Faith in God and the light on the paradoxes of Einstein

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(Dated: November 23, 2014)

Abstract

Speaking of Truth, till 2014 the paradoxes of Physics are not solved without the God's Grace. One must return to Holy Trinity. The development of physics was guided by the strange idea, that God is absent. Namely, He gave the laws, gave the matter and left for rest, for vacation till the Judgement Day. That is wrong, because Jesus Christ is the God, Who made miracles among us (see the Bible). ©

PACS numbers:

I. ABOUT ARXIV:PHYSICS/0004024

My deep respect, this explanation -You like- can really be correct. Moreover, the paper was published in reputable journal [Found.Phys.Lett. 13 (2000) 595-601]. It is the mathematical construction, which has no evident flaws. It has following characteristic: is not based on any postulates/principles, is it? The Special Relativity is based on two postulates, isn't it? I think with according experimental support -surely it would come- the paper requires the Nobel Prize as the major theoretical construction for widest range of the natural processes. He: Nikolic has introduced no new postulates, he's further developing the implications of the two basic postulates upon which SR is based. Me: Thank You. Excuse me, I am old enough to remember, that the Physics is the same in all inertial reference systems. So I find it hard to believe, that the Physical laws are looking the same way in all systems: sir Newton has not used name "non-inertial system" in his three laws. Be well. What can be done? This non-inertial frame accelerates, velocity of observer grows. But take the same velocity inertial reference frame in an arbitrary point. What is the transformation between the frames?

Opponent: sir Newton has included non-inertial systems in his three laws: there are real fictitious forces out there! Me: fictive force is the same as fictive marriage: it is not force nor marriage. An observer U on a free body B does not feel overloads and is not such crazy researcher to assign a force to the body B; however opponent O in non-inertial frame in a galaxy far, far away from U subjects a fictive force to this body B.

Pallen: What exactly is your point? Books on classical mechanics routinely cover non-inertial coordinate systems. Me: The considerations of non-inertial reference frames are not well studied. Or you pretend, that "There is nothing new to be discovered in physics now. All that remains is more and more precise measurement" (supposed to be said by Lord Kelvin)? As simplest example. Inside accelerating rocket holds $d^2x/dt^2 = -a = const.$ What is the theoretical derivation of this formula? Answer: 1) take Newton's second law in inertial frame, latter is co-moving with the rocket for a given moment $d^2x'/dt^2 = 0$, 2) make coordinate transformation $x' = x + a\,t^2/2$. Please give theoretical derivation of this coordinate transformation. The linear transformation was derived in Special Relativity from only two postulates. Which postulates would lead to the above non-linear transformation? They: 1) There doesn't need to be any derivation of a coordinate transformation. You can

use any coordinates you like. 2) you reject established mainstream physics, which is not permissible in pysicsforums.

Acceleration is cause of the difference? But in the frame of rocket the Earth accelerates and not the rocket. How to make frame in rocket? Take long rigid ruler with small clocks in every point of it. So the "this transformation cannot be simply inverted by putting $u \to -u$. This is why the inertial and the noninertial observers are not equivalent." is wrong reason. Indeed, they wrote "In particular, if the inertial and the noninertial clocks are at the same instantaneous position, then acceleration has no influence." Thus, the paper is not the solution of twin paradox. Under the inversion the author means $u \to -u$, $t \leftrightarrow t'$ and $x \leftrightarrow x'$, doesn't he? And turns out, what these two systems of equations are incompatible, isn't it? Let us look closer at the issue. The author uses the formula $dt' = \sqrt{1-u^2}\, dt$ for any acceleration. Thus, the author artificially selects the asymmetry of the systems, which is, thus, incorporated in Eqs.(1),(2). He well might say simply the rocket twin is younger, than the Earth twin, just because the rocket is greatly non-inertial. Indeed, all systems are not inertial. Then Eqs.(1),(2) shall transform the rocket and Earth to INERTIAL system S. Latter shall provide connection between two non-inertial systems. Can it be done? Will the result be invariant under the choice of S?

They: "the coordinate t' can be interpreted as a physical time only at $x' = 0$." Me: what the sense then t' (and thus the all transformation with integral of history for t') has? They: "a uniformly accelerated observer at $x' = 0$ another observer has such a trajectory that his position is given by $x' = constant \neq 0$. Then this second observer also accelerates uniformly, but with a different acceleration." These different accelerations are due to change of etalons. Find for same $t = fixed$ the x-positions of points $x' = 0$ and $x' = const_1$, is there the contraction?

The rocket has not to be small. Yes, there is mathematical difficulties to correspond events inside the large rocket to background system. Thus, the author demands physical nonsense of x', $t' \neq 0$ only of human impotence: only God am omniscience. So, actually the author has no transformation between frames, but rather the trajectory of a mathematical point, which is not something new.

To say something about clocks synchronization. You have transformation formulas, thus you know the motion of light between two points, thus you can synchronize the clocks to the clock in chosen point. In Newton's worldview the clocks experience the same acceleration

and velocity.

II. CLOSED (SMALL) UNIVERSE

Let us consider a model of Universe, which contains spacetime, the Earth and the capsule with astronaut. The Einstein has introduce modification of General Relativity called "Dark Energy" to make Universe stationary.

Take following model: rocket A flies by the Earth and drops the information of proper time. After rocket returns, it again drops the information. These both events and all the flight is without an acceleration. Where is the turning point T? There is no such one: the Universe is stationary Friedman Closed model. What is with twins? Both systems are inertial!

The luminal travel has near zero proper time $\Delta\tau_1 < \Delta\tau_2$, where $\Delta\tau_2$ is time, what elapsed on Earth. Thus, in the worldview of astronaut the Earth has orbited the Universe during $\Delta\tau_1$ of coordinate time. Thus, the time, what elapsed on Earth is less than $\Delta\tau_1$. Thus, we run into contradiction. Look in Section VI A for solution. Another possible solution: after the change of coordinate system, to the Earth corresponds the affine parameter $S = \Delta\tau_2/\alpha$, which is used instead of time. Thus, $S < \Delta\tau_1$ and so $\Delta\tau_2/\alpha < \Delta\tau_1$, therefore $\alpha < 1$.

Possible objection: the worldview of rocket A is some special metrics, in which the proper-time of Earth flight is more, then the coordinate time. What the consideration are? 1) The matter is not source of the spacetime, the latter is get curved due to Dark Matter and Dark Energy. See, the matter inside the Universe can not produce its ball-like shape. Thus, the equation $G^i_k = T^i_k(matter)$ is not correct. The right one is $G^i_k + P^i_k = T^i_k \approx 0$, if there is no much matter present. Therefore, it is solution to the nature of Dark Matter and Energy. The enlarged version of solution You see in Ref. [1]. The moving rocket is inertial system and there is no reason to loose the assumptions of homogeneity and isotropicy of Universe, observed from the rocket (because there is almost no matter) and spacetime is locally Minkowskian (there is no anisotropy or inhomogeneity induced around the rocket, even in photonic limit $v \to c$) (due to metric invariance for Lorentz transformation).

III. DISCUSSION

If time is what one measures with a clock (A.Einstein), then where you find a clock, which running is independent from the conditions of use? Me: take ordinary clock, and if you won't shake it too hard it will run stably. The perfect clock one would get from God. The perfect clock's run is independent from its acceleration. Do you argue, that the acceleration of the clock acts not only mechanically, but some bizarre way to change the clock's run? Then there is simple test: rotate a clock. Yes, the acceleration is not limited, but at least the initial plot (dt_1/dt_2, a) would tell, is there a dependence tendency or not. See: the twin astronaut do not feel the acceleration over $2g$, but there is profound effect claimed. Because, you do not age much, when is being accelerated in the buss, one could assume, that acceleration is not the key. There is near luminal velocity for the twin-astronaut, same near luminal velocity (and some acceleration) as for the Earth. The time difference in aging is in direct proportionality to the flight with constant velocity. So, indeed, the different time rate happens while the flight without the acceleration.

Suppose, that in every inertial reference system S_i the time runs the same rate. Then putting these nearly co-moving (with the rocket) S_i along the worldline of the rocket and allowing to submit data from S_i to S_{i+1}, one gets data back to Earth. Hereby the velocity effect will be cut off. Remains only acceleration $\sim g$. Thus, all difference of aging one can test in Earth laboratory with ordinary velocity and acceleration.

"It is assumed that the deceleration time is determined only by the speed of the object, but not its acceleration. This statement is the sufficiently reliable experimental evidence. For example, in a cyclic accelerator (CERN Storage-Ring experiment [2]), the lifetime of muons within the relative experimental error $2 \cdot 10^{-3}$ is increased in accordance with the relativistic formula. In the experiment, the rate of muon is $v = 0{,}9994\,c$, and time slows down in $1/\sqrt{1-(v/c)^2} \approx 29$ times. At 7 meter radius of the ring accelerator, acceleration of muons were reaching values $a \sim 10^{18} \cdot g$, where $g = 9{,}8\,m/c^2$." (Russian Wikipedia 2014, article "Relyativistskoye zamedleniye vremeni"), see Ref. [2] below.

IV. ON ETALONS

In Relativity the etalons are of different size/rate. Indeed, if you put a clock or a meter on the ground and run along them, they really change themselves.

A task: relativistic etalon (in known version – train) runs into dead end. Suppose the etalon is the true etalon, so it does not change the size. Then after the velocity of etalon gets zero, the size of etalon for local observer changes. Yes, the free end will move towards the forward end, until the pressure wave arrives. In conclusion: the etalon for the passenger really changes the size.

ETALONS do not change the size!

Suppose robotized spaceship (of proper size $l_o = 1\,meter$ – there is the etalon) accelerates from zero to v within t seconds. The destination planet Z is L_1 meters away. For the astronaut the outside path will shrink to $L_2 = \sqrt{1-v^2}\,L_1$. There can be $l_o > L_2$ and thus, there will be collision point P in worldview of astronaut. However in worldview of Earth the forward end of the ship is moving with velocity v after the t seconds. Thus, there is no collision event. (P.S. Velocity of planet Z for accelerating spaceship can be more, than velocity of light.) To solve the new paradox one puts in the change of etalon: $l_2 = \sqrt{1-v^2}\,l_o$. But the astronaut measures the path by this etalon (he does not notice the change of it), then the distance to the planet is $L_3 = L_2/l_2 = L_1/l_0 = L_1$ (meters). Thus, there is no Lorentz contraction and one may recognize, that meter etalon is not changed. From it follows, that the time etalon is not changed either. The astronaut observes speed v of the passing objects (principle of relativity), the distance is L_1, thus there is no twin paradox.

Possible way to get solution: one can not apply directly the Lorentz contraction. One shall try to use the Lorentz transformations. In Earth system K are there event, all by $t = 0$: Beggining of cabin A($x = 0$), End of cabin E($x = L$), The concrete wall D($x = 5 > L$). The transformation ($c = 1$) is $\beta\,x' = x - v\,t$, $\beta\,t' = t - v\,x$, where $\beta := \sqrt{1-v^2}$. Thus, A'($t' = 0, x' = 0$), E'($t' = -v\,L/\beta$, $x' = L/\beta$), D'($t' = -v\,5/\beta$, $x' = 5/\beta$). Because the intervalls are space-like, then the true distance between A' and E' is

$$\Delta s_1 = \sqrt{-(0 + v\,L/\beta)^2 + (0 - L/\beta)^2} = (L/\beta)\sqrt{1-v^2} = L\,,$$

the true distance between A' and D' is

$$\Delta s_2 = \sqrt{-(0 + v\,5/\beta)^2 + (0 - 5/\beta)^2} = 5\,,$$

the true distance between E' and D' is

$$\Delta s_3 = \sqrt{-(-v\,L/\beta + v\,5/\beta)^2 + (L/\beta - 5/\beta)^2} = 5 - L\,.$$

Holds $\Delta s_1 + \Delta s_3 = \Delta s_2$. Is there Lorentz contraction? No, however the Relativity holds. If inside of cabin the coordinate system, where A' and E' have the same t, a general transformation can make the points with different t' and the invariant distance (on etalon) between the points will not be $\Delta x'$. Without the Lorentz contraction the Eherenfest paradox is solved.

Objection: how to measure the distance between two space-separated events? If the first event has happend in $x' = 0$, and after that the second event has happend in $x' = 1$, then the space-distance between the places of events $\Delta x' = 1$. That if the x' has sense of distance, the physical sense. However, if in spacetime cotinuum the time has mixed up with space, then the x' and t' have only the mathematical sense of abstract room. Making transformation one puts, that the distance x is measured at the fixed time.

In the cabin first flash of light, second one and the fird one happen at different times t', but the wall is moving towards the cabin with velocity v. Thus, by the flash of A' it will be at $x' = 5/\beta - v^2\,5/\beta = 5\beta$ and collision is possible.

V. CONSIDERING METRICS IN TWIN PARADOX

Man *Bob* moves with $v = const$ in relation to woman *Allice*. From *Allice*'s perspective velocity of *Bob* is $dt/d\tau = E$, $dx/d\tau = \sqrt{1 - E^2}$, where τ is geodesic parameter of *Bob*, his proper time. The t are clocks of *Allice*. Now from *Bob* perspective velocity of *Allice* is $d\tau/dt = U$, $dX/dt = \sqrt{1 - U^2}$. The motion is relative (this ensures the invariant energy of possible collision), therefore the velocity values $dx/dt = dX/d\tau$, thus $E = U$. But it is the contradiction, as $dt/d\tau \neq d\tau/dt$. The case $E = 1$ is no motion $v = 0$.

Possible solution: $d\tau/ds = U$, $dX/ds = \sqrt{1 - U^2}$, where $ds = dt/\alpha$. But still holds $E = U$. That means, $dt/d\tau = d\tau/ds = \alpha\,d\tau/dt$. Therefore, $\alpha = (dt/d\tau)^2 = E^2$.

VI. ON TWIN PARADOX IN LITERATURE

A. My solution

The Lorentz transformation do contain asymmetry $d\tau = \int \sqrt{1-u^2}\, dt$. That is source of this mystery. Thus, there is indeed the privileged reference frame. Another words: the processes in the rocket do run slower. Then, being in rocket one concludes, that processes on Earth do run faster. Thus indeed, the Earth is the place for fast processes and the rocket is the place for slow rate processes. Does the mathematics agree? Yes it does: just do not switch the τ, $x' \leftrightarrow t$, x: the first postulate of Special Relativity is violated. Yes, the same form processes are in rocket and on Earth, that is true. But the rocket has SLOWER rate of time. In that aspect the frames are not equivalent and, thus, the first postulate of Special Relativity is violated. It well might be, that rocket stands on Earth, but the time runs slower. NB! Because we are entering the spiritual realm, we must be strong Orthodox Christians: the satan (might be dressed like angel with a fake nice smile) and demons are out there to kill you all and animals: "the herd ran violently down a steep place" (Luke 8:33) plus http://www.ridus.ru/news/160635.

Symmetry of reference systems is guaranteed by Relativity first postulate ("all systems are equivalent"). Unsolved twin paradox could tell, that oversight is in the first postulate.

VII. ON EHRENFEST PARADOX IN LITERATURE

A. My solution

You are on the disk and place rigid, ideal ruler on the edge of disk. Thus, you get proper perimeter of disk. The disk starts rotating, faster and faster. Because the ruler is rigid the proper perimeter remains the same. However outside observer places rigid ruler around the disk. While rotation the disk could only grow, but for rigid disk the outside perimeter remains the same. Thus, there is no problem.

The difficulties begins, when one tries to find the coordinates of events on the disk in outside world. Solution: because one of the system is not inertial, one can not use the Lorentz transformations. Let us attach a clock to point $A(\phi, r)$ on the disk. Then, because the disk is rigid, one has in outside polar coordinates $R = r$, $w = \phi + \Omega\, t^2$, where $\Omega\, t$ is the

growing angular velocity of the disk. What about the times? It relates via Special Relativity integration of $d\tau = \int \sqrt{1-u^2}\, dt$.

VIII. THE MAXWELL'S EQUATIONS ARE GALILEI INVARIANT

in the sense, that in every co-moving inertial reference system A is the same law. If the device A moves with speed v along the system B, then in the system B the motion of fields, which are inside system A has a different form. Indeed, there is redshift at least.

The Principle of Relativity says, that it is not possible to determine is the inertial laboratory A moving or is not. But from that does not follow the invariance of Maxwell's equations. Such invariance simply says, that describing laboratory B electromagnetic fields within system A one uses the same equations. Thus, the invariance of Maxwell's equations and Principle of Relativity are not logically connected.

IX. ON EQUIVALENCE PRINCIPLES

Due to the tidal forces and gradient of clock's rate, one can determine the position of the closed cabin, being inside of it. If there are no tidal forces or the different clock's rate, but are the overloads, then the cabin accelerates and does not stand on a planet. Measuring the acceleration and according duration one finds the passed path. Thus, the equivalence principles (basis of General Relativity's historical birth) are not true.

The Special Relativity within General Relativity? The assumption of Special Relativity is homogeneous space-time. In General Relativity there is nonzero gradient of space-time in-homogeneity (the curvature is nonzero in a given point), thus, the Special Relativity can hardly be applicable. 2) Without the Special Relativity the General one looses own sense.

X. ON RELATIVISTIC EFFECTS IN EXPERIMENTS

The God's Grace acts. If the people would not be so centered on Einstein or Niels Bohr... the God would not follow so closely our fantasies. You just do not say to a sick man: "you are crazy." You simply gently direct him to the Light. Too many Light can make You angry.

XI. ON THE INVARIANCE OF LAWS OF MECHANICS

Motion with dissipation:

$$m\,a + \kappa\,v = F\,,$$

make Galilei transformation $V(t) = v(t) + W$, then

$$m\,a + \kappa\,V - \kappa\,W = F\,.$$

Thus, the transformed formula does contain the transformation parameter W. Thus, it is not the form invariance. Perhaps the Electrodynamics also could not be form-invariant?

XII. SHAPE OF UNIVERSE

1) The Universe can not be infinite [1].
2) The General Relativity is wrong and, thus, perhaps correct is Newton's flat Euclidean Space. Therefore, there is a final frontier, the name of the book "The Universe in a Nutshell" perhaps has literal meaning. A body can not penetrate the barrier: it disappears into nothing, beyond frontier is nothing.

To preserve the God's Creation, one shall adopt the following view-point. Can there be curved space? Definition of two-dimensional space: it is the value, which measures the ruler between the two points with coordinates $A(x, y)$, $B(x, y)$ and which is given by the Pythagorean Theorem $ds^2 = dx^2 + dy^2$. The curved two-dimensional space: $ds^2 = g(x, y)\,dx^2 + f(x, y)\,dy^2$. Thus, the Victor Katyushchik [3] can be wrong. Therefore, the Universe can really be the expanding closed Friedmann Universe (however without the time dimension).

XIII. ZERO VELOCITY TIME MACHINE

In our appartment almost holds the metric

$$ds^2 = -dt^2 + dx^2 + dy^2 + dz^2\,.$$

Any rest-device in our appartment has 4-velocity

$$v^\nu = (dt/ds,\, 0, 0, 0)\,,$$

where $(dt/ds)^2 = 1$, thus $ds = dt$. To every particular device i corresponds parameter α_i, such, that

$$ds = d\tau_i/\alpha_i \,,$$

where τ_i is time inside i-th device.

Be aware of evil spirits, be strong Orthodox Christian. Then you could read the Vadim Chernobrov's results with "beaver-rat-trap": there is 3% time rate shift [4]. The reported change in machine size could be incorporated into the metric tensor following way:

$$ds^2 = -dt^2 + a^2(r)(dx^2 + dy^2 + dz^2) \,,$$

where to avoid the Dark Matter inclusion [1] the $a(r < R) = 2$ and $a(r \geq R) = 1$.

P.S. Can the noninertial cabin have a metric tensor? Perhaps Yes, if you have transformation formula. If the cabin rotates on disk, then the transformation from inertial system (t, r, ϕ) into rotating one has (in Newton approximation) $\Phi = \phi + \omega\, t$ and the metric has form

$$ds^2 = -(1 - r^2\omega^2)\, dt^2 + dr^2 + r^2\, d\Phi^2 - 2\, r^2\omega\, d\Phi\, dt \,.$$

Note, that it is the flat metric, because is got from flat metric by continuous transformation. However, the motion of a test body in this metric is not easy to derive, besides are the known equations of motion are applicable in non-inertial system?

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[1] Dmitri Martila, "Simplest Explanation of Dark Matter and Dark Energy", LAP LAMBERT Academic Publishing, 2013, ISBN 978-3-659-50275-0.

[2] Bailey J. et al. Measurements of relativistic time dilatation for positive and negative muons in circular orbit, Nature 268, 301–305 (1977).

[3] YouTube: "Space-time continuum. Continuum method", "Stephen Hawking science freak".

[4] "Gates to the future become reality this spring", (22.02.2008): http://english.pravda.ru/society/anomal/