Refutation of Einstein's relativity on the basis of the incorrect derivation of the inertial mass increase violating the principle of energy conservation. A paradigm shift in physics

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Abstract: An airplane flying in the sky cannot have a higher inertial mass just because a person on the ground is watching the airplane, as well as it cannot have different inertial masses, if observed from car drivers moving on the ground with different velocities. Einstein's relativistic physics that postulates that one can influence the inertial mass of matter or the speed of physical processes ("time") by observing another inertial frame is actually not understandable. Because the relativistic mathematical approach enables us to get usefully and numerally precise results of nature observable phenomena, relativistic physics is nevertheless generally accepted today. This can only be explained in such a way that most physicists subordinate their logical reasoning to their mathematical formalism. The author explains the constancy of the speed of light, as well as the slowing down of physical processes (time) and the increase in the inertial mass, which are caused by motion, cogently by the principle of energy conservation. Nonrelativistic explanations of the equivalence of inertial and gravitational mass and for the mass-energy equivalence are presented. It is demonstrated that the explanation of the inertial mass increase by Einstein's relativity violates the principle of energy conservation. As relativity has therefore been refuted by nature, a paradigm shift is imperative. © *2020 Physics Essays Publication*. [http://dx.doi.org/10.4006/0836-1398-33.4.466]

Résumé: La masse d'inertie d'un avion volant dans le ciel n'est pas plus élevée parce qu'une personne au sol le regarde. De même, l'avion ne peut avoir des masses d'inertie différentes s'il est observé par des conducteurs de voitures se déplaçant au sol à différentes vitesses. La physique relativiste d'Einstein dont le postulat est qu'il est possible d'influencer la masse d'inertie de la matière ou la vitesse des processus physiques ('temps') en observant un autre référentiel galiléen n'est pas compréhensible. Cependant, l'approche mathématique relativiste nous permettant d'obtenir des résultats utilement et numériquement précis de phénomènes observables dans la nature, la physique relativiste est généralement acceptée de nos jours. Cela peut uniquement être expliqué par le fait que la plupart des physiciens subordonnent leur raisonnement logique à leur formalisme mathématique. L'auteur explique de manière pertinente la constance de la vitesse de la lumière, ainsi que le ralentissement des processus physiques ('temps') et l'augmentation de la masse d'inertie, qui sont causés par le mouvement, par le principe de conservation d'énergie. Des explications non relativistes sont présentées pour l'équivalence entre la masse d'inertie et la masse gravitationnelle et pour l'équivalence masse/énergie. Il est démontré que l'explication de l'augmentation de la masse d'inertie par la relativité d'Einstein viole le principe de conservation d'énergie. La relativité étant réfutée par nature, un changement de paradigme est indispensable.

Key words: Inertial Mass; Gravitational Mass; Mass-Energy Equivalence; Equivalence of Inertial and Gravitational Mass; Natural Constant *c*; Special Relativity; General Relativity; Newtonian Quantum Gravity; Quantum Gravity; Fundamental Forces of Physics; Binary Quantum Model.

I. INTRODUCTION

Einstein's theory of relativity is based on the postulation that the velocity c is constant with respect to subjective observations and always c within any inertial frame, but this is an illusionary imagination, based on experimental results that proved that we always measure in a vacuum the velocity c of light in the predominating gravitational field of the Earth. Nothing else was proved by experiments, like the Michelson–Morley experiment.[1] As Einstein went from the imagination that observers or inertial frames are the relevant factor for the interpretation of the movement of light, artificial interpretations were necessary to explain the results of these experiments, as, for example, the postulation of relativistic length contraction. A paradigm shift in physics takes place in this article.

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II. ELECTROMAGNETIC RADIATION MUST ALWAYS HAVE THE VELOCITY *C* IN ANY PREDOMINANT GRAVITATIONAL FIELD BECAUSE OF THE PRINCIPLE OF ENERGY CONSERVATION AND THE PRINCIPLE OF MINIMUM ENERGY

The formula for the energy of electromagnetic radiation is given by the following equation, whereas c is the velocity of light, h is the Planck constant, and λ is the wavelength:

$$E = \frac{h \times c}{\lambda}. \tag{1}$$

According to Eq. (1), in the case of an increase in the velocity c, an electromagnetic radiation with a certain wavelength would need to have a higher energy level to travel with a higher velocity. In the case of a decrease in the velocity of electromagnetic radiation, an electromagnetic radiation with a certain wavelength would get a lower energy level. Both would contradict the principle of energy conservation. If a gravitational field is quantized, as according to the "Binary Quantum Model"[2] and advanced "Newtonian Quantum Gravity,"[3] electromagnetic radiation that moved slower than c in a gravitational field would be able to meet and interact with more gravitational quanta per unit of time in a certain spatial area of the gravitational field, which would increase the gravitational effect on the light beam, so that it would lose energy. This effect was stronger in a stronger gravitational field than that in a weaker gravitational field, so that, due to the principle of the energy minimum, a light beam will always try to move with the velocity c compared with the strongest gravitational field. This means that the velocity c of light must always orient on the predominant gravitational field, which is on Earth the gravitational field of the Earth. Otherwise this would contradict the principle of minimum energy. The principle of energy conservation and the principle of minimum energy are the reasons, why we always measure the velocity c of electromagnetic waves in the gravitational field of the Earth, which is for us the predominating gravitational field. It is now easily understandable why the speed of light c in the Earth's gravitational field must be constant, independent from the velocity of a light source within the gravitational field of the Earth. No length contraction or relativistic velocity addition formula is needed. According to the Binary Quantum Model, respectively, Binary Quantum Theory (BQT),[2] as it is described in my article "Unification of the Unification of the Four Fundamental Forces of Nature by a Binary Quantum Model," energy is nothing else than the movement of the two different kinds of basic quanta that build up all physical phenomena, causing different energy forms by different arrangements of the two different kinds of basic quanta, whereas the two basic quanta always move with the velocity c. To distinguish between the two types of basic quanta, I called the basic quanta "positive and negative," but in this context the different algebraic signs have for the moment nothing to do with the idea of electric charge. Each basic quantum has a long binding structure and a short binding structure, both having opposite algebraic signs, see Fig. 1. Negative and positive long binding structures can bind strongly to other long binding structures with the same algebraic sign, so that in this case the basic quanta of one sort bind to each other. But the long binding structures can also bind weaker to the short binding structures with the same algebraic sign of basic quanta with the opposite algebraic sign, so that in this case the two different sorts basic quanta bind to each other. The term "negative or positive" basic quantum gets its definition according to the algebraic sign of the long binding structure of one sort of basic quantum.

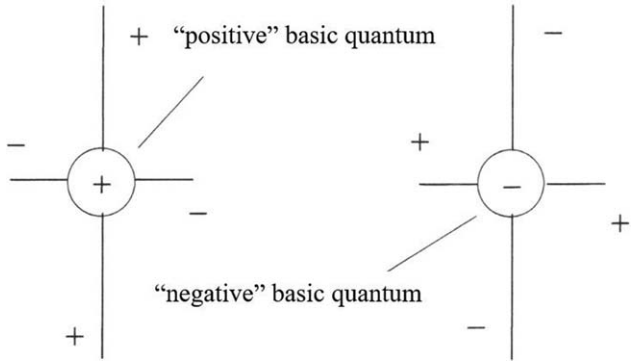

FIG. 1. The two different kinds of basic quanta simplified, described as two-dimensional structures.

The real appearance of the basic quanta we cannot know, but it should be a three-dimensional structure. The illustrated central circle is only for a better differentiation of the two kinds of particles and could have been named differently, as, for example, "green and red." If the two sorts of basic quanta are really the basis of all physical phenomena, it must also be able to define the energy in its fundamental sense by the movement of the basic quanta and therefore also by their velocity c, which explains, why the velocity c must be directly associated with energy and the principle of energy conservation

$$E = \text{basic quanta}^{+} \times c + \text{basic quanta}^{-} \times c. \tag{2}$$

If we knew the number of basic quanta the universe contains, we would know the energy contents of the universe. In this context, energy does not refer to the energy of electromagnetic radiation in Eq. (1) and does not refer to mass, but just to both sorts of tiny invisible basic quanta that are postulated by the Binary Quantum Model, which cause all phenomena that we can observe, including the phenomenon of gravitational mass, if condensed to matter, as described in my two articles "Unification of the Four Fundamental Forces of Nature by a Binary Quantum Model"[2] and "Newtonian Quantum Gravity and the derivation of the Gravitational Constant G and its fluctuations."[4] Energy is therefore at this stage just defined by the number of the basic quanta that move with the velocity c and their structural properties, which we cannot know in detail for single basic quanta.

As c is according to this part of energy, it must be a natural constant because of the principle of energy conservation principle. Energy can exist in different basic forms: Free basic quanta of both sorts that move disordered through space, ordered basic quanta of one sort, representing electric fields, electromagnetic radiation consisting of the two

different sorts of basic quanta that are in this case arranged to packets and bound basic quanta condensed to matter. If an elementary particle consists only of one sort of basic quanta, like the electron or position, there results a so-called charged particle. The basic quanta cannot have a rest mass, as well as electromagnetic radiation, which should consist of packets of the two different basic quanta cannot have a rest mass. Only when the basic quanta condense to matter, and the movement of the basic quanta no longer happens macroscopically, the gravitational phenomenon of a rest mass can become manifest. The basic quanta might represent what the ancient Greek philosophers called "substance." As the velocity c is part of this fundamental definition of energy, this also explains in a deeper sense, why an electromagnetic radiation would lose energy, if it moved slower than c, which is not possible because of the energy conservation principle.

According to our considerations, we have two structural components of energy ($E_S{}^+$ and $E_S{}^-$) and two velocity components ($2 \times E_C$), so that we can write

$$\begin{aligned} E &= (\text{basic quanta}^+ \times c) + (\text{basic quanta}^- \times c), \\ E &= (E_S^+ \times E_C) + (E_S^- \times E_C). \end{aligned} \tag{3}$$

If the two sorts of basic quanta are the basis of all physical phenomena, it must also be able to explain the mass-energy equivalence by the binary quantum model in a structural way. As in a mass the "negative" and the "positive" basic quanta must have interacted with each other and are now bound together, this binding must find its expression in the mathematical operation of multiplication, so that we have to square the two sorts of basic quanta, if we want to calculate the energy of condensed matter

$$E = E_S^+ \times E_C \times E_S^- \times E_C. \tag{4}$$

Positive of negative has in this context first of all nothing to do which electric charge, but are just names for a better differentiation of the two kinds of particles and their structural energy, that could have been named also differently, as, for example, green and red. We have to consider that within matter, which consists now of condensed basic quanta of both sorts, after the condensation now only one combined structure consisting of both sorts of basic quanta can move with the velocity c, instead of the two formerly separated basic quanta that moved with the velocity c. As a simple comparison, we can imagine that we first consider two cyclists, who are both riding at the same speed. Then we weld the two bikes together to form a tandem, whereupon the two cyclists can now only ride with one instead of two speeds. Because of the principle of energy conservation one of the velocity energy components (E_C) cannot have vanished, so that it must be still considered as a potential energy PE_C in our equation and we obtain

$$E = (E_S^+ \times \text{PE}_C \times E_S^-) \times E_C. \tag{5}$$

Although we cannot know the number of basic quanta a certain amount of matter contains, the number of condensed basic quanta must be responsible for the phenomenon, which we call gravitational mass. Because the basic quanta are responsible for the gravitational effect and their number is proportional to the gravitational effect, as described in detail by the Binary Quantum Model, the two sorts of basic quanta that build up a mass, which are bound to each other, can be replaced by the term m for gravitational mass. If we insert for the energy components again, the former symbols excluding the potential energy component and for the two basic quanta the term m for mass, we obtain

$$\begin{aligned} E &= (E_S^+ \times \text{PE}_C \times E_S^-) \times E_C, \\ E &= (\text{quanta}^- \times \text{PE}_C \times \text{quanta}^+) \times c, \\ E &= (\text{PE}_C \times \text{quanta}^- \times \text{quanta}^+) \times c, \\ E &= (\text{PE}_C \times m) \times c. \end{aligned} \tag{6}$$

Neither the potential energy component nor the intraelementary particular velocity c of the intraelementary particle movement of the elementary particles building up matter we are able to perceive, holding a mass in hand. But in the case of annihilation of matter, both velocity energy components appear again, so that we obtain

$$\begin{aligned} E &= (\text{PE}_C \times m) \times c \rightarrow E_C \times m \times c = c \times m \times c, \\ E &= m \times c^2. \end{aligned} \tag{7}$$

The equation for the mass energy equivalent $E = m \times c^2$, as it was derived by Einstein and is used today, is actually imprecise because it cannot explain where the two velocities c come from when matter gets annihilated. The binary quantum model makes the formula of the mass-energy equivalence intuitively in a deeper sense understandable, structurally and objectively justified, while today's physics can explain it only in a mathematical sense deriving the formula using relativistic physics, which is based on subjective observations, without allowing a direct understanding of the underlying physical conditions.[5,6]

As demonstrated in Section IV, by the binary quantum model it is also possible to explain the inertial mass increase by motion conclusively, while Einstein's relativistic explanation of the inertial mass increase violates the principle of energy conservation, as pointed out in Section V.

We can only indirectly differentiate between the two different basic quanta existing in the universe, if a charged elementary particle causes the arrangement of one sort of basic quanta of space in its surroundings, or if the basic quanta are arranged in alternating packets of the different sorts of basic quanta, which build up electromagnetic radiation. But the amount of basic quanta that build up matter, we cannot know, as matter is usually "neutral" and consists of both sorts of basic quanta, with the exception of electrons and positrons that consist only of one sort of basic quanta. If all physical phenomena are based on the basic quanta that move with the velocity c and matter also consists of composed basic quanta, an intraelementary particular movement must also happen with the velocity c, otherwise this would contradict the principle of energy conservation. This also explains the strong explosive power of an atomic bomb, in which matter is partially dissolved into its components consisting

of the two sorts of basic quanta moving away with the velocity c from the location of the explosion.

III. AS THE VELOCITY *C* OF ELECTROMAGNETIC RADIATION AND OF BASIC QUANTA THAT BUILT UP MATTER IS ALWAYS *C* IN A PREDOMINANT GRAVITATIONAL FIELD, THERE MUST RESULT A SLOWING DOWN OF FUNDAMENTAL PHYSICAL PROCESSES ("TIME"), IF MATTER IS MOVED OR ACCELERATED

Charged elementary particles, such as electrons, or charged structures on larger elementary particles, such as protons, only consist of one type of basic quanta. "Neutral parts" of elementary particles consist of a network of both types of basic quanta, so that no electrical field can result to the outside, but only the gravitational effect. The neutral portion of a mass has long binding structures of both types of basic quanta on its surface and also short binding structures of both types of basic quanta, see Fig. 2.

As electromagnetic radiation, which according to the Binary Quantum Model consists of altering packets of the two different basic quanta, always moves with the velocity c with respect to the predominating gravitational field, also an intraelementary particular or intraatomic movement must always have the velocity c with respect to the predominating gravitational field to satisfy the principle of energy conservation, because also matter consists of basic quanta. This explains, why fundamental physical processes must slow down, if a movement happens within a predominant gravitational field. Let us consider a metal bowl resting on the surface of the Earth. In this case, the intraelementary particular or intraatomic movement within the matter of the metal bowl has the velocity c compared with the predominant quantized gravitational field of the Earth. If we now move the metal ball on Earth in relation to the quantized gravitational field of the Earth, the intraelementary particular or intraatomic velocity would have to increase compared with the predominant gravitational field of the Earth, if the intraelementary particular or intraatomic velocity related to the positon of the metal bowl wanted to keep the velocity c. As the intraelementary particular or intraatomic velocity cannot be faster than c compared with the predominant gravitational field of the Earth, the velocity of the intraelementary particular or intraatomic movement within the mental bowl must slow down. Instead of a metal bowl, we could also consider the same for single elementary particles (e.g., muons) or atoms (e.g., Caesium-133 atoms in atomic clocks). This quantum-physical phenomenon must stand behind the so-called "relativistic time dilation." It must be just a change of the duration of physical processes and not a change of time. Time does not exist as an own entity, it is just a theoretical construct that describes the measurement of the duration of physical processes by precise defined durations of certain fundamental physical processes, for example, by the oscillation of atoms in atomic clocks.

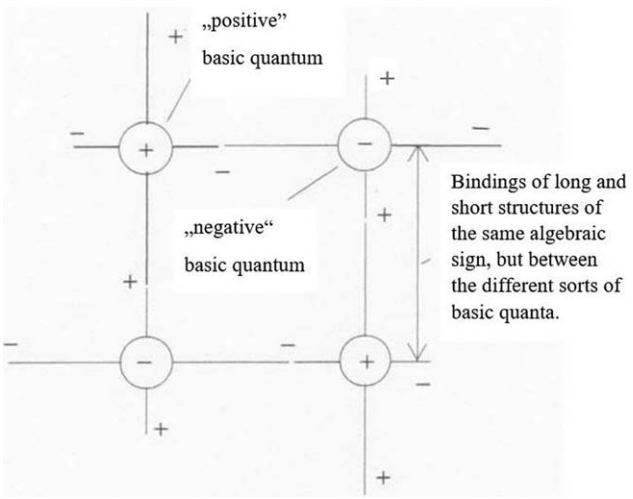

FIG. 2. Negative and positive basic quanta building up the neutral part of a mass. For simplification, only a two-dimensional model is depicted.

We can derive this slowing down like Einstein by a system of two light clocks.[7] A light clock consists of a tube with two mirrors in a certain distance to each other, one mirror at the bottom and one mirror at the top of the tube. In a light clock time is measured by a beam of light moving from the bottom mirror to the top mirror, where it is then reflected back to the bottom mirror and so on. Always, when the light beam hits one of the mirrors, the clock "ticks." If the light clocks and the observers are in a resting position, the light beams move straight from one mirror to the other mirror and need a certain time to get from one mirror to the other mirror of the light clock. But if the one observer keeps in the resting position against his light clock, while the other observer starts moving with his light clock from the former common resting position, the still resting observer would see the light beam of the moving light clock travel at angles to the mirrors, see about this in Fig. 3.

Going from the assumption that light beams do not orient on observers or inertial systems, but on predominant gravitational fields, we expect that the light beam traveling at angles in the moving light clock only travels with the velocity c in respect of the predominant gravitational field, as it is correctly observed by the resting observer. This means, that with respect to the moving light clock the light beam of this clock must decelerate. With other words we have to postulate, that by moving in a predominant gravitational field the velocity of basic physical processes must decelerate. The deceleration of physical processes as, for example, of the velocity of light with respect to the light

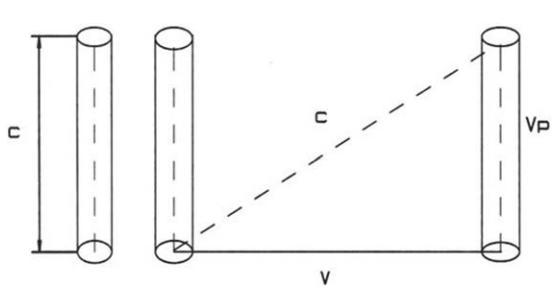

FIG. 3. The relationship in a system of two light clocks, the one resting, and the other moving within a predominant gravitational field: A physical process must decelerate within a light clock, because the velocity of light cannot be faster than c within the predominant gravitational field.

source by the movement of this light source within a predominant gravitational field we calculate as following. While v is the velocity of the moving light clock with respect to the not moving light clock, c is the velocity of the light beam traveling at angles with respect to the predominant gravitational field, and v_p is the velocity of basic physical processes within a physical system (p stands for basic "physical process"), which is moving within a predominant gravitational field, as in our example the velocity of a light beam (v_p) traveling in the moving light clock. By the Pythagorean Theorem, we get

$$v_p^2 = c^2 - v^2. \tag{8}$$

Inserting the velocity values in Eq. (8) on the right side in relative velocities of c, we get a dimensionless relative velocity factor v_F squared

$$v_F^2 = 1 - \left(\frac{v}{c}\right)^2. \tag{9}$$

Transforming this term, we get for the dimensionless relative velocity factor v_F, representing a relative factor for the slowing down of the velocity c, which corresponds with the length contraction factor $1/\gamma$ of relativistic physics

$$v_F = \sqrt{1 - \frac{v^2}{c^2}},$$
$$\frac{1}{\gamma} = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}} = \sqrt{1 - \frac{v^2}{c^2}}. \tag{10}$$

The speed of light in the predominant gravitational field must always remain c and thus also its relative value 1, regardless of whether the movement of the photon happens at angles within the predominating gravitational field of the Earth in the case of a moving light clock within the gravitational field of the Earth. Instead of a space contraction by the relative factor $1/\gamma$ ($=v_F$), we have now a slowing down of the velocity of the light beam within the light clock by the relative factor $1/\gamma$ ($=v_F$). This means that a light beam moving in the light clock in a predominant gravitational field always keeps the constant velocity c with respect to the predominant gravitational field, but gets a slower velocity than c with respect to the light clock. If the light beam would keep the velocity c with respect to the light clock, the light beam would have to move faster than c with respect to the predominant gravitational field, which is not possible. For example, a light beam has in a light clock moving with the velocity 0.9 c in a predominant gravitational field a velocity, which is about by the factor $1/\gamma$ (=0.436) slower than c, while the velocity is still c with respect to the predominant gravitational field. The term $1/v_F$ corresponds with the so-called relativistic time dilatation factor γ, which I called the "gravitational deceleration factor of motion." For example, a light beam in a light clock moving with the velocity 0.9 c in a predominant gravitational field, needs time that is about by the factor γ (=2.294) longer than in the case of a light clock resting in the predominant gravitational field. According to the binary quantum model, therefore the length contraction factor $1/\gamma$ is replaced by a slowing down factor $1/\gamma$ of the velocity of light, if a light clock or a mass moves in a predominating gravitational field. While the length contraction allows an invariance of the duration of physical processes for matter (or an observer) moving in gravitational fields and thus only a relativistic time dilation is possible, the slowing down of the physical processes takes place absolutely according to my considerations for matter (an observer) moving in a predominant gravitational field. This solves the problem that according to relativistic physics a clock should be able to display infinite different times.

It is incomprehensible that today in physics one generally assumes that the speed of time should change, whereas the speed of the physical processes, with which time is measured should remain constant and unchanged, e.g., when measuring time by means of oscillations of caesium-133 atoms in atomic clocks. Instead, it is rational to assume that physical processes themselves change with respect to their speed when moving in a gravitational field or when positioned in different gravitational potentials, as it was, e.g., found that the decay process of muons slowed down, if the muons moved at high speed in the Earth's gravitational field. After physicists have learned for generations that the velocity of light must be constant in any inertial frame, it will not be easy to enable physicists and society to rethink. From a scientific point of view, there is no getting around the paradigm shift, as Einstein's derivation of the inertial mass increase contradicts the principle of energy conservation. That time changes absolutely with respect to the velocity on Earth and the gravitational potential has been proved many times, but the experiments have nevertheless been interpreted in favor for Einstein's relativity. For example, the Hafele–Keating experiment disproved relativity, as all observers, the observers in the aircraft and the observers on Earth, saw the same time changes on the display of the atomic clocks that were in the aircraft compared with the displayed time on the atomic clocks on the ground.[8] Another experiment that proved that time changes absolutely with respect to the gravitational potential was that of Briatore and Leschiutta in 1976. They 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.[9] The researchers measured a difference of 33.8 ± 6.8 ns/d and 36.5 ± 5.8 ns/d. As the proper times at different heights were different and all observers could measure the same time signals, 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 interpretation of these experiments in favor of Einstein's relativity is a scam in science, of which many were committed during the last century. Global positioning system (GPS) would not function, if the time changes in the satellites were not absolute in dependence of the velocity of the satellites on Earth and a certain gravitational potential

caused by Earth at a certain height. How should a technician change the time signal in the satellites for the other satellites and at the same time leave the correct proper time in each satellite unaltered?

Many thousands of experiments were carried out that are all said to confirm relativity, but indirectly also represent a scam in science, because they always only compared two systems. In this case, the contradictions of the relativistic physics are hidden. Contradictions between Einstein's relativity and reality would arise, as soon as one compares at least three systems with one another. In this case, it would become clear that it is impossible for one system to be able to transmit different time signals of one clock (moving at a certain velocity and positioned in a certain gravitational potential) to the other systems at the same time. By motion within a predominant gravitational field, there results a deceleration of basic physical processes by the factor $1/\gamma$, so that the physical processes need time that is by the factor γ longer than at rest in a predominating gravitational field, as the velocity of light must decelerate with respect to a moving light clock or moving mass (matter), so that there results also a change of the frequency of a light beam, which is called the relativistic Doppler effect or the traverse Doppler effect in relativistic physics.[10,11]

Velocities can be used to calculate the angle α between the light beam of a light clock (moving within a predominant gravitational field) traveling at angles and the direction of the movement of the light clock

$$\sin\alpha = \frac{1}{\gamma} = \sqrt{1-\frac{v^2}{c^2}} = v_F. \tag{11}$$

The factor $1/\gamma$ can therefore be used to calculate the angle α directly

$$\alpha = \arcsin\,(1/\gamma) = \arcsin\left(\sqrt{1-\frac{v^2}{c^2}}\right). \tag{12}$$

But this is only valid for the special situation, when the light clock is orientated vertically with respect to the direction of the movement of the light clock (within a predominant gravitational field). But the light clock could be inclined by variable angles in the moving direction or against the moving direction. Before an inclined light clock is moving, the angle of inclination of the light beam traveling in the light clock is identical with the inclination angle of the light clock, that is to say, some kind of angle α'. If the inclined light clock moves, by the movement the inclination angle of the light beam traveling in the moving light clock changes with respect to the gravitational field, so that this results in a changed inclination angle α of the traveling light beam. Electromagnetic radiation with such a change of the inclination angle by motion is the so-called synchrotron radiation, as can be generated by fast moving electrons in synchrotons.[8] To calculate the angle α between a light beam, or photon, and the direction of a moving light source resulting in the motion of the light source, for example, a light clock, we have to regard the components of the velocities of the traveling light beam with respect to the x-axis and the y-axis (of the resting coordinate system). The component of the velocity with respect to the x-axis of the light beam in an inclined moving light clock is the product of the vertical component of the velocity of the light beam

$$v_F = \sqrt{1-\frac{v^2}{c^2}} \tag{13}$$

and sinus of the angle α', so that we get

$$v_{Fx} = \sin\alpha' \times \sqrt{1-\frac{v^2}{c^2}}. \tag{14}$$

The component of the velocity with respect to the y-axis of the light beam in an inclined light clock with the angle α' is the sum of v/c and cosine of the angle α'

$$v_{Fy} = \cos\alpha' + \frac{v}{c}. \tag{15}$$

From these two components, we can calculate the angle α between the direction of the light beam with respect to the predominant gravitational field and the direction of the movement of the light source within the predominant gravitational field by using the tangent function

$$\tan\alpha = \frac{\sin\alpha' \times \sqrt{1-\frac{v^2}{c^2}}}{\cos\alpha' + \frac{v}{c}}, \tag{16}$$

and therefore we get

$$\alpha = \arctan\frac{\sin\alpha' \times \sqrt{1-\frac{v^2}{c^2}}}{\cos\alpha' + \frac{v}{c}}. \tag{17}$$

Relativistic physics gets the same results for the changing of inclination angles of electromagnetic radiation by the movement of a source of electromagnetic radiation, as, for example, the so-called synchrotron radiation, by a different, but similar derivation, which is not mentioned here. The proof of the existence of the so-called synchrotron radiation was again taken as an argument for the correctness of the theory of special relativity.[10] As an example, I wish to calculate the changes of angles of light beams in a moving light clock, which is differently inclined toward the direction of the movement of the light clock in a very much predominant gravitational field. The chosen velocity of the light clock shall be 0.9 c, see Table I. As sin α corresponds directly with a certain velocity of the light beam within the light clock, by correlating sin α with sin α' and forming the quotient of both angles, we get the relative values of sin α in respect to sin α' and therefore directly the values of the relative velocity factor v_F of the light beam within the moving light clock ($\sin\alpha/\sin\alpha' = v_F = 1/\gamma$), while the relative velocity of the light beam with respect to the predominant gravitational field is still c (=1), see Table I. To calculate the gravitational deceleration factor of motion ($\sin\alpha'/\sin\alpha = 1/v_F = \gamma$), on average for all angles seems to be very difficult. But

TABLE I. There exist different relative velocity factors v_F corresponding with the unreal length contraction factor ($1/\gamma$) and deceleration factors of physical processes v_F corresponding with the unreal time dilatation factor of relativistic physics (γ).

α' (deg)	α ($v=0.9c$) (deg)	$\sin\alpha/\sin\alpha' = v_F = 1/\gamma$	Factor of deceleration $1/v_F=\gamma$
0	0	$(c-v)/c=0.1$	10
30	7.035292	0.2449614	4.0822758
60	15.090185	0.3006137	3.3265282
90	**25.841933**	**0.4358899**	**2.2941573**
120	43.341759	0.7925271	1.2617865
150	81.139693	1.9761336	0.5060387
180	180	$(v+c)/c=1.9$	0.5263158
210	278.860307	1.9761336	0.5060387
240	316.658241	0.7925271	1.2617865
270	**25.841933**	**0.4358899**	**2.2941573**
300	344.909815	0.3006137	3.3265282
330	352.964708	0.2449614	4.0822758
360	360	$(c-v)/c=0.1$	10

considering the gravitational factors of deceleration of pairs of angles ($\alpha'+180°$), we always get a median gravitational factor of motion γ ($=1/v_F$) of 2.2941573. For example: For a moving light clock ($v=0.9$) with an inclination angle α' of 30°, the gravitational factor of deceleration γ is 4.0822758 and for the a moving light clock ($v=0.9$) with an inclination angle $\alpha'$of 210° ($\alpha'+180°$) the gravitational factor of deceleration γ is 0.5060387. For this pair of angles, we get the mean gravitational factor of deceleration of

$$\text{Ø}\,\gamma = \frac{4.0822758 + 0.5060387}{2} = 2.2941573. \tag{18}$$

This is exactly the factor γ, as calculated by relativistic physics for the so-called time dilatation in the case of a light source moving with a velocity of $0.9c$, see Table II. More examples of pairs of angles would lead to the same result. We can therefore go from the assumption, that the medium gravitational factor of deceleration for pairs of angles ($\alpha'+180°$) is always the same and corresponds with factor γ of relativistic physics, with the exception of the pair of angles of 0/180°. Now it is simply understandable, why basic physical processes, as processes, which move to and fro (oscillation of atoms) or circular processes within atoms, as, for example, in atomic clocks, decelerate by motion of the atoms within a predominant gravitational field by the gravitational deceleration factor of motion γ, which is called the relativistic factor in relativistic physics. But γ defined according to relativistic physics represents only a medium value of the duration of basic physical process, while the factor of deceleration is permanently changing in reality and only for the special case of a vertical traveling light beam or a vertical intraatomic motion falls together with γ, as it is defined by relativistic physics. For a light source moving by 0.9 c relativistic physics calculates a time dilatation of ($c=1$)

$$\gamma = \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} = \frac{1}{\sqrt{1-\frac{0.9^2}{c^2}}} = 2.2941573. \tag{19}$$

According to the derived changes of angles of circular basic physical processes, which take place with the velocity of light within a predominant gravitational field, as of intraatomic processes of motion, or processes within elementary particles, or as, for example, of the spreading of an electromagnetic radiation or the radial spreading of elementary charges, by the movement within a predominant gravitational field, there should result a deformation of, for example, a radial spreading electromagnetic field, so that the particles or electrical fields are shortened in the front and in the back, which could in fact be observed at Coulomb fields of electrons moving with a fast velocity.[9] But this has nothing to do with the so-called relativistic length-contraction. The so-called dilatation of time by the factor of γ is derived by relativistic physics by the special case of a vertical transmission angle with respect to the moving direction of the light source and is then generalized for all other transmission

TABLE II. The so-called time dilatation factor γ is in reality a medium deceleration factor of physical processes $1/v_F$.

α' (deg)	Factors of deceleration $[(1/v_F=\gamma)+(1/v_F=\gamma)]:2$ ($v=0.9$)	Medium factor of deceleration Ø
0/180	(10 + 0.5263158):2	=5.263158
30/210	(4.0822758 + 0.5060387):2	=2.2941573
60/240	(3.3265282 + 1.2617865):2	=2.2941573
90/270	**(2.2941573 + 2.2941573):**2	=2.2941573
120/300	(1.2617865 + 3.3265282):2	=2.2941573
150/330	(0.5060387 + 4.0822758):2	=2.2941573

angles, which shall be allowed because of the principle of relativity.

IV. THE INERTIAL MASS INCREASE CAUSED BY MOTION WITHIN A PREDOMINANT GRAVITATIONAL FIELD RESULTS FROM THE DECELERATION OF THE INTRAELEMENTARY PARTICLE OR INTRAATOMIC MOVEMENT WITHIN MATTER DUE THE PRINCIPLE OF ENERGY CONSERVATION

A phenomenon that is wrongly regarded as a relativistic effect is the so-called dynamic mass increase caused motion of matter, which is according to relativistic physics again derived by the imagination of a different passing time. In fact it could be shown that accelerated elementary particles seem to have an increased mass.[12–14] If not an electromagnetic radiation, but a mass moves within a predominating field, the intraelementary movement, which also happens with the velocity c, must slow down with respect to the position of the mass because the velocity of the intraelementary movement still tries to keep the velocity c against the predominating gravitational field, in which the mass is moving with an additional velocity. At first, we want to consider the dynamic energy only with respect to the position of the moving mass: If the intraelementary structure of an elementary particle was an electromagnetic radiation, we could use the formula for the energy of electromagnetic radiation. In the case of the definition of energy of the electromagnetic radiation with a certain wave-length we would obtain, if the velocity c slowed down by the factor v_F (relative velocity factor of a physical process), respectively, by the factor $1/\gamma$

$$E_d = \frac{h \times (v_F \times c)}{\lambda} = \frac{h \times \left(\frac{1}{\gamma} \times c\right)}{\lambda}, \qquad E_d = \frac{\frac{1}{\gamma} \times h \times c}{\lambda} = \frac{1}{\gamma} \times E. \tag{20}$$

As the condensed structure within matter consisting of both kinds of basic quanta must also move with the velocity c with respect to the predominating gravitational field because of the principle of energy conservation, the energy of the basic quanta building up a mass must also be proportional to the velocity of the intraelementary particular or intraatomic movement of the condensed basic quanta of a mass.

In the case of the definition of the mass-energy equivalence, we would obtain using the result of Eq. (6), if the velocity c slowed down by the factor v_F (relative velocity factor of basic physical processes), which corresponds with the length contraction factor $1/\gamma$

$$E_d = (PE_C \times m) \times c \times v_F, \qquad E_d = v_F \times E = \frac{1}{\gamma} \times E. \tag{21}$$

As the "dynamic mass" refers to the position of the moving mass, we must correctly write for the energy of the moving mass with respect to the position of the mass, which is against itself still at rest (E_{dr} = energy of the dynamic rest mass)

$$E_{\mathrm{dr}} = \frac{1}{\gamma} \times E_r. \tag{22}$$

But according to the principle of energy conservation, the energy of a moving mass must with respect to its position keep the same as at rest (E_r), despite the movement of the mass, which means that there must happen some compensation. If we take the principle of energy conservation serious, the following equation must be valid:

$$E_{\mathrm{dr}} = E_r. \tag{23}$$

A rest mass depends on the amount of basic quanta (mass) and the basic quanta ("substance") cannot increase by motion, the energy of the rest mass cannot change by motion. As the dynamic rest mass must have the same mass as the resting mass, because of the principle of energy conservation, also the energy of the dynamic rest mass cannot change, so only a change of the energy of the inertial mass is possible, so we have to replace the energy of the resting mass E_r by the energy of the inertial mass E_i in Eq. (22), which is allowed because of the equivalence of inertial and rest mass, which is strictly speaking only valid, if a mass is at rest with respect to a predominant gravitational field

$$E_{\mathrm{dr}} = \frac{1}{\gamma} \times E_i. \tag{24}$$

If a mass is at rest with respect to a predominant gravitational field, we have the situation the energies of the "dynamic rest mass," the rest mass and the inertial mass are the same

$$E_{\mathrm{dr}} = E_i = E_r = m \times c^2. \tag{25}$$

If a mass is moving in a predominant gravitational field, the inertial energy E_i of the inertial mass must according to our considerations get reduced by the factor $1/\gamma$, so that we obtain

$$\frac{1}{\gamma} \times E_i = m \times c^2, \qquad E_i = \gamma \times m \times c^2 = m_i \times c^2. \tag{26}$$

The reduction of the energy of the inertial mass is according to our considerations compensated by an inertial mass increase, so that the energy of the dynamic rest mass E_{dr} keeps the same and the principle of energy conservation is satisfied. For the inertial mass increase that is wrongly also named dynamic mass increase, we obtain in this case

$$m_i = \gamma \times m. \tag{27}$$

Using the inertial mass for the formula of the mass-energy equivalence in Eq. (24), we obtain

$$E_{\mathrm{dr}} = \frac{1}{\gamma} \times E_i, \quad E_{\mathrm{dr}} = \frac{1}{\gamma} \times m_i \times c^2, \quad E_{\mathrm{dr}} = \frac{1}{\gamma} \times \gamma \times m \times c^2, \quad E_{\mathrm{dr}} = m \times c^2 = E_r. \tag{28}$$

This means that the energy of a moving mass with respect to its position, despite the slowing down of its intraelementary velocity by the factor $1/\gamma$, keeps unchanged in comparison to the energy of a resting mass, as the inertial mass increases by the factor γ, so that the principle of energy conservation is satisfied. The objective principle of energy conservation is the real reason for the so-called inertial mass increase and not subjective observations, as it is postulated by Einstein and todays generally accepted relativistic physics. No observer, no time dilatation, no length contraction, no relativity in the sense of relativistic physics is needed to explain the inertial mass increase, but only the objective and absolute principle of energy conservation. In the case of a moving mass, there does not result a gravitational mass increase in the sense of an increase in matter (substance), but an increase in the inertial mass caused by a decrease in the velocity c within the moving mass, whereas c is still constant with respect to the predominant gravitational field of the Earth. What we feel as heaviness is the energy we have to muster to move or accelerate a mass to compensate the slowing down of the velocity c within the mass (matter), because the energy of the dynamic mass must keep constant with respect to its positon. The energy we have to muster, if we move or accelerate a mass in a predominant gravitational field, we obtain from the difference between the rest energy and the increased inertial energy of the moving mass

$$\begin{aligned} \Delta E &= E_i - E_r, \\ \Delta E &= m_i \times c^2 - m \times c^2, \\ \Delta E &= \gamma \times \mathrm{m} \times c^2 - m \times c^2, \\ \Delta E &= (\gamma - 1) \times m \times c^2. \end{aligned} \tag{29}$$

The actual reason for the inertial mass increase is the necessity to compensate a slowing down of the velocity c with respect to the position of the moving mass, if a mass is accelerated or moved in a predominant gravitational field.

We have now actually three formulas for the mass-energy equivalence

$$\begin{aligned} E_r &= m \times c^2, \\ E_i &= m_i \times c^2 = \gamma \times m \times c^2 = m_i \times c^2, \\ E_{\mathrm{dr}} &= \frac{1}{\gamma} \times m_i \times c^2 = \frac{\gamma}{\gamma} \times m \times c^2 = m \times c^2. \end{aligned} \tag{30}$$

According to our considerations, we have to add the mass-energy equivalence of the resting mass and equivalence ΔE from Eq. (28), to obtain the correct energy value, which exactly represents the inertial mass increase in the moving mass

$$\begin{aligned} E_i &= E_r + \Delta E, \\ E_i &= m \times c^2 + (\gamma - 1) \times m \times c^2, \\ E_i &= \gamma \times m \times c^2 = m_i \times c^2. \end{aligned} \tag{31}$$

When the velocity of the mass moving in a predominant gravitational field reaches the velocity c, the inertial mass increases to infinite. While the explanation of this behavior by relativistic physics is only a pure mathematical one, according to my considerations, the infinite inertial mass increase results from the fact that the velocity of the basic quanta a mass consists of would reach the velocity zero with respect to the mass, if the velocity of the mass reaches c with respect to the predominant gravitational field. The fatal situation of physics today is, that also from the concept of an invariant velocity c of light with respect to any inertial frame, we can derive the equation for the dynamic mass, so that the relativistic physicists claim that Einstein's theory of relativity must be right. But in this case, we have to use the "schizophrenic" concept of relativity, that fundamental physical processes are relative and different with respect to the awareness of different observers.

V. THE EXPLANATION OF THE INERTIAL MASS BY EINSTEIN AND RELATIVISTIC PHYSICS VIOLATES THE PRINCIPLE OF ENERGY CONSERVATION, BUT NEVERTHELESS DELIVERS CORRECT NUMERAL MATHEMATICAL RESULTS

Relativistic physicists derive the inertial mass increase indirectly more complicatedly from the conservation of impulse.[15–17] Impulse is mass multiplied by velocity. They imagine, for example, a metal ball flying with a certain velocity that hits a wall causing a hole in this wall. An observer in the inertial frame the movement of the metal ball will see the metal ball colliding with the wall with a faster velocity than an observer passing by with high velocity, as latter observer will see the time of the resting observer be "time dilated." Because both observers must nevertheless see the same size of a hole that the metal ball left in the wall, because of the conservation of impulse, the masses must be different, otherwise the impulses and the holes would be different. This sounds plausible, but is not the objective and absolute reason for the dynamic mass increase. By a thought experiment I want to illustrate the absurdity of the relativistic explanation of the inertial mass increase: Two trains are 100 km apart from each other at rest on two tracks that run parallel. The clocks on both trains are synchronized. Each train has only one wagon that is transparent and contains only two seats, leaning against each other with the backrest. An observer is sitting on each of the two seats in both train. Then the trains accelerate the same way in the direction of each other train and after a short time reach the same constant velocity. In each train an observer looks in the direction of the movement of his train, the other in the opposite direction. At the moment the trains pass each other, in each train a steel ball is shot in the direction of the movement of the respective train against the wall of the wagon. In each train, each observer looking in the direction of the movement of his train sees a correspondingly large hole that is caused by the steel ball in the wall of his wagon. The observers looking in the opposite direction will be able to see the steel ball hitting the wall in the other train causing the same size of hole. As these observers will see the other train passing by with a velocity twice as fast as his train moves on the tracks, according to relativistic physics he must see that the time in

the other train passes more slowly, which would mean that the impulse of the steel ball in the passing train would be smaller, what is according to relativistic physics compensated by an increase in the inertial mass. As we know, the moving conditions of the steel balls and of the two observers in both trains are the same. Only by looking on the steel ball in the other train the inertial mass of the steel ball in the other train shall be able to increase. No other reason is given for the inertial mass increase in the steel ball in the other train than the process of observing. This violates the principle of energy conservation because only from observation there cannot result any energy increase, which corresponds with the increase in the inertial mass. According to relativistic physics, Einstein is obviously able to create energy just from observing a physical process, what is not understandable and illogical. Nevertheless, the mathematical derivation of the inertial mass increase obtains correct results. The basis of the relativistic derivation of the inertial mass increase is the law of momentum conservation, whereas the momentum p is mass multiplied by the velocity of mass

$$p = m \times v. \tag{32}$$

Relativistic physicists argue that the law of momentum conservation postulates that the momentum of a moving mass must be the same, no matter, if the moving mass is observed by observers with different velocities. If a moving mass is observed from two different inertial frames (I and I'), we obtain for the momentum

$$\begin{aligned} p &= p' \\ m \times v &= m' \times v', \\ m \times \frac{\Delta d}{\Delta t} &= m' \times \frac{\Delta d'}{\Delta t'}. \end{aligned} \tag{33}$$

For the time dilatation caused by velocity, as it is postulated by Einstein's theory of relativity, we obtain

$$\begin{aligned} \Delta t' &= \gamma \times \Delta t, \\ \Delta t' &= \frac{1}{\sqrt{1-\frac{v^2}{c^2}}} \times \Delta t, \\ \Delta t' &= \frac{\Delta t}{\sqrt{1-\frac{v^2}{c^2}}}. \end{aligned} \tag{34}$$

Inserting the result of Eq. (34) in Eq. (33), we obtain

$$\begin{aligned} m \times \frac{\Delta d}{\Delta t} &= m' \times \frac{\Delta d'}{\Delta t'}, \\ m \times \frac{\Delta d}{\Delta t} &= m' \times \frac{\Delta d'}{\frac{\Delta t}{\sqrt{1-\frac{v^2}{c^2}}}}, \\ m \times \frac{\Delta d}{\Delta t} &= m' \times \frac{\Delta d'}{\Delta t} \times \sqrt{1-\frac{v^2}{c^2}}. \end{aligned} \tag{35}$$

As $\Delta d = \Delta d'$, we obtain

$$\begin{aligned} m \times \frac{\Delta d}{\Delta t} &= m' \times \frac{\Delta d}{\Delta t} \times \sqrt{1-\frac{v^2}{c^2}}, \\ m &= m' \times \sqrt{1-\frac{v^2}{c^2}}, \\ m' &= \frac{m}{\sqrt{1-\frac{v^2}{c^2}}} = \gamma \times m. \end{aligned} \tag{36}$$

This is the correct numeral mathematical result for the inertial mass increase, but Einstein's explanation of the inertial mass increase does not satisfy the principle of energy conservation. Formerly, the inertial mass increase was also called relativistic mass increase, but then sometimes the problem arose that somebody questioned the relativistic concept because there suddenly, seen from the position of the mass, existed two masses, the rest mass, and the relativistic mass. Therefore, the name "relativistic mass increase" was avoided in the following and replaced by the name "inertial mass increase." But according to relativistic physics, the dynamic rest mass corresponds with the inertial mass and the energy of the moving dynamic rest mass is identical with the energy of the increased inertial mass, so that the energy of the dynamic rest mass and the energy of the resting mass are different

$$\begin{aligned} E_i &= m_i \times c^2 = E_{\mathrm{dr}}, \\ E_{\mathrm{dr}} &= m_i \times c^2, \\ E_{\mathrm{dr}} &= \gamma \times m \times c^2 \neq E_r = m \times c^2. \end{aligned} \tag{37}$$

Einstein's relativistic concept therefore contradicts the principle of energy conservation, and Einstein's relativistic approach is disproved.

According to classical physics, a moving mass has kinetic energy[18]

$$E_k \rightarrow \frac{1}{2} m \times v^2. \tag{38}$$

According to classical physics, we obtain the energy of the moving mass by adding the kinetic energy and the mass-energy equivalence of the resting mass

$$\begin{aligned} E &= E_k + E_r, \\ E &= \frac{1}{2} \times m \times v^2 + m \times c^2 \approx \gamma \times m \times c^2. \end{aligned} \tag{39}$$

This value for the energy of the moving mass approximately considers the inertial mass increase in the moving mass. For a mass moving with the velocity of 10 000 km/s, the difference is, for example, only about 4.6468×10^{-7}x mass. The in reality higher inertial mass than the pure kinetic energy can be explained by the inertial mass increase that can be calculated by relativistic physics, but their explanation contradicts the principle of energy conservation. The origin of

this additional inertial mass cannot be explained by relativistic physics because pure observation cannot generate mass or energy. Not only for the inertial mass increase, but also for many other observable phenomena, as, for example, the slowing down of physical processes ("time dilatation") by motion or gravity, as well as for divergent changes of planetary or stellar orbits than predicted by Newton's theory of gravity, Einstein's theory of relativity delivers correct mathematical results in the end, that is why we can almost daily read in physical journals that Einstein's relativity has been proved again by very precise tests. Usually by experimental tests, Einstein's theory is therefore not falsifiable, but only by logical thinking what has been given up for a long time. Except the correct mathematical numeral results that can be obtained by artificial relativistic constructs, Einstein's theory of relativity cannot be a realistic theory.

VI. A NONRELATIVISTIC DEFINITION OF THE EQUIVALENCE OF GRAVITATIONAL AND INERTIAL MASS

The equivalence of inertial mass and gravitational mass is already explained less conclusively in my article "On the new theory of gravitation" (NTG),[19] which was as a theory of gravity later improved by advanced "Newtonian Quantum Gravity" (NQG).[3] But in my article "Newtonian Quantum Gravity" (NQG), I only briefly discussed the equivalence of gravitational and inertial mass. In my article "Unification of the Unification of the Four Fundamental Forces of Nature by a Binary Quantum Model,"[2] I postulated that a mass emits "gravitational quanta," which results in a quantum pressure of basic quanta in space from the opposite side than the position of a certain mass, so that another mass is pressed toward the mass, which we call gravitational mass. But imagine a single large mass in the universe, like a star or a planet moving with its predominant gravitational field through space. Nobody could in this case say, if this mass is at rest or moves at a certain velocity. If the mass emits gravitational quanta, these quanta also move with the velocity c in the direction of the particles or quanta, of which the mass consists itself, as the mass has a certain extension. In other words, according to the binary quantum model, respectively, "BQT," the mass is continuously causing a higher quantum pressure of space also on the quanta the mass consist of, so that the mass is pushed toward the position it is located, or, if it moves, toward each new position on its way, so that the mass moves on forever, unless a force acts on the mass. As I explained in this article, the intraelementary particular or intraatomic movement of matter must always have the velocity c with respect to the predominant gravitational field because of the principle of energy conservation. In the case of a single mass moving through space, like a planet, this mass moves with its own predominant gravitational field through space. Always when we try to accelerate a certain single mass, we have to move its matter against its own gravitational field, which means that the intraelementary particular or intraatomic movement of the matter the mass consists of had to be faster than c with respect to the gravitational field of this mass, which is not possible. As in Section IV explained, the movement of a regarded mass must cause in a slowing down of the intraelementary particular or intraatomic movement against the own gravitational field of the mass, if it is moved in a predominant gravitational field or if a mass moving through space with its own predominant gravitational field is accelerated. Because of the principle of energy conservation, this must result in an increase in the inertial mass, so that we have to muster energy to move or accelerate a mass, which we perceive as a resistance of the mass against the movement or acceleration. A mass moving with its own predominant gravitational field through space always wants to move with its former velocity, unless we muster energy to change the velocity of the movement of the mass. This corresponds with Newton's first law of motion: "In an inertial frame of reference, an object either remains at rest or continues to move at a constant velocity, unless acted upon by a force." For the movement of a mass within a predominant gravitational field, this is not exactly valid, as in this case already a certain constant motion of a mass results in an increase in the inertial mass compared with the resting mass. As the gravitational mass depends on the number of basic quanta, a mass consists of and the number of gravitational quanta that are emitted by masses, and as also the inertial mass depends on the number of basic quanta a mass consist of and the number of gravitational quanta that are emitted by masses, the gravitational mass and inertial mass must be proportional to each other. Therefore, the advanced "Newton quantum gravity" can explain the equivalence of inertial and gravitational mass. To define it clearly: The so-called gravitational mass is a gravitational effect of a mass on the basic quanta another mass consists of and the so-called inertial mass is a gravitational effect of a mass on its own basic quanta the mass consists of itself. Not only a mass like a star or a planet must have a "self-attracting" gravitational field, but also any atom or elementary particle, in which we expect some kind of circular particular and intraelementary particular motion. If a mass (matter) is moved in a predominant gravitational field, the basic quanta a mass consists of cannot move with the velocity c with respect to the position of the mass anymore because the basic quanta are forced to keep the velocity c with respect to the predominant gravitational field (of the Earth). It is important to realize that the inertial mass and the gravitational mass are only exactly equivalent, when a mass rests in a predominant gravitational field or a mass moves through vacuum with its own predominant gravitational field with constant velocity. As soon as a mass is accelerated or also moves within a constant velocity within a predominant gravitational field, the inertial mass increases and is then not exactly equivalent with the gravitational mass any more, which we can neglect, if we only consider slower velocities up to about 10 000 km/s. We must not make the same mistake, which is omnipresent in physics today and led physics to a mathematical impasse, that we are satisfied with a mathematical derivation and explanation. As we have made clear using the example of Einstein's theory, relativity we can easily be led astray. We can now explain why the inertial mass increases by motion. If the speed of the basic quanta a mass consists of slows down, their speed slows down compared with the own gravitational field of this mass. As a result, the

basic quanta of a mass are able to meet and interact with more gravitational quanta per unit of time in a certain spatial area of the gravitational field of this mass, which increases the gravitational effect on the basic quanta a mass consists of, so the basic quanta of this mass lose energy, which we have to compensate, if we want to move or accelerate a mass. This is the reason, why we can feel the energy decrease in the basic quanta of a certain mass as heaviness, if the mass is moved or accelerated. According to the BQT also electromagnetic radiation must take part in the gravitational interaction and emit gravitational quanta. Because electromagnetic radiation always moves more of less straight, the gravitational quanta are emitted right-angled by the electromagnetic radiation, so that the basic quanta a photon consists of cannot have a gravitational interaction with the photon's own "gravitational field," so that a "photon" cannot not have an inertial mass. Nevertheless, according to the BQT, electromagnetic radiation must also take part in the gravitational interaction and must also "emit gravitational quanta," by which it is possible to explain phenomena like "dark energy" and "dark matter."[2,19]

If we consider a single mass in space, while other masses are far away, this single mass is the absolute reference frame for the inertial mass of this mass and for other physical processes. If we consider different masses, the predominating gravitational field of the largest of the considered masses is the absolute reference frame for physical processes, for other masses and for the velocity c of electromagnetic radiation. Einstein's purely theoretical inertial frames, which have only a relative relation to one another, as well as Mach's principle must thus be replaced by real reference frames with respect to masses because of the principle of energy conservation. If we consider a single mass in space that causes a predominant gravitational field, this single mass is the absolute reference frame for physical processes and the velocity c of electromagnetic radiation. If we consider different masses located near to each other, for example, an aircraft flying in the gravitational field of the Earth, the predominating gravitational field of the largest of the considered masses (Earth) is the absolute reference frame for physical processes, for example, for the oscillations of caesium-133 atoms in atomic clocks, but also for the velocity c of electromagnetic radiation.

VII. EINSTEIN'S THEORY OF RELATIVITY IS WRONG FOR MANY REASONS, WHICH ARE IGNORED BY RELATIVISTIC PHYSICS

As demonstrated the example of the inertial mass increase in Section V, Einstein's theory of relativity delivers correct numeral mathematical results, but their derivation is illogical. This concerns all fields of relativistic physics. How can one seriously believe that the mass or energy of matter cares about an observer in another inertial system? A person in an inertial system, who sees a mass or a physical process in another inertial system cannot influence anything by his observation, although mathematically this is possible. No inertial mass or energy increase and no slowing down of a physical process (time) can be influenced by observation from another inertial system. Whenever logically justified criticism is expressed, the relativistic physicists refer to their correct numeral mathematical results. It is then usually not possible to argue against the result of the mathematical formulas and the criticism is silenced. During the 20th century, most physicists subordinated their sense of reality to mathematical formulas and the science journalists, the media and especially the laymen believe their mathematically founded relativistic theses, which for logical reasons cannot correspond with reality. Einstein's relativistic explanation of the inertial mass increase contradicts the principle of energy conservation and disproves Einstein's relativistic approach. Also with respect to Einstein's theory of general relativity, the tensor-calculations of a four-dimensional space time are artificial and do not correspond with reality. As demonstrated in my article "Newtonian Quantum Gravity," you get even more precise predictions of so-called general relativistic phenomena, which are not relativistic at all, by just applying Kepler's second law to quantized gravitational fields.[3] I recommend to read my thought experiment in Section V again to realize that, despite the formally correct mathematical result of the inertial mass increase by relativistic physics, Einstein's relativistic approach is nonsensical. This thought experiment also shows that a paradox similar to the twin paradox exists and cannot be discussed away and solved mathematically, because this paradox has a symmetric constellation and not an asymmetric constellation as the twin paradox. Because the observers in each train see how the observers in the other train age more slowly because, according to Einstein's Relativity, time moves more slowly in the other train. According to my explanation of the inertial mass increase, only the movement of the steel balls with respect to the predominant gravitational field of the Earth is relevant for momentum of the steel balls. And according to my explanation in both trains, physical processes happen more slowly the same way because of the same movement of both trains within the predominating gravitational field of the Earth. As the velocity of both steel balls with respect to the predominant gravitational field of the Earth is the same in both trains, all four observers in both trains are confronted with the same inertial mass of both steel balls, what means that the increase in the inertial mass with respect to the predominant gravitational field of the Earth is an absolute increase. Therefore, also according to my explanation the momentum conservation is satisfied. Of course, also the slowing down of fundamental physical processes (time dilatation) by motion of a mass or elementary particle in a predominant gravitational field is an absolute slowing down. During the last years, there have been published many critical scientific articles that refuted Einstein's theory. Stephan J. G. Gift indicates that time dilation as a function of speed and gravity, as it is measured by GPS, contradicts the invariance of the speed of light because light travels faster to the west than to the east.[20] In an article, A. Styrman compares General Relativity and the Dynamic Universe (DU) with respect to absolute simultaneity.[21] He writes: "Absolute simultaneity is implicit in basic human conceptualization where houses, trees, mountains, star systems, planets and galaxies are wholes, whose parts exist at exactly the same time." Regarding, for example, a house: According to general

relativity, the roof and the cellar of the house cannot exist simultaneously at the same time, because time passes different on the roof (faster passing time) than in the cellar (slower passing time). As GR violates the absolute simultaneity, the relativistic world-view is nonunderstandable. Master-Khodabakhsh uncovers confusing argumentations of Einstein, with which he justified his theories, and shows that Special Relativity is not able to explain the Michelson– Morley Experiment conclusively.[22] Lundberg impressively reveals the absurd velocity concept of modern physics, especially of relativistic physics.[23] Klinaku describes four basic errors of Special Relativity, which are all conditional for Einstein's theory.[24]

VIII. CONCLUSION

The article explains why the velocity c of electromagnetic waves must orient on predominant gravitational fields, because otherwise it would contradict the principle of energy conservation and the minimum energy principle. If one recognizes that because of the principle of energy conservation and the minimum energy principle the velocity c of light must be constant in the predominant gravitational field of the Earth, it is easily understandable that the speed of light c in the Earth's gravitational field must be constant, independent from the velocity of a light source within the gravitational field of the Earth. No length contraction or relativistic velocity-addition formula is needed. The experimental predictions we derived in this article are the same, as expected by Einstein's theory of special relativity, if we assume that the speed of light is always c with respect to the predominant gravitational field of the Earth. The advanced NQG unifies quantum physics with Newton's theory of gravity and calculates so-called "general relativistic" phenomena more precisely and much simpler than general relativity whose complicated theoretical construct is no longer needed.[3] Also special relativity is not needed, as all so-called special relativistic effects can be calculated, if we consider that the velocity of light must be always c in predominant gravitational fields like that of the Earth, as explained in my article "The essence of the theory of relativity of Albert Einstein."[25] Einstein's theory of relativity is not needed to derive the equivalence of gravitational and inertial mass, which he derived inconclusively, as explained in my article "Failure of Einstein's Theory of Relativity. II. Arguments of Einstein disproving his own theory of general relativity and absurd consequences of relativistic physics."[26]

IX. FINAL REMARKS

Everyone with common sense feels that Einstein's theory of relativity cannot describe the reality of our physical world, from which we instinctively think that it must have objective and absolute qualities. Even most physicists admit that they do not really understand relativistic physics, but just apply the theory. As it is taught, that we are not able to grasp the reality of relativity and its mathematics provides precise numeral results, many people believe the experts of relativistic physics and do not dare to use our own mind. During their education, the physicists are internalizing the bans of thinking of relativistic physics, which is why they are no longer willing to think about certain fundamental dogmas of physics. In particular, they refuse to think about the basic postulate of the theory of relativity of an invariant speed of light within any inertial frame. The result is according to epistemological criteria a very successful and generally celebrated illusion called "Einstein's Relativity." No relativity is needed to explain the so-called time dilatation and the inertial mass increase caused by motion in a predominant gravitational field, but only the objective and **absolute** principle of energy conservation.

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