Failure of Einstein's theory of relativity. II. Arguments of Einstein disproving his own theory of general relativity and absurd consequences of relativistic physics

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Abstract: The theory of special and general relativity causes a "schizophrenic" dilemma in physics. It undeniably provides mathematically correct values, but it is undeniably epistemologically wrong in many respects. Including the relativistic explanation of the gravitational "time dilation" and the curvature of light beams at the surfaces of large masses, the author demonstrates the illogical character of relativistic physics. When one thinks the relativistic explanations of gravitational time dilatation and of the curvature of light rays by masses through to the end, they lead to absurd and contradictory logical conclusions. © *2019 Physics Essays Publication*.
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Résumé: La théorie de la relativité restreinte et général crée un dilemme "schizophrénique "dans la physique. Elle fournit indéniablement des valeurs mathématiquement correctes mais elle est indéniablement incorrecte à des nombreux égards sur le plan épistémologique. En incluant l'explication relativiste de la "dilatation temporelle" gravitationnelle et la courbure des faisceaux lumineux sur la surface de grandes masses, l'auteur démontre le caractère illogique de la physique relativiste. Lorsque l'on réfléchit jusqu'au bout aux explications relativistes de la dilatation gravitationnelle du temps et de la courbure des faisceaux lumineux sur la surface des masses, elles mènent à des conclusions logiques absurdes et contradictoires.

Key words: Einstein's Elevator Thought Experiment; Theory of General Relativity; General Relativity; Theory of Special Relativity; Equivalence of Inertial and Gravitational Mass; Gravitational "Time Dilatation"; Gravitational Redshift/Blueshift; Curvature of Space-Time; Four-Dimensional Space-Time; New Theory Of Gravitation (NTG).

I. INTRODUCTION

Einstein realized that it is difficult to get a satisfactory definition of "time." He therefore defined time in his thoughts on his theory of relativity by what a clock at a certain location is measuring. Hereby he detached time from its possible physical meaning. Instead of only using three mutually perpendicular axes in units of length in a coordinate system, he added a fourth variable that is defined by spatially distributed clocks that are stationary with respect to the coordinate system.[1,2] Although Einstein introduced indefinite "clock variables" located within different positions of three-dimensional space, he nevertheless used in his calculations the common letter "*t*" for a certain clock variable. Einstein called this fourth variable time or sometimes he also used the phrase "the concept of time."[1] Lundberg recommended using the term clock variable instead of time variance.[2]

But the physical phenomenon, which underlies the term time, does not become much clearer if one chooses the term clock variable instead. Latter has only the advantage that it corresponds better with Einstein's concept. I find this concept nevertheless also unsatisfactory for describing physical processes associated with the term time. Something that is measured by physical processes should be physically defined and not only in an abstract way. I would like to continue to use the term time in my considerations, as well as the letter "*t*" in my calculations. Most readers are used to it and using the term clock variable instead of time and introducing a new mathematical symbol, would unnecessarily complicate the comprehension of my arguments. However, it should always be clear that the term time does not mean a physical entity itself. In this context I would like to define time by the duration of fundamental physical processes that are associated with the velocity of light, for example, the frequency of electromagnetic radiation, the emission of quanta of electromagnetic radiation, or intra-elemental or intra-atomic processes. Latter is the reason why we can measure time with atomic clocks. In this article, I focus on the evidence that the relativistic explanations of the gravitational time dilation and the curvature of light rays at the surfaces of large masses are illogical and lead, if we think the relativistic model through to the end, to absurd and contradictory logical conclusions, to circular arguments, as well as to a incompatible coexistence of three-dimensional space, as we perceive it, and a four-dimensional space-time, as it shall be relevant for electromagnetic waves. For an epistemologically experienced philosopher, the correct mathematical results of general relativity must be judged to be fortuitous, especially since there

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are three-dimensional computational methods with at least equal precise predictions.[3,4] According to Einstein's theory of special and general relativity, independent from a certain velocity of a light source and independent from the strength of a certain gravitational potential the measured oscillation of a light beam, respectively, the measured "proper time," must always be the same, so that each observer will not be able to distinguish one from the other. However, distant observers within different velocities and different gravitational potentials must measure a different oscillation of the light beams, respectively, a different time, if they compare their times with each other. Simplified one can say, that according to Einstein's theory of relativity locally there must be always measured the same proper time ("absolute time") because the velocity of light is postulated to be a constant and a natural law. If time measurements within inertial frames at different velocities or within different gravitational potentials are compared with each other from a distance, there must be measured different times ("relative times").

II. EINSTEIN'S EXPLANATION OF GRAVITATIONAL "TIME DILATION" (CLOCK VARIATION) IS ILLOGICAL AND CONTRADICTORY

Einstein used the equivalence of inertial and gravitational mass to explain by his thought experiments, why he expects a gravitational time dilation and a curvature of a light beam near large masses. In his famous elevator thought experiment, Einstein exploited the equivalence of inertial and gravitational mass by replacing the gravitational field by the pseudoforce field of an accelerated elevator. Einstein postulated that a constant gravitational field can be replaced by an accelerated reference frame, because a person in a closed elevator will not be able to differentiate, if he feels his weight on the floor of the elevator because there is a gravitational field or because the elevator is accelerated upward.[5]

Therefore, he compared the gravitational acceleration effect of a gravitational field g by placing two clocks in the reference frame of an elevator, separated at a certain vertical distance Δd, e.g., one on the floor and one at the ceiling of the elevator. In the absence of any gravitational field, he imagined that the elevator is accelerated upward at the rate g. An observer in the elevator will then see that a clock signal emitted by the clock (2) on the floor of the elevator at a certain rate will reach the clock (1) at the ceiling of the elevator by the time $\Delta d/c$ later, which the light pulses emitted on the floor need to reach clock (1) at the ceiling. This means that an observer at the position of clock (1) will measure by the incoming time pulses from clock (2) that clock (2) on the floor of the elevator is running slower than clock (1) at the ceiling. As the frame of the elevator, which is uniformly accelerated by the pseudoforce g, can be replaced by a uniform gravitational field g, a clock near to a large mass, for example, on the surface of the Earth, shall according to Einstein's thought experiment also run slower than a clock on a certain height. This means that a light beam emitted from the surface of the Earth should be observed red-shifted, if received at a certain height, although the frequency of the emitted light beam is itself not affected by gravity. We can understand the relativistic derivation of the gravitational time dilatation (clock variance) better, if we imagine three massive steel boxes that are completely closed, in each of which there is an observer. In each steel box, there shall be an atomic clock at the ceiling and on the floor, see Fig. 1. In steel box (A), an emitter at the ceiling at the position of clock (1) sends a time impulse every second to a detector on the floor at the position of clock (2), where the time pulses of the clock at the ceiling (1) are compared with the time of the clock on the floor (2) by the incoming time pulses. There shall neither be acceleration, nor a gravitational field, so that the detector in the steel box (A) at the ceiling at position of clock (1) must measure the same frequency for the time pulses emitted from the position of clock (2). Also the detector at the floor in the steel box (A) at the position of clock (2) must measure the same frequency for the time pulses emitted from the position of clock (1). Then Einstein imagined that such a steel box was in a rocket. For better understanding, in our case we took two rockets, in each of which one of the steel boxes is located. The rocket (B) and the rocket (C) shall be accelerated, see again Fig. 1. According to relativistic physics, the clocks at the ceiling and on the floor shall for themselves still measure the same proper time t_0 because of the constancy of the velocity of light. For the other clock, they now have to measure a seemingly other time.

This seemingly other time measured by the detector D (1) at clock (1) in rocked B for the time of clock (2) and the seemingly other time measured by the detector D (2) at clock (2) in rocked C for the time of clock (1) are written in quotation marks.

Considering that each time impulse of one second emitted from the position of clock (2) in the steel box of rocket B needs a longer time to reach the detector D (1) in the steel box of rocket B at the position of clock (1) because the detector at the ceiling moves away from the time impulses coming from the floor, the time impulses of clock (2) seem to be longer for an observer at clock (1). This means that the

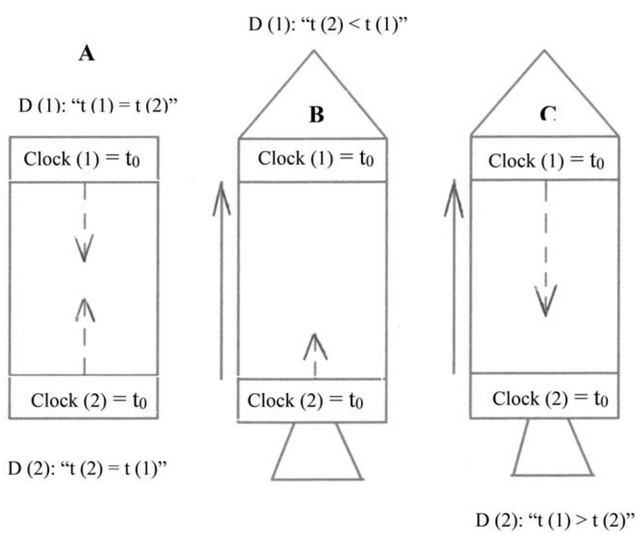

FIG. 1. Einstein's elevator thought experiment modified by three closed steel boxes placed side by side, the left without acceleration, the others in rockets with acceleration.

clock (2) on the floor in the steel box of rocket B seems to tick slower (less time passes by) for an observer at the ceiling at the position of clock (1), whereas the atomic clocks (2) and (1) are themselves ticking as usual according to the proper time t_0. In contrast to this, considering that each time impulse of one second emitted at the position of clock (1) by the emitter in steel box (C) needs a shorter time to reach the detector D (2) in the steel box (C) at clock (2) because the detector on the floor moves toward the time impulses coming from the ceiling, the time impulses of the clock (1) seem to be shorter for an observer at clock (2). This means that the clock at the ceiling (1) seems to tick faster (more time passes by) for an observer at the ceiling at the position of clock (2), whereas the atomic clocks (1) and (2) are themselves ticking as usual according to the proper time t_0.

So far all seems plausible and well founded. Einstein then considered that we cannot differ between the situation when we are accelerated by a rocket or when we stand on the surface of a large mass like the Earth and being accelerated by gravity toward the Earth. Because of the equivalence of inertial and gravitational mass, he postulated that there is no difference between the situation shown in Fig. 1, where steel boxes are accelerated in rockets and the situation in Fig. 2, where steel boxes are located on the surface of a large mass and accelerated by gravitation toward this mass, see Fig. 2.

At the example of a steel boxes standing on the surface of large mass nothing moves except the light beams. If you take the basic postulate of the special and general theory of relativity of a constant velocity of light seriously, what means that each clock is itself measuring the same proper time t_0, you do not expect to be able to measure a time difference between the clock (1) on the floor and the clock (2) at the ceiling of the steel box. Because the velocity of light should be constant according relativistic physics, every impulse emitted at the ceiling should arrive on the floor of the steel box with the same frequency, as a time pulse emitted by an emitter on the floor that reaches a detector at the ceiling. Einstein's concluded that in this case only a gravitational accelerated time at clock (1) and a decelerated time of clock (2) makes it possible that at the position of clock (1) the time of clock (2) can be seen passing slower and that at the position of clock (2) the time of clock (1) can be seen passing faster.

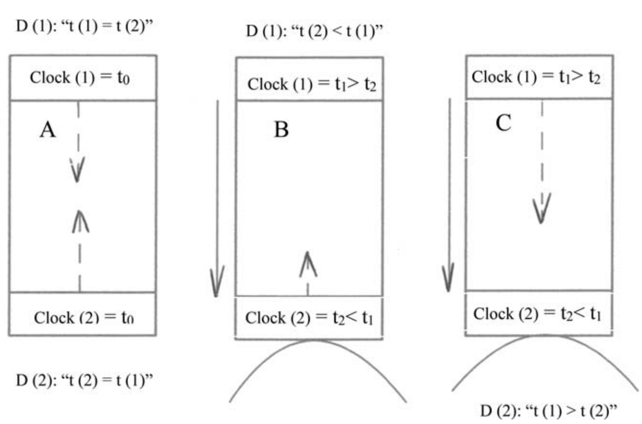

FIG. 2. Einstein's thought experiment modified by three closed steel boxes placed side by side on the ground of a large mass like the Earth, the left without gravitational acceleration.

At the example of the steel box accelerated by a rocket, the time dilatation is explained by a relativistic approach, as each clock at the ceiling and on the floor of the box measure the same proper time t_0. Also using a relativistic approach in Einstein's explanation of time dilatation caused by gravity, clock (1) must measure the proper time t_0 and at the same time also a faster going time in comparison to clock (2). Only then it is guaranteed that an observer at clock (1) is able to measure a slower going time for clock (2). In Einstein's explanation of time dilatation caused by gravity, clock (2) must measure the proper time t_0 and at the same time also a slower going time in comparison to clock (1). Only then it is guaranteed that an observer at clock (2) is able to measure a faster going time for clock (1). Relativistic physicists know that a clock cannot measure two different times, so they just assert that Einstein could explain why clocks run faster on a mountain and slower at sea level. By this interpretation relativistic physicists leave the basic postulation of Einstein's theory of relativity that all observers must themselves measure the same proper time t_0. And by this interpretation, the relativistic physicists take over an absolute position and contradict their own relativistic theory.

Sometimes relativistic physicists want to avoid these contradictions of Einstein's theory of relativity. In this case, they assert that each clock only seemingly measures another time than the proper time t_0, but in reality the proper time is measured. But a clock cannot measure one time only seemingly and measure at the same time the real proper time, so that the contradictions are preserved. Einstein's relativistic approach therefore cannot explain a gravitational time dilatation, as it is claimed by relativistic physics. Einstein and relativistic physicists instead use a nonrelativistic approach, without noticing this. This means that by Einstein's explanation of gravitational time dilatation he refutes his own relativistic approach.

III. WHAT IS THE EMPIRICAL RESULT OF EXPERIMENTS EXAMINING GRAVITATIONAL TIME DILATATION?

In 1976, Briatore and Leschiutta compared two cesium atomic clocks, one atomic clock located in Turin at 250 m and a second atomic clock located at Plateau Rosa at 3500 m above sea level.[6] Einstein's theory of general relativity predicted that a clock at the Plateau Rosa measures 30.6 ns more time per day than a clock in Turin. The researchers measured a difference of 33.8 ± 6.8 ns/d and 36.5 ± 5.8 ns/d. As the proper times in different heights were different, according to epistemological criteria Einstein's theory of general relativity was refuted by the experiment. But as the measured quantitative values suited quite well the predicted values, the researchers asserted that the Einstein's theory of relativity was verified again. The comparison of the cesium atomic clocks was done by radio waves. Every observer at different heights in this region could have had received the same time differences between the clocks in Turin and at Plateau Rosa by the emitted radio waves. This contradicts the theory of relativity, according to which, each observer located at a different height must receive different time signals, while the clocks in Turin and at Plateau Rosa should measure the same proper time. It is not possible that for all observers at different heights in that region the atomic clocks in Turin and on the Plateau Rosa can display different times, respectively, numbers, like Einstein and the relativistic physicists try to make us believe it. This means that time measured by clocks varies absolutely depending on the height within the gravitational field of the Earth.

IV. AN EPISTEMOLOGICAL EVALUATION OF THE RELATIVISTIC DERIVATION OF GRAVITATIONAL TIME DILATION (CLOCK VARIANCE)

An observer can see, according to general relativity, from a distance a change of time for another clock that is in a stronger or weaker gravitational potential than the observer himself. But each observer must for himself always measure the same proper time t_0. According to Einstein's theory of relativity, the clocks on a mountain should not really "tick" faster than for example at sea level, but only seemingly tick faster and contrariwise, if observed from the distance. But experiments, like that of Briatore and Leschiutta, proved directly that clocks locally measure time different in dependence of the strength of the gravitational field in reality and not always measure the same proper time t_0.[6] By Einstein's elevator thought-experiment, he found an inconclusive explanation why time should change in dependence of gravitation. But he did not notice that he left his relativistic approach and used an absolute approach in the case of gravitational acceleration, according to which time changes absolutely in dependence of the gravitational potential. Moreover Einstein was not able to explain the equivalence of inertial and gravitational mass with his theory of general relativity, as it is claimed today by relativistic physicists. He just used the well-known equivalence of inertial and gravitational mass for his inconclusive theoretical considerations. We have to recognize that the derivation of gravitational time dilation by Einstein and relativistic physics must be wrong.

Einstein argumentation can be summarized as following: Due to the constant speed of light time must run slower in a stronger gravitational field and faster in a weaker gravitational field because of the equivalence of inertial and gravitational mass. As time slows down in a stronger gravitational field because of our inability to differ between inertial and gravitational mass, what he equated with the equivalence of inertial and gravitational mass, we can observe a decrease in the frequency of a light beam. As time runs faster in a weaker gravitational field because of the equivalence of inertial and gravitational mass, we can observe an increase in the frequency of a light beam in a weaker gravitational field. But actually according to relativistic physics the motion and frequency of the light beam shall not be influenced by gravitation. So we get the relativistic circular conclusion: The time change within a gravitational field causes the frequency change of a light beam and the frequency change of a light beam within a gravitational field causes the time change we measure. This logical circular conclusion is the necessary precondition for the following argument of relativistic physics: When relativistic physicists measure a time change by a frequency change, they claim that not the frequency itself has changed, but time has changed, which we can measure by a frequency change. A frequency change itself is not allowed, according to relativistic physics, because of the constancy of the velocity of light, so only time can have changed, if we measure a changed frequency. According to relativistic physics experiments like that of Pound and Rebka only indirectly measured a frequency change of electromagnetic radiation by red-shifted light beams emitted from the ground of a tower and received on the top of a tower.[7,8] According to general relativity, they just measured the redshift on the top of the tower because clocks on the top of the tower run faster than on the ground of the tower. But because atomic clocks cannot measure time without frequencies, the only logical conclusion is that Einstein and relativistic physics must be wrong. It must be postulated instead that, if an atomic clock measures time by frequencies, the frequencies must have changed to be able to measure a changed time.

V. BASED ON AN ILLOGICAL DEDUCTION OF GRAVITATIONAL TIME DILATION (CLOCK VARIANCE) EINSTEIN DEVELOPED HIS MATHEMATICAL CONSTRUCT OF A FOUR-DIMENSIONAL SPACE-TIME, WHICH DELIVERS QUANTITATIVE CORRECT RESULTS

According to relativistic physicists, the velocity of light is always $c \sim 300\,000$ km/s locally, but according to a distant observer, the velocity of light varies with position in a gravitational field. This means that, seen from a distant observer within a lower gravitational potential, a light beam within a stronger gravitational potential needs more time than a second to move from position A to position B, which are about 300 000 km apart from each other. The reason is that the distant observer does not see a straight movement of the light beam from A and B, but a curved movement of the light beam on a geodesic within four-dimensional space-time, so that the distance from A to B seems to be longer for the distant observer. But in four-dimensional space time the distance is nevertheless the shortest way the light beam can move on a certain geodesic, on which the light beam moves with the constant velocity c. With other words, the seemingly slower velocity of a light beam, respectively, the longer time a light beam within a stronger gravitational potential needs to get from position A to position B, as seen by a distant observer within a lower gravitational potential, is caused by a longer distance the light beam has to travel on a curved line within four-dimensional space-time, the so-called geodesic, on which the light beam travels unaccelerated with the constant velocity c. If we uncritically accept these relativistic imaginations, the mathematical concept of general relativity is correct. But Einstein's considerations are founded on the postulation that within a gravitational field time runs locally always with the same velocity, so that it is always measured the same proper time t_0 locally, independent of the strength of the gravitational potential. However, if experiments are epistemologically examined unbiased, like that of Briatore and Leschiutta,[6] Hafele and Keating,[9] or Chou *et al.*,[10] these experiments prove that time is measured different in dependence of the gravitational potential in an absolute sense, depending on the strength of the gravitational potential. See about this my last article "Failure of Einstein's Theory of Relativity I: Refutation of the Theory of Special and General Relativity by an Empirical Experiment and by an Epistemological Analysis."[11]

The field equations of general relativity determine the geometry of space-time as a function of the distribution of matter, this describes how space-time is curved at a given energy and mass distribution. The space-time geometry is described by the metric tensor $g_{\alpha\beta}$ or by the corresponding Riemann's curvature tensor $R_{\alpha\beta\gamma\delta}$ and matter by the energy-momentum tensor $T_{\alpha\beta}$. Electromagnetic energy also contributes to the curvature of space-time. In order to find the field equations, Einstein oriented himself on the principle of general covariance what means that the formulation of physical laws must be independent of the inertial or noninertial reference system used. For the mathematical description, it follows that the laws of physics must be formulated tensorially. The field equations are also subject to a correspondence principle, so that two important limiting cases of observation are taken into account. First, in the limit of vanishing gravity, the special theory of relativity must be included as a limiting case, and second, for nonrelativistic velocities and weak gravitational fields Newton's theory of gravity must result. The field equations of space-time geometry form a system of 16 coupled partial differential equations, which are reduced to ten by symmetries. In the limiting case of weak gravitational fields and low velocities, the usual Newtonian gravitational equations result, see Fig. 3.

In the four-dimensional space time the shortest path from A to B is a straight line, while in three-dimensional space this path is curved. Relativistic physicists derive the curvature of a light beam near a (large) mass by other thought experiments in their textbooks. Instead of a vertical beam of light, as used by Einstein in his famous elevator thought experiment, in this case the relativistic physicists imagine a horizontal beam of light in an accelerated rocket. Because of the acceleration of the steel box in the rocket, an observer outside the accelerated rocket will see that the light beam appears curved, as the rocket has moved a certain distance before the light beam reaches the opposite wall of the steel box, see Fig. 4. The curvature is of course exaggerated for better visibility.

Because of the equivalence of inertial and gravitational mass, Einstein expected the same, if the steel boxes are put on the surface of a large mass within a gravitational field, see about this in Fig. 5. As the observers are now allowed to know that the boxes are standing on the mass of the Earth,

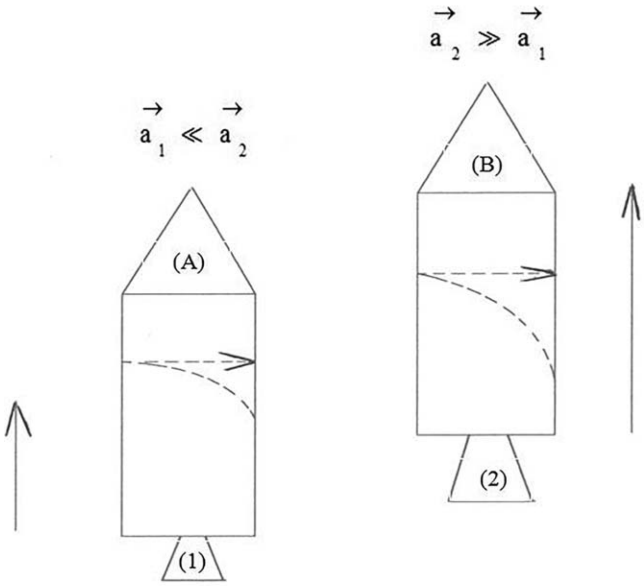

FIG. 4. Because of the acceleration a_1 and a_2 an observer outside the same accelerated rocket will see a different curved light beam.

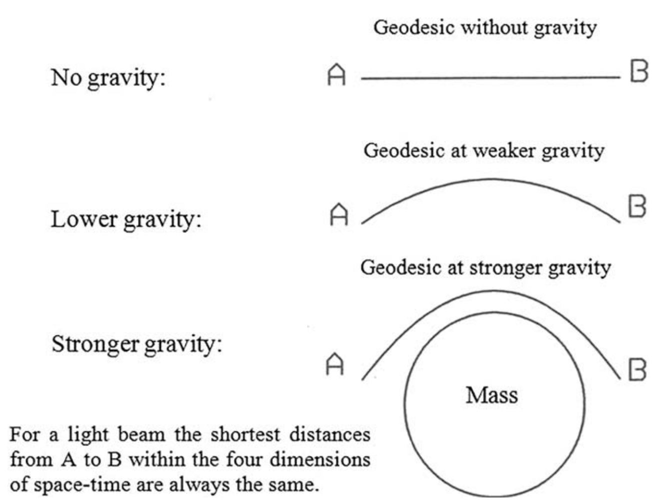

FIG. 3. A simplified scheme showing the four-dimensional space-time and the geodesics on which light beam shall move in order to keep the velocity c constant.

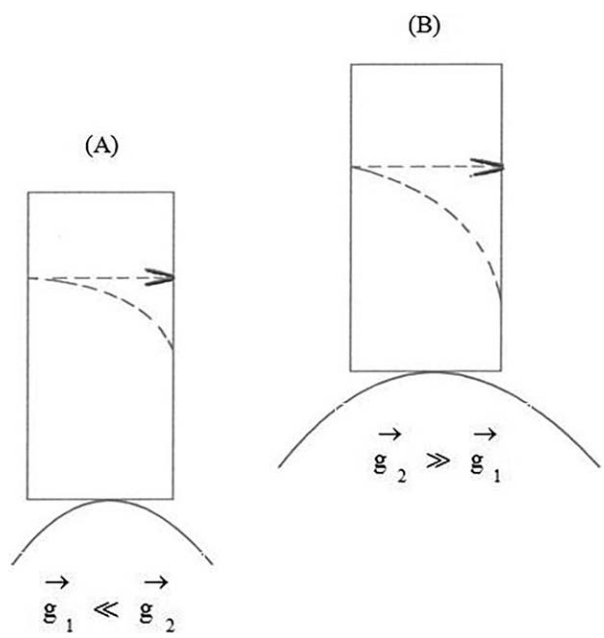

FIG. 5. Because of the gravitational acceleration g_1 and g_2 an observer outside the glass boxes will see a different curved light beam in the other glass box.

we imagine that the boxes are not made out of steel, but of glass.

At this point relativistic physicists and Einstein stop with their thought experiment without thinking further. Instead, Einstein worked out his concept of a four-dimensional space-time, which he could mathematically describe using tensor calculations. As already mentioned, it is worth thinking the thought experiment through to the end. Let us imagine two glass boxes, which are completely mirrored inside and are hung on a framework, whereas an observer from outside shall be able to look through the glass. Toward the mass of the Earth, the glass boxes shall be open. Because the glass boxes are mirrored, for an observer in another glass box within another gravitational potential will be able to see, how the light beam moving in curves will fall out of the glass boxes, while for an observer in a glass box within the same gravitational potential will see the light beam nevertheless move straight to and fro within the glass box. This is an absurd situation. Imagine the light beam consists only of a single photon, see Fig. 6.

Because the glass boxes are mirrored inside, the observers outside the same gravitational potential are able to see that the reflected photon falls out of the other glass box. A relativistic physicist will vehemently object and claim that the light beams are only seemingly curved in our three-dimensional world, while in reality the light beams move on geodesics, which are straight lines in the real four-dimensional world. And a physicist of quantum mechanics may assert that it is no problem, if two conflicting states exist at the same time. But also in quantum mechanics, a certain quantum state is clearly defined when an observation is performed, which is not the case in the example above. It is right that a light beam moves on geodesics, which are straight lines, if we go from the imagination of a four-dimensional space-time. That is why the relativistic physicist expects that the light beam can move to and fro between the mirrored walls of the glass boxes, as shown in Fig. 7.

According to relativistic physicists, who again take a relativistic viewpoint in this case, the three-dimensional world, in which objects move at a variable speed, as we perceive it, must coexist Aside from/In addition to the real four-dimensional world, which is determined by the constant velocity of light that we are not able to perceive. Everything seems to be alright. But if the four-dimensional world was indeed real, we would not be able to see the curvature of space-time, because every curved motion in the four-dimensional space-time happens on a straight line, the so called geodesic. With other words, we can only see the curvature of a light beam on the surface of a large mass, like the Sun, if their at least also exists the three-dimensional space. But as explained above, in the case of a coexistence of the three-dimensional space and the four-dimensional space, we get the situation that while the observer in one of the glass boxes sees his photon moving to and fro, the other observer sees that the photon has already left the glass box. For an observed photon, it should not be able to be in the glass box and to have left the glass box at the same time.

The inside mirrored glass boxes have themselves only a three-dimensional structure. Even if the light beams are curved within four-dimensional space-time only seemingly in the glass boxes, in the three-dimensional world of the glass boxes, they nevertheless have to be reflected somewhat closer to the opening at the bottom of the glass boxes, than it would be the case in four-dimensional space-time. If the light beam is reflected closer to the opening at the bottom of the steel boxes, this will also be the case with every further

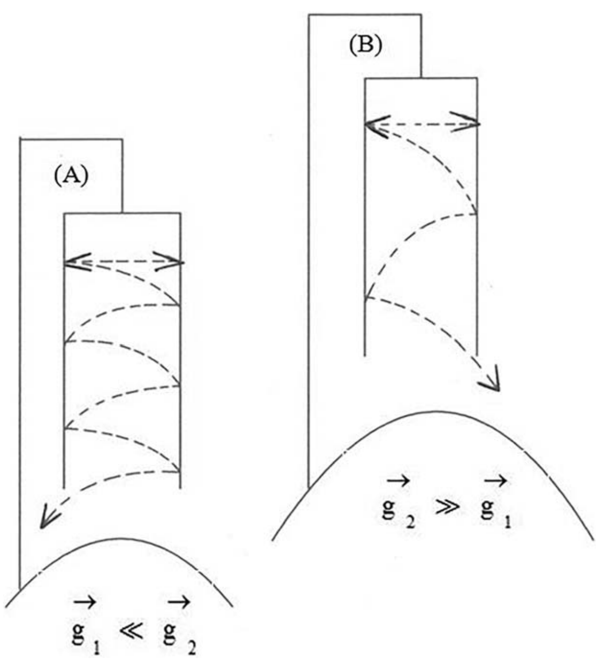

FIG. 6. Because of the acceleration g_1 and $g_{2,}$ an observer within another gravitational potential will see a curved light beam, while an observer within the same gravitational potential will see a straight moving light beam.

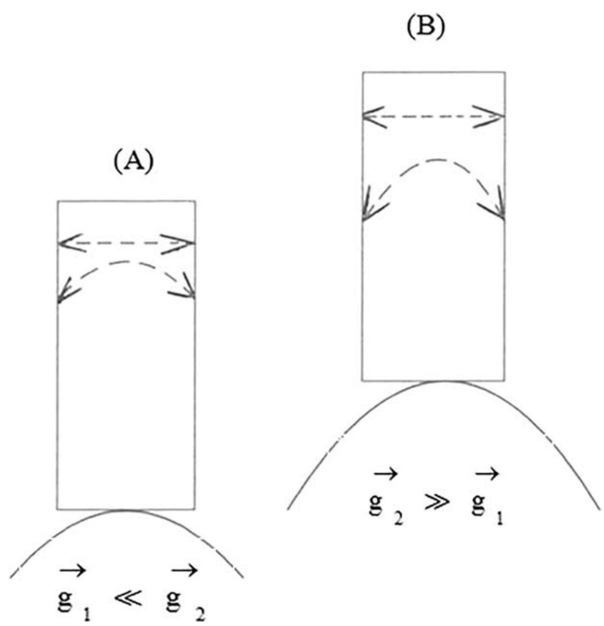

FIG. 7. A relativistic physicist expects that each observer sees the light beam moving straight to and fro within his glass box on a straight line. But a light beam within another gravitational potential an observer will see the light beam moving on a curved line to and fro.

reflection of the light beam, so that it eventually has to leave the glass box through its opening. While in the reality of the three-dimensional glass boxes the light beams are leaving the glass boxes through the opening at the bottom, this is not possible in the four-dimensional world of the light beams. We have to choose between a three-dimensional space and a four-dimensional space-time, both cannot co-exist, if we do not want to accept absurd and illogical consequences. As I already could successfully refuted Einstein's theory of relativity several times in my two former articles and because the thought experiments of Einstein and relativistic physics, which are the basis of the theory of general relativity, lead to absurd epistemological contradictions, only the three-dimensional world can be real.[12,13] This corresponds with the analysis of Crothers that Minkowski–Einstein space-time violates the theorem of Pythagoras and must therefore be invalid.[14]

VI. HOW DO WE HAVE TO EXPLAIN THE CONSTANCY OF THE VELOCITY OF LIGHT WITHIN DIFFERENT GRAVITATIONAL POTENTIALS, DESPITE DIFFERENT MEASURED TIMES, INSTEAD OF USING THE CONTRADICTORY THEORETICAL CONSTRUCT OF EINSTEIN'S THEORY OF GENERAL RELATIVITY

First, we have to admit the knowledge that usual three-dimensional space is real and the four-dimensional space-time is just a mathematical construct to calculate an underlying physical phenomenon that is not understood by Einstein and relativistic physics. Second we must go from the fact that time is measured by clocks differently in dependence of the gravitational strength of a certain potential in an absolute sense.

With other words, for an observer within a strong(er) gravitational potential time runs slower in comparison to an observer within a lower gravitational potential, so that the observer within the strong(er) gravitational potential, who locally sees light beams move from position A to position B in a straight line, must locally measure $c \sim 300\ 000\,\text{km}/(<t_0)$ because a clock at this position measures less "time pulses" than a clock within a weaker gravitational potential

$$\begin{aligned}&\text{No gravity: } (t_0 = 1s)\\ &\text{Strong gravitational potential: } t_1 = 0.98 \times t_0\\ &\text{Very strong gravitational potential: } t_2 = 0.8 \times t_0.\end{aligned} \tag{1}$$

Expressed in values of t_0

$$\begin{aligned}&\text{No gravity: } (t_0 = 1s)\\ &\text{Strong gravitational potential: } t_0 = 1.02 \times t_1\\ &\text{Very strong gravitational potential: } t_0 = 1.25 \times t_2.\end{aligned} \tag{2}$$

As we know, a light beam must always have the velocity $c \sim 300\ 000\,\text{km/s}$ within the gravitational field of the Earth, independent of the location of observers within different gravitational potentials. But if we calculate the velocity of the light beams by using time t_0, an observer located at a position without or within very low gravitational potential would see that a light beam at a stronger gravitational potential moves with a slower velocity than c

$$\begin{aligned}&\text{No gravity } (t_0 = 1s)\text{: } v = \frac{d_0}{t_0} \sim \frac{300000\,\text{km}}{t_0} \sim \frac{300000\,\text{km}}{1s} = c\\ &\text{Strong gravity } (t_0 = 1.02 \times t_1)\text{: } v_1' = \frac{d_0}{t_0} \sim \frac{300000\,\text{km}}{1.02 \times t_1} \sim \frac{294118\,\text{km}}{t_1} \neq c\\ &\text{Very strong gravity } (t_0 = 1.25 \times t_2)\text{: } v_2' = \frac{d_0}{t_0} \sim \frac{300000\,\text{km}}{1.25 \times t_2} \sim \frac{240000\,\text{km}}{t_2} \neq c\,.\end{aligned} \tag{3}$$

So that every observer is able to see a light beam moving within different gravitational potentials with the constant velocity c, the light beam must get accelerated by gravity by the reciprocal factor than the time gets decelerated (dilated) by gravity, so that we get

$$\begin{aligned}
&\text{No gravity:}\ \ (t_0 = 1s)\\
&\text{Strong gravitational potential:}\ \ t_1 = 0.98 \times t_0 \rightarrow g_1 = 1.02 \times \frac{d_0}{t_0^2}\\
&\text{Very strong gravitational potential:}\ \ t_2 = 0.8 \times t_0 \rightarrow g_2 = 1.25 \times \frac{d_0}{t_0^2}.
\end{aligned} \tag{4}$$

In this case, any observer is able to measure the constant velocity c for a light beam moving within different gravitational potentials, independent of different running times or different measuring "clocks" within different gravitational potentials

$$\begin{aligned}
&\text{No gravity}\ (t_0 = 1s)\text{: } v_0 = \frac{d_0}{t_0} \sim \frac{300000\,\text{km}}{t_0} \sim \frac{300000\,\text{km}}{1s} = c\\
&\text{Strong gravity}\ (t_0 = 1.02 \times t_1)\text{: } g_1 = 1.02 \times \frac{d_0}{(t_0)^2} \rightarrow v_1 = \frac{1.02 \times d_0 \times t_0}{(t_0)^2} = \frac{1.02 \times d_0}{t_0}\\
&\text{Very strong gravity}\ (t_0 = 1.25 \times t_2)\text{: } g_2 = 1.25 \times \frac{d_0}{(t_0)^2} \rightarrow v_2 = \frac{1.25 \times d_0 \times t_0}{(t_0)^2} = \frac{1.25 \times d_0}{t_0}.
\end{aligned} \tag{5}$$

Putting in the value for the velocity v_1' and v_2' from Eq. (3), we get

$$\begin{aligned}
&\text{No gravity}\ (t_0 = 1s)\text{: } v_0 = \frac{d_0}{t_0} \sim \frac{300000\,\text{km}}{t_0} \sim \frac{300000\,\text{km}}{1s} = c\\
&\text{Strong gravity}\ (t_0 = 1.02 \times t_1)\text{: } v_1 \sim \frac{1.02 \times d_0}{t_0} \sim \frac{1.02 \times 294118\,\text{km}}{t_1} \sim \frac{300000\,\text{km}}{t_1} = c\\
&\text{Very strong gravity}\ (t_0 = 1.25 \times t_2)\text{: } v_2 \sim \frac{1.25 \times d_0}{t_0} \sim \frac{1.25 \times 240000\,\text{km}}{t_2} \sim \frac{300000\,\text{km}}{t_2} = c
\end{aligned} \tag{6}$$

Experiments prove that we always measure a constant velocity c within the gravitational field of the Earth. The acceleration of electromagnetic radiation by gravity, what is forbidden according to relativistic physics, is the necessary precondition that the constant speed of light can always be measured independently of the gravitational time dilation because only then the gravitational time dilatation is compensated. As Einstein's theory of relativity is founded on the postulation that we always locally measure the same proper time, which is connected with the constancy of the velocity of light, the fact that clocks do not locally measure the same proper time within different gravitational potentials lets collapse Einstein's general relativity theory.

VII. CONCLUSION

The theory of special and general relativity is illogical in many respects, but the mathematical construct of Einstein's theory of general relativity founded on illogical considerations is conclusive, which is why so many physicists and mathematicians believe in the theory. There are no known Einstein field equations for the interaction of two or more masses and there is no theorem by which it can be asserted that Einstein's field equations contain a latent capacity to model two or more masses. There are no gravitational forces in General Relativity because gravity is allegedly space-time curvature, which is not a force. Gravitational force can have meaning only in the presence of more than one mass, as experiments attest, and which is codified in Newton's theory of gravitation. Time dilatation, as explained by Einstein, has nothing to do with any relativistic definition. And the four-dimensional space time and the mathematical construct of geodesics have nothing to do with real physical phenomena. It is experimentally proved that time dilatation changes absolutely with respect to the strength of a gravitational potential, what the believers and lovers of Einstein's theory do not want to recognize, which is why they interpret the results of experiments in the sense of their faith. Einstein used the very simple postulation that the velocity of light is invariant because all observers must be equal. This met the anthropocentric bias of man and was accepted too uncritically. Because the simple basis of Einstein's theory of relativity, the invariance of the speed of light with respect to all observers, is not real, the theoretical construct using this unreal basis, must be all the more complicated in the context of the general theory of relativity so that the mathematical results of the theory are brought back into line with reality. We should recognize that natural laws do not depend on observers, but on physical phenomena. In our case this means that the velocity of light depends on gravity. Nevertheless Einstein's tensor calculations of a fictive four-dimensional space-time enable us to gain useful quantitative results about the behavior of light beams and of masses within gravitational fields and about the time variance or "clock variance" in dependence of the gravitational potential that can be observed in the field of astronomy or that can be applied in physics, as for example to adjust the clocks within the satellites of the

Global Positioning System (GPS). Therefore, we can orient us on the quantitative values gained by general relativity, which we have to explain without the concept of the fictive four-dimensional space-time of general relativity. A paradigm shift based on a new explanation of the propagation properties of light is required. This will be explained in detail together with a conclusive explanation for the gravitational time dilation in a further article.

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