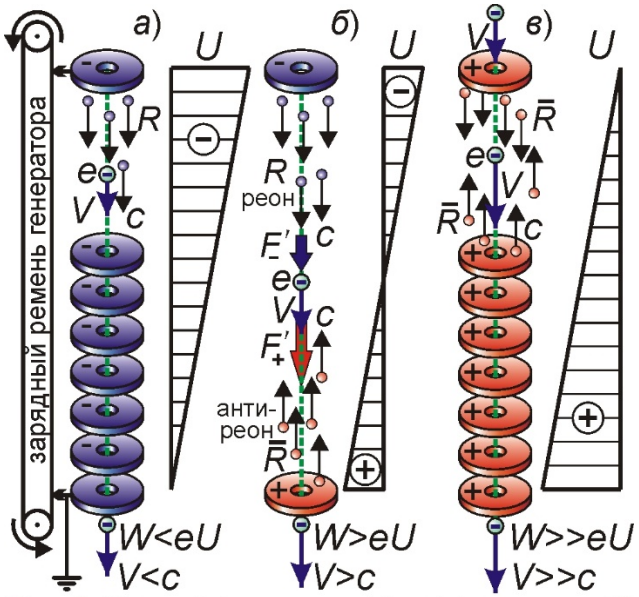

Рис. 5. Малоэффективные (*а*), эффективные (*б*) и сверхэффективные (*в*) варианты ускорителей прямого действия, разгоняющие электроны до разных скоростей при одинаковом напряжении *U*.

Fig. 5. Ineffective (a), effective (b) and ultra-efficient (c) accelerator options direct action, accelerating electrons to different speeds at the same voltage U.

For some reason, in direct-action accelerators, electrons are accelerated only by negative (pushing) electrodes, and the positive (pull-up) electrode is grounded: its influence allegedly distorts the calculated value of the electron energy [9]. Thus, physicists admit that the positive electrode leads to a discrepancy with the SRT formulas, since electrons are accelerated to energies higher than the calculated ones, to speeds higher than light. As soon as the electron exceeds the speed of light c, it will start to catch up with the rheons (F'_- will change sign), so that the accelerating force $F'=F'_+–F'_-=4FV/c$ will increase with acceleration. They do not build such efficient accelerators just because they will prove the falsity of SRT. So scientific officials bypassed all others in terms of spending budget funds on more expensive and ineffective equipment for kickbacks. From the scale of "record" accelerators (including the Large Hadron Collider), it is easy to understand that not only particles are spinning in them, but also huge sums [7]. And, in view of the religious background of SRT, the weakening of accelerators and "kickbacks" back from the possible energies of particles are accompanied by strong monetary "kickbacks" [3].

It is interesting that electrons, having passed through the positive electrode, are attracted by it with a lesser force $F'_+=F(c–V)^2/c^2$, since the field now catches up with the electron and hardly slows it down. And as soon as the electron reaches the speed of light, the braking effect will disappear, then it will change its sign - it will become accelerating. This paves the way for the creation of ultra-efficient accelerators (Fig. 5.c), where fast electrons pass through a battery of positive electrodes in the form of charged rings. Each ring strongly pulls up an electron as it approaches, but cannot slow it down as it moves away. By building a long chain of rings, electrons can be accelerated to arbitrarily high speeds. Such an accelerator would be efficient and cheap due to its simplicity. Such efficient and compact accelerators will also find application as jet engines of starships, throwing a jet of superluminal particles from the accelerator instead of a gas jet, and therefore accelerating the ship to superluminal speeds [10]. So far, the calculation by the formulas of electrodynamics and SRT, which is unsuitable for near-light and superluminal speeds, did not allow the creation of an effective accelerator technique, because it did not take into account field changes at such speeds [2]. So the calculation according to the formulas of the previous aerodynamics gave false conclusions for movements at transonic speeds, while S.A. Chaplygin did not take into account the pressure changes from the phenomenon of compressibility of the medium (also associated with overtaking air atoms by a flying body), which made it possible to calculate the pressure forces at transonic speeds and build supersonic aircraft [11].

Resonant accelerators are more complex [4, 9], and are more efficient than direct-action accelerators, being capable of imparting enormous energies and superluminal speeds to electrons and other particles [2]. Indeed, in resonance

accelerators, particles are accelerated by charges of both signs. When a particle flies through the accelerating gap, where the charges of the metal walls create an alternating electric field, then as the electron accelerates, the positive charges "pull up" it more and more efficiently, and the weakening during the acceleration of the "pushing" action of negative charges is more than compensated for. The superluminal velocities of particles in such accelerators are confirmed by their energy and curvature of their trajectories in a magnetic field [2]. Direct measurements of the particle velocity would also confirm this.

However, an incorrect estimate of the velocities, supposedly lower than the speed of light, also reduces the efficiency of these accelerators, which do not realize their potential U to give high energies to either electrons or protons: their energies do not even reach 10 MeV [4]. The problem is allegedly that the voltage across the flight tubes does not change synchronously: it is supplied through the wires with a final speed c. This affects when particles reach near-light speed and go out of resonance with the accelerating field, ceasing to accelerate. But this is an excuse: physicists-engineers can easily solve more complex problems. So, in the transmission line it is possible to organize not a traveling, but a standing wave (Fig. 6.b); it is possible to connect each tube to the main line through the delay line τ, which decreases with distance (Fig. 6.c), or to connect the tubes to the generator with wires of equal length; you can feed them with separate synchronous generators (Fig. 6.d, as in the SLAC accelerator). And the real reason for the exit of particles from resonance with the accelerating field is that according to SRT the velocities of particles and the lengths of the transit tubes L_i were found incorrectly, especially if the particle velocity reaches superluminal values [2]. As a result, accelerators built according to SRT formulas have extremely low efficiency: billions of joules of electricity are spent to communicate to elementary particles energy in billionths of a joule - the energy generated by an entire power plant [9], although a simple battery would be enough. Equally weak and ineffective is the theory of relativity itself, to maintain its reputation, to hide the facts that contradict it, spend enormous efforts and money, and the contradictions to experience are becoming more and more obvious. Indeed, in SRT there is no truth, there is no agreement with the laws of nature, and even having spent all the money in the world, relativists will not change the world, as they say: "Power is not in money, but in truth!" But the ballistic theory, in agreement with nature, explains all the experiments and anomalies without exaggeration, costs and efforts, gaining more and more recognition and defeating SRT, and all attempts by relativists to refute the BTR turn against them.

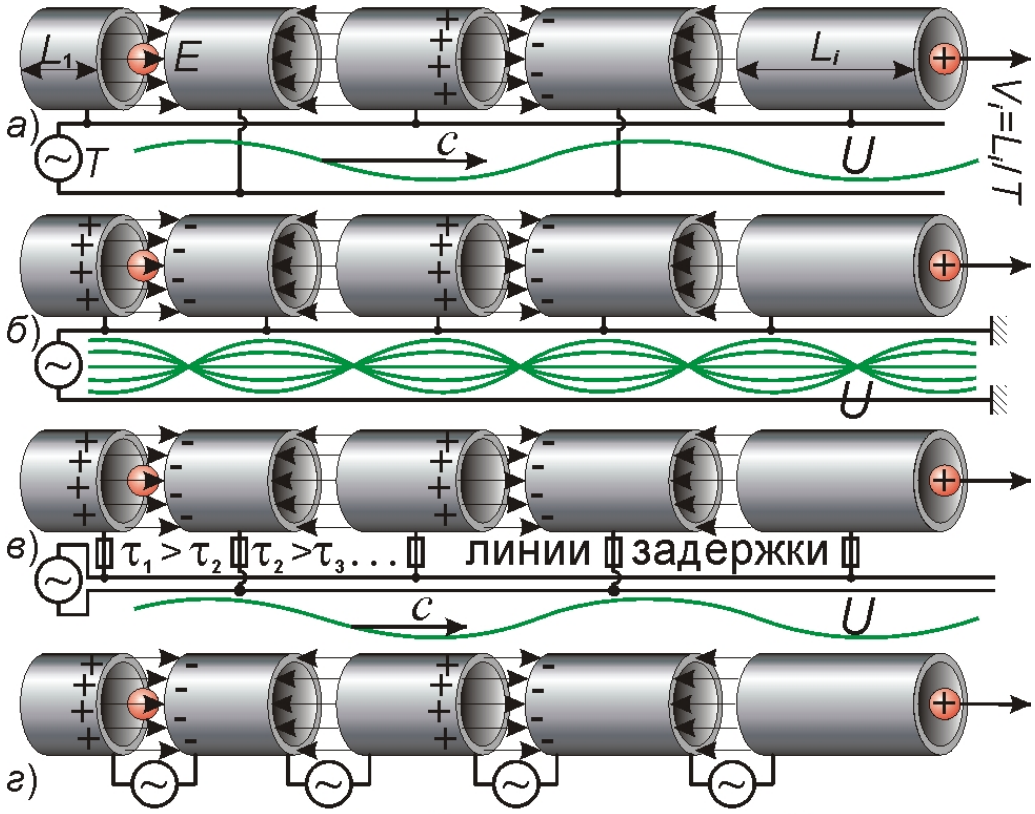

Рис. 6. Схемы линейных ускорителей Видерое: неэффективных (*а*) и эффективных (*б*, *в*, *г*).

Figure: 6. Schemes of linear ineffective (a) and effective Koriteli Videroy: objective (b, c, d).

There are also cyclic resonance accelerators. Despite the false estimates of the speed and frequency of arrival of particles to the accelerating resonator, they work, since resonant acceleration of particles is also possible at the frequency f of the accelerating force, which differs by an integer number of times q from the frequency of arrival of particles to the resonator. So, you can accelerate the swing, squatting on them with a frequency different from the swing frequency, say, twice as often or twice as rarely [9]. So, in large synchrotrons (with a diameter D of hundreds of meters), where the frequency f of the accelerating field and the frequency of rotation of particles coincide, it is believed that the frequency of rotation of particles is q times lower, and their calculated velocity $\upsilon=\pi Df/q\approx c$ does not violate SRT. As A.V. Mamaev, the real speed of particles $V=\pi Df\approx qc$ is superluminal [2, 10]. That is why the frequency f must be large (although according to SRT nothing prevents it from being reduced by a factor of q). And that is why the multiplicity of acceleration q in large synchrotrons is close to the γ-factor, once for the BTR $V=\gamma c$ [2]. On the other hand, in small synchrotrons (meters in diameter) the frequency of rotation of particles is an integer number of times higher than the frequency of the accelerating field, as in the case of a swing accelerated by a force acting less frequently than the swing frequency.

At first glance, such overclocking is impossible in an accelerator. Indeed, we represent the fluctuation of the electric field strength E on the vector diagram in the form of a unit vector rotating with the frequency f of the field fluctuations. The horizontal projection of this vector will represent the magnitude of the accelerating field $E=\cos\varphi$ (Fig. 7). A bunch of particles rotating with a frequency Nf that is an integer number of times N, periodically enters the accelerating resonator, and the fields E_1, E_2, …, E_N, acting on the particle in successive passes, are represented by vectors spaced apart from each other by an angle $\Delta\varphi=2\pi/N$, forming an N-ray star (Fig. 7.a, b). Due to the symmetry of the star, the sum of the vectors E is equal to zero, and during one period of oscillation the field should not accelerate the particle. But in reality, the star is asymmetric, since in the accelerating field E the particles gain additional velocities or lose them (from the losses of δ for synchrotron radiation), and come to the accelerating resonator earlier, then later, separated from each other by angles not equal to $2\pi/N$. Due to the violation of symmetry, the particles also receive an addition to the velocity in each period of field oscillations. The acceleration of particles in the course of such a periodic variation of parameters is a kind of parametric resonance, which is possible even with inequality of frequencies [9].

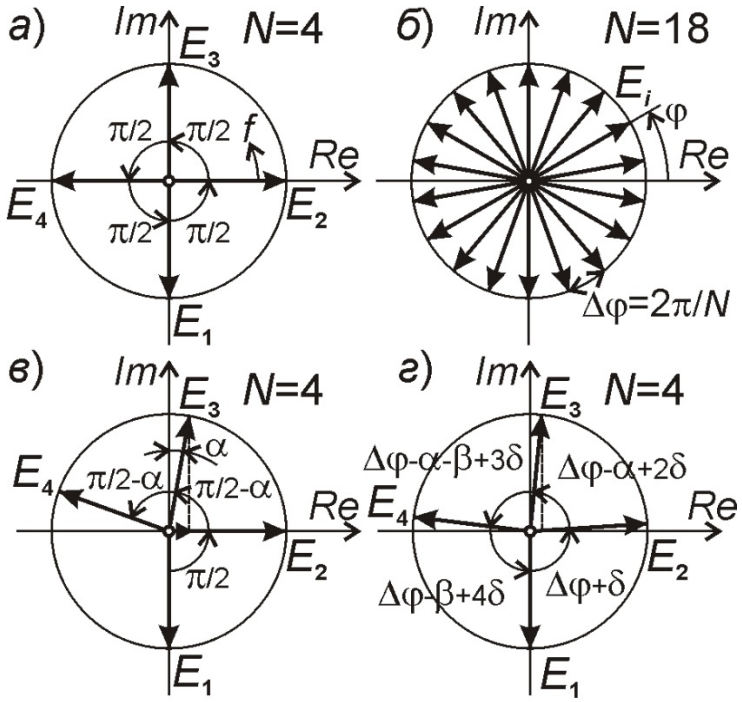

Рис. 7. Векторные диаграммы для ускоряющего поля E: при полной симметрии среднее воздействие поля нулевое (*а*, *б*); при нарушении симметрии можно ускорять частицы (*в*) или компенсировать синхроторонные потери (*г*) при $N>1$.

Fig. 7. Vector diagrams for the accelerating field E: at full symmetry, the mean field effect is zero (a, b); when symmetry is broken, particles can be accelerated (c) or compensate for synchrotoronic losses (d) at N>1.

So, if we consider a 4-ray star of vectors ($\Delta\varphi=\pi/2$), that is, the rotation of a particle with a frequency 4 times higher than the frequency of the field, we get that the field $E_1=0$ in the 1st passage, the particle gets into the 2nd passage in the field $E_2=\cos0=1$ and will acquire an additional speed in it (Fig. 7.c). Therefore, in the 3rd pass the particle will enter the accelerating field E_3 a little earlier: the vector E_3 is rotated by a smaller angle ($\pi/2-\alpha$), and the field $E_3=\sin\alpha<<1$. Finally, in the 4th pass, the vector will rotate by ($\pi/2-\alpha$) and the particle will enter the decelerating field $E_4=\cos(\pi-2\alpha)\approx-1$. The total effect of these fields on the electron is proportional to $E=E_1+E_2+E_3+E_4\approx\sin\alpha$. That is, the impact for the period is different from zero and reduces $\Delta\varphi$ by an angle β. The particle accelerates more and more, and after k field oscillations, the angle $\Delta\varphi$ will decrease from $\pi/2$ to $\pi/2-k\beta$, reaching the next value of $2\pi/5$ for individual particles, and the bunch will rotate in the accelerator with a frequency that is already $N=5$ times higher, than the field frequency f. And so on: the orbital frequency Nf increases until the loss δ for synchrotron radiation exceeds the energy input β. Of course, the efficiency of the accelerator is low, since it uses only an insignificant part of the accelerating field E, due to the absence of resonance with it. As a result, the costs of accelerating particles are enormous, and the efficiency of the accelerator is close to zero. Therefore, compact synchrotrons, where N is large, are used to accelerate electrons to energies $W<1$ GeV, or to maintain them in orbit in storage rings, where the supplied energy β is only enough to cover the synchrotron losses δ (Fig. 7.d). And to accelerate particles to record energies, large synchrophasotrons are needed, where, as the particle velocity increases, the frequency f of the accelerating field E and the magnetic field B, which keeps the particles in an orbit of constant radius R. Yes, and in compact synchrotrons it will be possible to accelerate particles to much higher energies and velocities, if the particles are accelerated by a field synchronous with their revolution, that is, by increasing the frequency of the field by a factor of thousands, acting on the particles with microwave or even infrared and optical radiation. It is interesting to note here that laser accelerators have already been built that fit on a table and accelerate particles to the same energies as giant accelerators, but at a much lower energy consumption.

So, in synchrotrons and storage rings, operation modes are possible in which the frequency $f'=Nf$ of particle revolution is N times higher than the oscillation frequency f of the accelerating field. Considering that these frequencies coincide, we obtained the calculated values of the speed $\upsilon=2\pi Rf\approx c$, and the real speeds $V=2\pi Rf'\approx Nc$ are higher than the speed of light c in the same N times. We did not notice this, since we did not measure the speed and frequency of the particles' revolution directly. It would seem that the frequency of rotation of particles is easy to find by the frequency of the pulses they create in an inductive detector or in a synchrotron radiation detector. But even this frequency often differs from the particle rotation frequency. So, if not one, but q bunches rotate in the accelerator, then the pulse frequency is q

times higher than the bunch revolution frequency, since the pulses are generated not by one circulating bunch, but by different ones, successively approaching the detector. And in small synchrotrons the pulse frequency is an integer number of times N lower than the particle rotation frequency. It would seem that the frequency of pulses cannot be lower than the frequency of arrival of the particles that generate them. But this is only when particles rotate with the same frequency. And if the particles independently rotate in different orbits with different frequencies fN, $f(N+1)$, $f(N+2)$ …, then the overall signal will be the sum of periodic functions, harmonics with these frequencies (Fig. 8). Moreover, the frequency of the total signal is then equal to the difference f of adjacent frequencies of the spectrum, that is, N times lower than the frequency of rotation of particles.

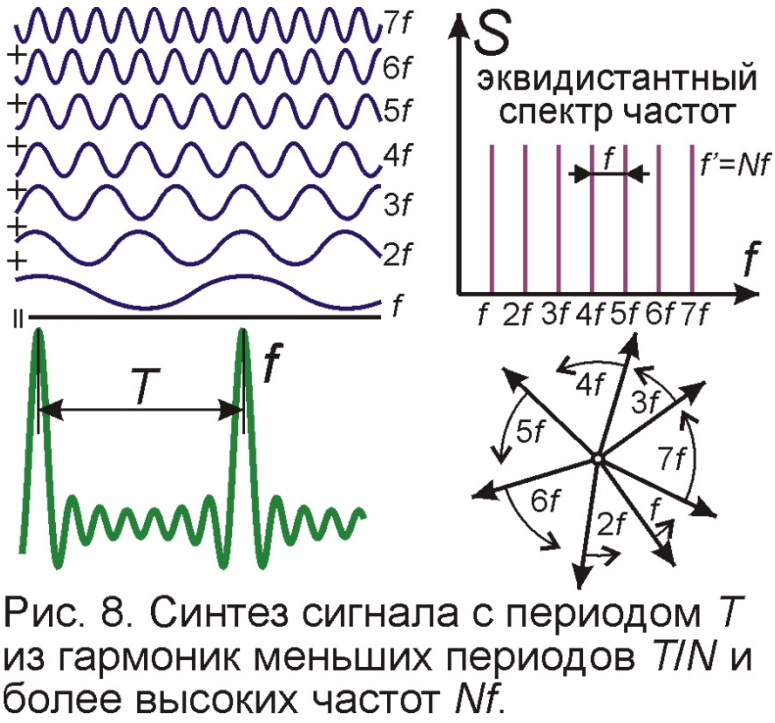

Рис. 8. Синтез сигнала с периодом T из гармоник меньших периодов T/N и более высоких частот Nf.

Fig. 8. Signal synthesis with period T from harmonics of smaller periods T/N and higher frequencies Nf.

This resembles the generation of pulses in ring fiber lasers [12]. If particles circulate in the accelerator ring, light circulates in the optical fiber ring. In an accelerator, the energy of particles increases when they pass through an accelerating resonator, and in a ring laser, light builds up energy by passing through an active fiber (powered by external pumping). In an accelerator, synchrotron radiation of particles at each revolution goes out through the output channels (Fig. 9), and in a ring laser, light pulses go out through a branch of the fiber, and also with a period T of nanoseconds. Finally, light of frequencies fN, $f(N+1)$, $f(N+2)$ …, circulates in the fiber, and the signal obtained during interference has the form of short pulses with a repetition rate f,

which is millions of times lower (N~106). This is illustrated in the vector diagram, where the vectors, like the hands of a clock, rotate with different frequencies $fN, f(N+1), f(N+2)$ …, and impulses appear in those rare moments when the directions of all vectors coincide (Fig. 8). That is why these impulses have a frequency of millions of times lower f. To create them, such an equidistant frequency spectrum is formed and their phases are linked to each other, modulating the Q-factor of the resonator with frequency f. In the accelerator, the same function is performed by an accelerating resonator, where field oscillations with frequency f select bunches rotating with frequencies $fN, f(N+1), f(N+2)$ …, and phases tied to the phase of oscillations of the resonator field: so particles and generate pulses of frequency f. Unlike light, particles do not interfere with each other, and a nonzero density background appears at the places where the minima and maxima of the density of different bunches coincide. However, induction detectors react only to changes in the particle current and register pulses at those moments when the maximums of the bunch density coincide. In fact, they register the passage of a wave of density of charges, and not of the charges themselves, moving at much higher speeds (and in galaxies, stars revolve much faster than the arms, density waves formed by them). And for synchrotron radiation, interference is also possible, because electrons moving synchronously emit coherently - their phases, frequencies are rigidly connected.

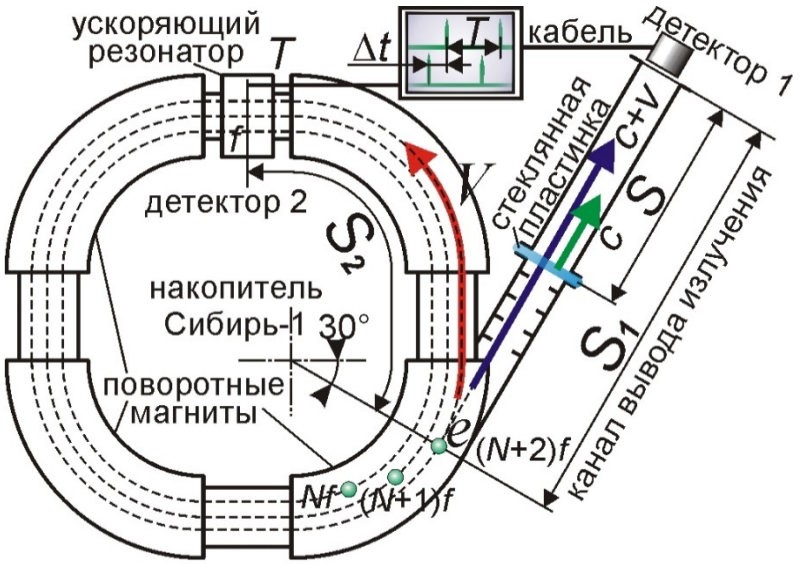

Рис. 9. Схема опыта по сравнению скорости синхротронного излучения и скорости электронов, движущихся в ускорителе по разным орбитам.

Fig. 9. Scheme of experiment versus speed synchrotron radiation and electron velocity, moving in the accelerator in different orbits.

It remains to find out how particles with different frequencies can spin at once in the accelerator. Of course, in a uniform magnetic field B, particles of mass m and

charge *e* circulate with the same cyclotron frequency $f'=eB/2\pi m$, but in accelerators the field *B* is inhomogeneous and decreases towards the edges in order to provide stable orbits of particles [2, 4, 9]. Then particles with the lowest frequencies fly along the outer orbits, and closer to the center - with the highest. The difference in *B* values is small and amounts to a percentage, especially in synchrotrons, where particles fly in a narrow ring along orbits of a close radius. But if *N* and γ are large and amount to about 100, then both the frequencies (100*f*, 101*f*, 102*f*, etc.) and the orbital radii differ from each other by a percentage. That is, with a synchrotron radius *R*~1 m, the difference in the radii of the orbits in it will be of the order of 1 cm, and the particles will be able to independently fly in one chamber. The movement of particles with different frequencies in different orbits will exclude their collisions. However, even in a uniform field *B*, the design features of accelerators and storage rings allow particles to circulate at different frequencies. In accelerators, the orbits do not look like circles, but their arcs (in bending magnets), conjugated by straight sections between the magnetic sections (Fig. 9). Since particles flying at different speeds pass a straight section in unequal times, then even with equal travel times of the magnetic sections, the total periods of particle motion along the ring will be different. All this maintains the illusion of speed *c* for superluminal particles.

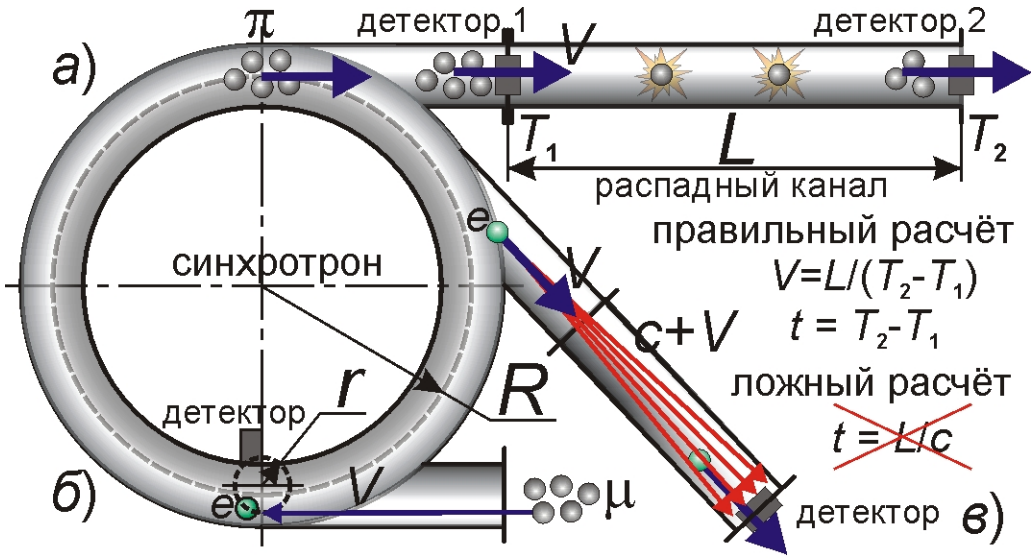

Рис. 10. Схемы измерения скоростей и времён распада *t* быстрых частиц (*а*, *б*), и сравнения скорости света и электронов (*в*).

Fig. 10. Schemes for measuring speeds and decay times t of fast particles (a, b), and comparison of the speed of light and electrons (c).

Formally "stopping" the speed of light and particles at level *c*, relativists create the illusion of a change in everything else - the masses, lengths and lifetimes of

particles from "time dilation" [2, 3], just like scholastic geocentrists, "stopping" the Earth's rotation, created the illusion of a change in the positions of the massive Sun and false slowdowns-stops of planets. This "relativity" gave rise to the paradox of twins - two brothers, one of whom is aging faster than a brother flying in an airplane or in a rocket. The increase in the mass and lifetime of particles has never been fixed by direct measurements. For example, fast π-mesons ($\gamma = 857$) were launched into a decay channel with a length of L=100 m (Fig.10a) and, having measured their number at the input and at the output, we found a decrease in their number for the calculated time of their flight $t=L/c$ [13]. This decay time t turned out to be $\gamma = 857$ times longer than the decay time t_0 of the same number of immobile π-mesons, allegedly confirming the extension of the lifetime $t=\gamma t_0$ according to SRT. But the real speed of particles is higher: $V=\gamma c$, not c [2]. Hence $t=L/\gamma c=t_0$: the lifetime has not changed. This would be immediately discovered if the time t was measured directly, by the delay between the detector pulses, which they did not, because this would reveal the superluminal speed $V=L/t_0=857c$. Only once have they attempted to directly measure the lifetime of muons entering the synchrotron at high speed [3, 14]. But even there, the measurements were indirect: the detectors recorded not the muons themselves, but the electrons that appeared during their decay (Fig. 10b). The electrons were recorded over a time much longer than the decay time of slow muons, which was interpreted as an increase in their lifetime. In fact, the muons decayed during the same time, and the generated electrons continued to spin in the accelerator, gradually leaving it from absorption in the detectors and drift along the magnetic field lines. Since the electron mass m is 207 times less than the muon M mass, then, while maintaining the velocity V, the electrons rotate in the field B in an orbit with a radius $r=mV/eB$ less than 207 times. With a muon orbital radius $R=MV/eB$=7 m, for an electron r=3.4 cm, that is, electrons were spinning in the synchrotron chamber in one place, near the muon decay point, gradually being absorbed by the detectors and leaving the chamber along helical lines. Since the time it takes for an electron to spend its energy and be absorbed increases in proportion to γ [2], it seems that the lifetime of muons also increases in proportion to γ. It turns out that the experiments proved not the stretching of the particle lifetime, but their superluminal speed.

So, superluminal particles are easy to obtain [2], but accelerators, detectors and experimental installations are built in such a way as to hide it, using a number of degrees of freedom for an imaginary confirmation of SRT and concealment of superluminal velocities [3]. This is the essence of the quantorelativistic doctrine of the influence of an observer on an experiment (which is openly proclaimed): for relativists, as for casuist hookers, the laws of nature, whatever the pole, where he turned, is what happened. And honest physicists see perfectly well that all the experiments that allegedly confirmed SRT are just a trick, which has been repeatedly stated by such nuclear physicists as E. Rutherford, F. Soddy, J. Fox [15], A.A.

Tyapkin, L.A. Pobedonostsev [16], LB Okun, Di Hua [7] and others. Likewise, in tricks, everyone understands that "miracles" are just an illusion created by the sleight of hand of a magician, even if you do not know the secret of the trick reproduced by magicians from different countries. Like magicians, relativists in experiments put on display what they want to show, but hide the most important from everyone (the secret of focus, for example, the superluminal speed of particles), which creates the illusion of a miracle (mass growth, time dilation). For impressiveness, the experience is accompanied by mathematical gibberish - meaningless formulas from Latin symbols, as a medieval magician pronounced for solidity the Latin formula "Hocus pokus" - a distorted church dictum.

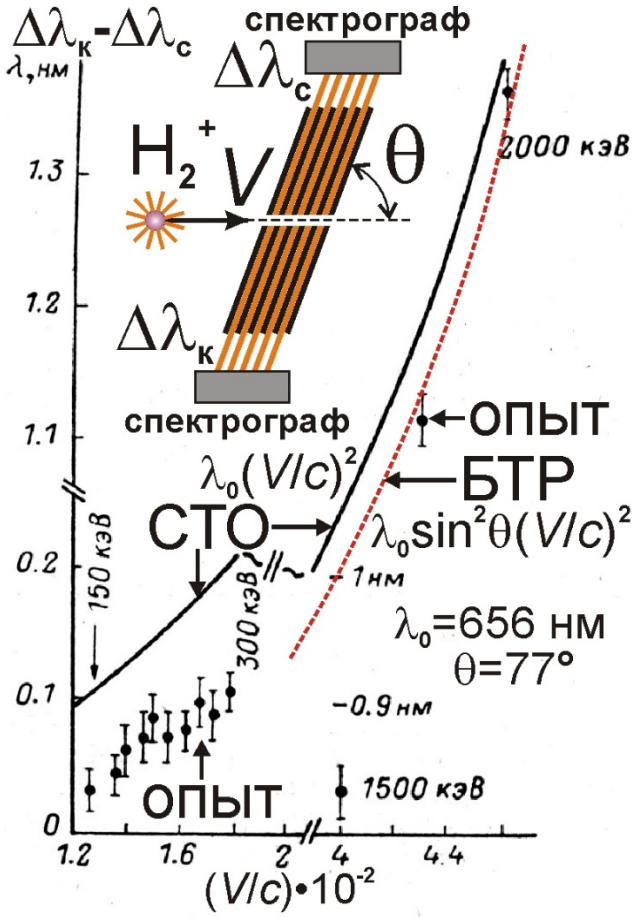

Рис. 11. Схема опыта Победоносцева по сравнению красного и синего смещений спектральных линий и его результаты, отвергающие СТО и доказывающие БТР.

Fig. 11. Scheme of Pobedonostsev's experiment comparing reds and blues spectral lines and its results, rejecting SRT and proving BTR.

But if tricks are harmless fun, and no one seriously passes them off as a miracle, then relativists give fake confirmation of SRT at face value, turning

cyclotrons and synchrotrons into scams for fooling people and promoting states for huge sums. Medieval hucksters, swindlers and showmongers brought the art of deceit to perfection, becoming bankers and relativists, who, "cheating" accelerators, cheat peoples and their governments for astronomical sums. That is why relativists are so afraid of checking their accounting and experiments, in every possible way preventing the publication of alternative theories, so that there is no shadow of doubt in SRT [3]. After all, an experimental test of its formulas now and then reveals their falsity. Thus, the refined experiment on checking the quadratic Doppler effect for light emitted at an angle θ to the velocity V of hydrogen ions H_2^+ (Fig. 11), set up by L.A. Pobedonostsev in 1989, showed that the measured spectrum shifts differ from the SRT forecasts ($\lambda_0 V^2/c^2$) by a factor of two or more [16]. But the shift turned out to be close to the forecast of the BTR ($\lambda_0 \sin^2\theta \cdot V^2/c^2$, see Fig. 11) [2]. And the velocity V is lower than its estimate for the ion energy $mV^2/2=eU$, which is why the measured velocity differed more and more noticeably from the calculated one with increasing energy [16]. All this again and again convinces of the unreliability of the previous confirmations of the SRT, which Pobedonostsev regarded as the result of mistakes and self-hypnosis. Therefore, new experiments are needed, which will surely bring victory to classical physics.

It is sometimes believed that charged particles flying in a vacuum with superluminal velocities and called tachyons for this would generate Cherenkov radiation. In fact, a charge flying without acceleration does not radiate, regardless of its speed, otherwise in a system where the charge is at rest, we will get an absurd conclusion about the radiation of a particle that loses kinetic energy, which it does not have at rest. As for the Cherenkov radiation in the medium, it arises only due to the deceleration of the charge and its oscillations under the influence of stationary ions, past which it flies [3]. That is, Cherenkov radiation is similar to bremsstrahlung [4]. Cherenkov radiation and detectors based on it are considered to be another proof of the sublight speed of particles. But in BTR, an accurate calculation shows that the light emitted by particles acquires a speed $c'=c/(n-V/(c+V)$ in a medium with a refractive index $n=1+\delta$, and Cherenkov threshold detectors at $c'=V$ and $\delta \ll 1$ particles are registered with a speed $V \approx c/\delta^{1/2} \gg c$, confirmed by their impulse $p=mV \approx mc/\delta^{1/2}$ [3]. It is believed that the superluminal motion of particles and light violates the principle of causality, changing the direction of time, since the consequence of an event (for example, the decay of a particle) can be seen earlier than its cause (the appearance of the particle itself). In fact, the principle of causality is unshakable, because the anticipation of the cause by the effect is only an appearance. So during a supersonic flight of an airplane or fireball, it seems that it is flying in the opposite direction, and its "explosion" can be heard earlier than the sound of an airplane or fireball appearing in the sky [17]. The effects only prove that the speeds of sound and light are not infinite, that the speed of light depends on the speed of the

source, just like the speed of bullets from a machine gun firing from a speeding armored car or car.

However, the modern scholastics deny this dependence and claim that light always flies at a standard speed c, regardless of the speed V of the source and receiver. This absolutization of the movement of light is a tribute to scholastic scholars to the poor ideas of Aristotle, who considered the speed of light to be unattainably high, infinite. Only then is it unchanged: adding infinity with any number again gives infinity, and for relativists, $c+V=c$, as if $c=\infty$. That is why electric forces $F'=F(c-V)^2/c^2=F$ are considered to be independent of V, as if the speed c is infinite, and the bodies cannot reach this speed, but only approach it. But already in the 17th century, from Roemer's observations of the satellites of Jupiter, it became clear that the speed of light is finite ($c=3\cdot10^8$ m/s) and the movement of light is relative, causing the Doppler effect, discovered in Jupiter by the same Roemer [18]. And all the paradoxes of SRT arise from an attempt, by means of sophisms, to combine a finite meaning with and its seemingly infinite, unchanging and unattainable value. They say that what is allowed to Jupiter is not allowed to a bull; what is allowed for ideal light is not allowed for material bodies; what is permissible for cosmic beings is not permissible for earthlings, whom relativists consider cattle. This will be so until people doubt SRT and directly check the immutability, unattainability of the speed of light. Academician Ye.B. Alexandrov, but the result was negative [2, 3, 19]. However, even this experience is not direct (Fig. 9).

First, the speed of electrons is not directly measured. It is calculated using the SRT formulas, from which it follows that "the speed of an electron differs from the speed of light by less than one millionth part" [19]. But in classical physics the speed of electrons is sought differently [2, 3]. Ritz himself noted in 1908 that electrons can also have superluminal velocity. So, with the measured momentum of electrons $p=mV=m\gamma c=450$ MeV/c and $\gamma=900$ [20], the electron speed $V=\gamma c=900c$ [2], that is, almost a thousand times higher than the speed of light c. Therefore, the corrections following from the Ritz theory differ from the 9 ns calculated by Aleksandrov [3]. It turns out that cyclic accelerators provide a cyclical substantiation of SRT according to the vicious circle method: first, they accept the conclusions of SRT, from where they receive its confirmation and refutation of other theories. The speed of electrons must be measured directly, by the flight method (Fig.10a), it cannot be found as $\upsilon=Lf=c$ by multiplying the length of the accelerator ring $L=8.7$ m by the frequency f of the accelerating field and radiation pulses, since this frequency is $f=34$ MHz is not equal to the frequency of rotation of particles f'. The fact that f' is an integer number of times N higher than f was confirmed by the fact that the interference induced in the cable by flying particles had the form of harmonics Nf of the fundamental frequency f [20]. And the "ringing" at the trailing edge of the pulse (Fig. 12) is similar in shape to the

typical picture of the sum of harmonics of the frequency Nf (Fig. 8). Secondary maxima could also be created by light re-emitted at a speed with the edges of the diaphragms in the output channel. And the spectrum of synchrotron radiation begins not from the frequency f=34 MHz, but from the infrared range f'~1011 Hz [20], that is, from a frequency that is a thousand times higher. This means that the frequency of rotation of particles f' (with which the spectrum begins) is higher than the adopted f, and their speed is higher $V=Lf'\sim10^3c$, which is consistent with the classical estimate $V=\gamma c\approx900c$.

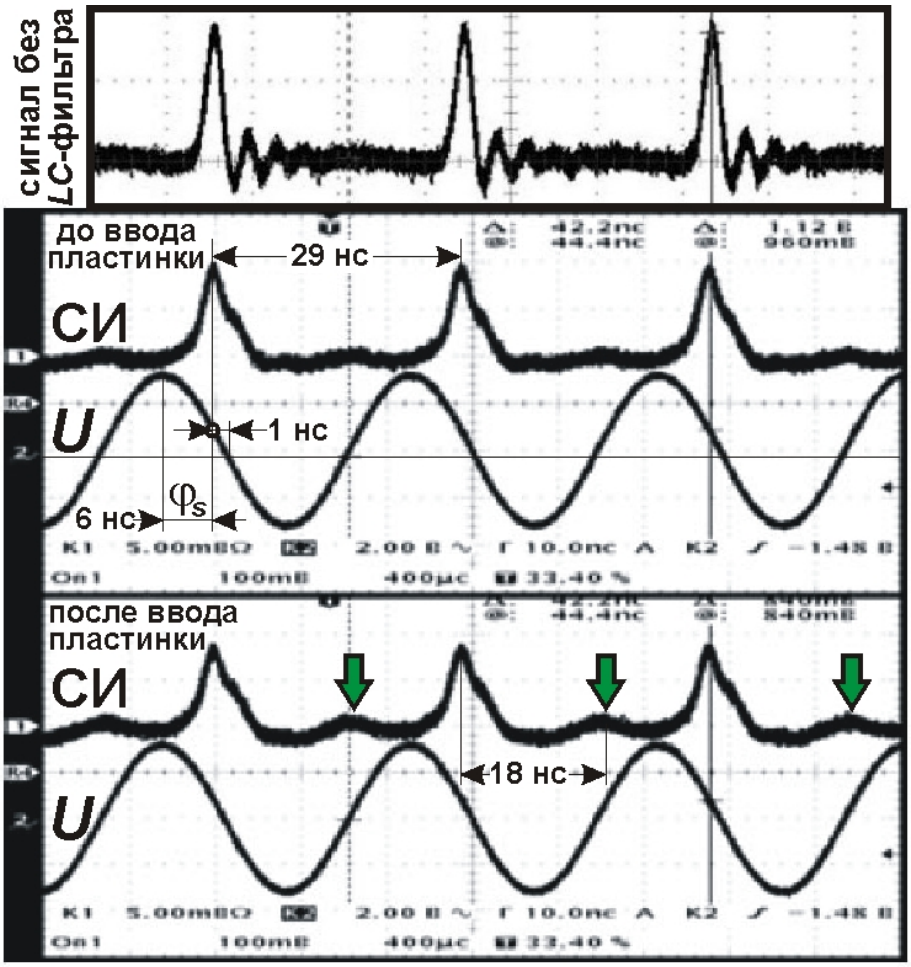

Рис. 12. Осциллограммы из опыта Александрова [19]: на нижней появляются вторичные импульсы синхротронного излучения (СИ, отмечены стрелками), летящего от пластинки медленней, чем первичное излучение, импульсы которого показаны вверху.

Fig. 12. Oscillograms from the Alexandrov experiment [19]: at the bottom secondary pulses of synchrotron radiation (SR, marked with arrows) flying from the plate slower than primary radiation, the pulses of which are shown above.

Secondly, since the pulses form a periodic sequence, it is impossible to say for sure whether there was a displacement, since, according to Ritz's theory, it is not equal

to 9 ns [2, 3]. If the displacement Δt is small or a multiple of the pulse repetition period T, it will not manifest itself: identical pulses will superimpose on each other (strobe effect) [3]. This can be easily verified by varying the offset by smoothly moving the detector away. Similarly, when measuring the speed of electrons by the transit method, it is necessary to monitor how the time t of their registration by the detector changes with its distance.

Third, the efficiency of re-radiation by a glass plate has not been studied. J. Fox noted that atoms of a stationary medium re-emit only part of the light [15]. The thicker and denser the medium, the higher the fraction of the secondary radiation emitted by the plate with the speed c, and the lower the fraction of the primary radiation sent by the source with the speed $c+V$. Fox estimated the reradiation (extinction) length $d=\lambda/2\pi(n-1)$ only for velocities $V<<c$. For super-accelerated particles, the re-emission can be much stronger or weaker. Strong re-emission will lead to the fact that the traces of gas in the accelerator chamber will immediately re-emit all the light at a speed c, and the expected shift Δt will not occur. Weak re-radiation is more likely. So, particles with a speed $V\approx c$ emit light with a speed $c'=c/(n-V/(c+V))=c/n'$, for which the refractive index of glass $n=1.5$ decreases to $n'=n-V/(c+V)\approx 1$, and the reradiation length grows $d=\lambda/2\pi(n'-1)\rightarrow\infty$. With a weak re-emission, the plate will retain only a small fraction of the light, and the bulk of it will continue to fly at a speed of $c+V$ without changing the oscillogram. The oscillogram shows that after the introduction of the glass plate, the height of the pulses decreased: the primary radiation with a speed $c+V$ weakened, and weak shifted pulses appeared, equal in height to the decrease in the primary ones (Fig. 12). Apparently, these are the pulses of secondary radiation coming from the plate with a velocity c, which was also confirmed by the magnitude of their displacement, which corresponds to the Ritz theory and the classical estimate of the electron velocity $V=900c$. Indeed, at a distance of $S=5.4$ m, the secondary pulses, having flown out at a speed of c, will lag behind the primary ones with a speed of $c+V=901c$, for a time $\Delta t=S/c-S/901c\approx 18$ ns, in accordance with experiment (Fig. 12). This is how much the secondary impulses lagged behind the primary ones. These pulses are small from weak re-radiation, from the gradual formation of the optical SR spectrum [2], or from the LC filter, which smoothed the detector signal and eliminated the ringing noticeable on the previous oscillograms [20]. And the synchronous arrival $\Delta t\approx 0$ ns of radiation and electrons to the detectors found from the oscillograms [20] (Fig. 12) means that the light and electrons had a speed of $V\approx 900c>>c$. Only in this way, light and electrons, instantly passing different distances from the point of radiation $S_1=7.2$ m and $S_2=2.8$ m, can arrive at the detectors almost simultaneously with the interval $\Delta t=S_1/(V+c)-S_2/V=0.016$ ns. The authors of the experiment [20] did not notice the superluminal velocities of electrons and light, since they were calculating according to STR, did not change the flight distances with a periodic signal (hence the ambiguity [3]), and

measured the phase φ_s=75.6º (6 ns) of the bunch not from the maximum accelerating voltage U, and from the minimum.

It turns out that the authors of the experiment obtained a result that confirmed the ballistic theory and refuted the SRT. However, electrical and psychological filters that filter out "noise" prevented this from being noticed. As T. Kuhn noted, scientists “see the world” through the prism, the filter of the accepted paradigm, and it is not the experiment that judges the theory, but the theory determines which facts will enter into meaningful experience [1]: there are no experiments independent of the paradigm. By selecting the conditions of experience and suitable facts (hiding contradictory ones), leading their false processing and interpretation, relativists get agreement with SRT. But in order for experience to become the supreme judge, it should be studied closely and impartially, on the basis of complete data, moreover, experimental (oscillograms, instrument readings), and not calculated ones. The experiment itself must be supplemented, firstly, by direct measurement of the electron velocity, secondly, to exclude the strobe effect by changing the flight distances of light and electrons, and thirdly, the contribution of re-radiation should be estimated by using ever thicker glass plates (or plates of variable thickness of two shifted wedges) and evaluating the accompanying changes in the oscillograms. In this form, the experience could indeed become decisive and be included in textbooks. And in its current form it is ambiguous and not new, repeating the scheme of A.S. Mazmanishvili [21].

Measurements of the speed of radiation from relativistic particles were carried out before, but with the same drawbacks: they did not directly measure the speed of particles and did not take into account re-emission by the medium. Thus, in the FLASH setup, the measured rate of undulator radiation [2] from fast electrons with an energy of 1 GeV turned out to be equal to c. But there the light went in glass, air, and from the re-radiation it flew with a speed of c, even if it was originally emitted with a speed of $c+V$. Experiments were also carried out in vacuum, where the velocities of 11 GeV electrons (γ=22000) and their synchrotron radiation were compared [22]. The detector recorded them with a delay of $\Delta t<5\cdot10^{-12}$ s: the speeds coincided. But this also does not contradict the Ritz theory, according to which at γ=22000 electrons fly at a speed $V\approx22000c>>c$, and their speed is only 0.005% lower than the speed $c+V\approx22001c$ of the radiation emitted by them, which is why the distance S=1 km they pass with a gap $\Delta t<7\cdot10^{-15}$ s. If the light of a stationary source were used for comparison, then not only would the falsity of SRT be revealed, but also a method of superluminal space communication through highly directional synchrotron radiation would be discovered. There were also those who, based on the directional diagram of synchrotron radiation, concluded that there was no dependence of the speed of light on the speed of the source [23]. But if the speed of the particles is superluminal, then

their synchrotron radiation will just gather inside the cone, which is narrower, the higher the speed and energy of the particles [2]. Only by borrowing the speed of a superluminal particle does the light fly out in the direction of its motion (Fig. 10c), just as fragments of an exploded supersonic cruise missile continue to fly forward by inertia.

This property of conservation of the source velocity was also applied in measurements of the neutrino radiation velocity. From a huge speed, the source emitted neutrinos within a narrow cone directed in the direction of particle motion (which proves their superluminal speed [2]). As a result, the neutrinos did not scatter, but were directed into the detector at a distance of 732 km (Fig. 1), which made it possible to catch neutrinos and measure their speed. This speed turned out to be higher than c by only 7.5 km/s - by thousandths of a percent. This proximity to the speed of light suggests that neutrino radiation is not the particles predicted by W. Pauli (the godfather of E. Mach), but electromagnetic radiation with a frequency and penetrating power much higher than that of gamma rays (such ultra-gamma radiation was also foreseen by W. Hess in cosmic rays). Neutrino radiation may contain neutral particles, but its penetrating component, which has a velocity c, must be light. No wonder the neutrino radiation from the supernova SN 1987A came at a speed close to the speed of light - almost simultaneously with the visible flash. If these type II supernova explosions are just an optical illusion of an increase in the brightness and frequency of the star's light according to the Ritz effect [24], then there are no particles and cosmic rays in them. By the way, underestimating the velocities of cosmic ray particles to c, they falsely find the direction of their arrival [3], which is why there is still no heavenly map of cosmic ray sources - they seem to be coming from all directions [4], without connection with the center of the Galaxy and bright optical sources, radio, X-ray or gamma radiation.

So, neutrino radiation, like gamma and X-rays, is the same light. Then neutrino oscillations are also understandable - mutual "transformations" of electron, muon and taon types of neutrinos: if these emissions contain common frequencies in the spectrum, they can be detected by the same detectors. This is the reason for other anomalies of neutrinos, which more than once let physicists bet on them [1], including denying their superluminal velocity. Why did the speed of neutrinos from fast particles grow by only a fraction of a percent? Simple neutrino radiation, despite weak absorption, is also re-emitted, albeit at a greater length d than simple light [24]. Only at the beginning it flies with a hyperlight speed, and after $d\approx18$ m it slows down to a speed of c or lower (taking into account dispersion). Then the average speed $c'=L/T$ is only slightly higher than the speed of light. In addition, the protons p and the π-mesons knocked out of the target and emitting neutrinos also had superluminal velocities $V=\gamma c$ ($\gamma\approx400$) and instantly traveled a path $S\sim1$ km before neutrino

emission. But, accepting $V=c$, we got a total delay from registering protons to registering neutrinos (even if they immediately slowed down to speed c) lower by $\Delta t=S/c-S/\gamma c\sim 10^3$ ns, which is close to the first result of "OPERA" in 2009 year it turns out that the experiment proved the superluminal speed of V particles and neutrinos. If the experiment were repeated on a smaller path L and in a vacuum, the excess of the speed of light would become even more noticeable. By the way, a supporter of the ballistic theory D. Voronin suggested that it is the extra velocity $V\sim c$ imparted by the decay products to gamma radiation (or neutrino radiation) that explains its penetrating ability [25]. And this is quite likely, since the refractive index is $n'=n-V/(c+V)\rightarrow 1$, and the redemption length is $d\rightarrow\infty$. Unfortunately, interesting ideas, projects and experiments of this modern Icarus, who attempted to fly on the wings of an original design and was named for this "Ichthyander of the fifth ocean" [26], met a barrier of misunderstanding and drowned in the abyss of time.

And yet the example of such romantics of science, following in the footsteps of Daedalus and Icarus, Leonardo da Vinci, Giordano Bruno, K. Tsiolkovsky and A. Belyaev, continues to serve as an example to all who dare and sincerely seek the truth. Instead of the insane, scholastic relativistic science and virtual reality invented for the sake of religion, instead of weak fake accelerators, their efforts will revive classical physics, which makes it possible to build simple powerful accelerators and starships to overtake light and reach the stars. Superluminal technologies will make a breakthrough into the future without even violating the principle of causality. After all, light and superluminal technology is the main weapon in the fight against obscurantism that has driven science into the labyrinths of mysticism. And no matter how they tried to fool us with dark superstitions and protect us from the truth, overseas religious figures, who have long suppressed the light of knowledge and "blessed" the hordes of Swedes [27], then the French and Germans for the war with Russia as the main source of traditions, knowledge and inventions, still a victory was and will be behind us. For, as Alexander Nevsky, who defeated the enemy hordes, rightly said: "God is not in power, but in truth!"

S. Semikov

Sources:

1. Komarov V.N. The universe is visible and invisible. Moscow: Knowledge, 1979.

2. Semikov S.A. Superlight made easy! // Engineer # 11-12, 2011. [Семиков С.А. Сверхсвет – легко! // Инженер №11-12, 2011.]

3. Semikov S.A. How to steal a million electron volts // Engineer №3, 2012. [Семиков С.А. Как украсть миллион электронвольт // Инженер №3, 2012.]

4. Sivukhin D.V. Atomic and Nuclear Physics. Part 2. Moscow: Nauka, 1989.

5. Bertozzi W. // American Journal of Physics, V. 32, No. 7, p. 551, 1964. [Bertozzi W. // American Journal of Physics, V. 32, №7, p. 551, 1964.]

6. Walz D.R., Noyes H.P., Carezani R.L. // Physical Review A, V. 29, No. 1, 1984.

7. Liangzao Feng, in the collection "Fundamental Problems of Natural Science", St. Petersburg, 2010. [Лиангзао Фэн, в сборнике "Фундаментальные проблемы естествознания", СПб, 2010.]

8. Semikov S.A. // Engineer # 1, 2006; No. 8-9, 2009. [Семиков С.А. // Инженер №1, 2006]

9. Goldin L.L. Physics of accelerators. Moscow: Nauka, 1983.

10. Semikov S.A. Cosmic rays - the way to the stars // Engineer №4, 2008. [Семиков С.А. Космические лучи – путь к звёздам // Инженер №4, 2008.]

11. From the history of the development of Russian military-technical thought. M., 1952.

12. Kryukov P.G. Femtosecond pulses. Moscow: Fizmatlit, 2008.

13. Aleshkevich V.A. // UFN, T. 182, No. 12, 2012. [Алешкевич В.А. // УФН, Т. 182, №12, 2012.]

14. Bailey J., Picasso E., et al. // Nature, V. 268, p. 301, 1977.

15. Fox J.G. // American Journal of Physics, V. 33, No. 1, 1965. [Fox J.G. // American Journal of Physics, V. 33, №1, 1965.]

16. Pobedonostsev L.A. et al. // ZhTF, T. 59, no. 84, p. 124, 1989. [Победоносцев Л.А. и др. // ЖТФ, Т. 59, вып. 84, с. 124, 1989.]

17. Perelman Ya.I. Entertaining physics. Moscow: Nauka, 1991. [Перельман Я.И. Занимательная физика. М.: Наука, 1991.]

18. Sekerin V.I. The theory of relativity is a mystification of the century. Novosibirsk, 1991. [Секерин В.И. Теория относительности – мистификация века. Новосибирск, 1991.]

19. Alexandrov E.B. // Chemistry and Life No. 3, 2012. [Александров Е.Б. // Химия и жизнь № 3, 2012.]

20. Alexandrov E.B. et al. // UFN, T. 181, No. 12, 2011. [Александров Е.Б. и др. // УФН, Т. 181, №12, 2011.]

21. Mazmanishvili A.S. // Electromagnetic phenomena, vol. 2, no. 1, p. 124, 2001. [Мазманишвили А.С. // Электромагнитные явления, Т. 2, №1, с. 124, 2001.]

22. Brown B. C., et al. // Physical Review Letters, V. 30, No. 16, 1973.

23. Newburgh R. G. // American Journal of Physics, V. 40, No. 8, p. 1173, 1972. [Newburgh R. G. // American Journal of Physics, V. 40, №8, p. 1173, 1972.]

24. Semikov S. Star freak show // Engineer No. 5-6, 2012. [Семиков С. Звёздный паноптикум // Инженер №5-6, 2012.

25. Voronin D. // Technology-Youth No. 7, 1999; No. 10, 2001; No. 3, 2002. [Воронин Д. // Техника-Молодёжи №7, 1999; №10, 2001; №3, 2002.]

26. Vasiliev Y. Ichthyandra of the "fifth ocean" // AON №3, 2001; Voronin D. // Young technician №7, 1998. [Воронин Д. // Юный техник №7, 1998.]

27. Andreev M. Alexander Nevsky. Moscow: Goskinoizdat, 1941.

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