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Review Article

How Long can Wikipedia Keep Making False Claims about Einstein's Flawed Relativity Theory?

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Abstract: There is a litany of fundamental problems with Einstein's theory of relativity. The Lorentz transformation (LT), which the centerpiece of his theory, is not internally consistent, thereby proving that it is not valid. It claims that lengths can contract while times increase without changing the value of its ratio, the speed of light. It argues in favor of the symmetric character of time dilation, even though the experiments with circumnavigating clocks carried out in 1970 by Hafele and Keating contradict this claim. It also claims that events which are simultaneous for one observer may not be so for another, even though the Global Positioning system relies on the assumption that the emission of light pulses occurs at exactly the same time for both the atomic clock on an orbiting satellite and its counterpart of the Earth's surface. Wikipedia supports Einstein's theory at every turn. The Law of Causality, which Newton relied upon in formulating his First Law of Kinetics, is never mentioned by Wikipedia in the context of Einstein's theory. The fact that an alternative (Newton-Voigt) space-time transformation has been introduced which is consistent with the Law of Causality and Galileo's Relativity Principle (RP) is totally ignored by Wikipedia. The Uniform Scaling Method of physical properties is ignored as well, despite its usefulness in comparisons of the results of experiments from the vantage points of different rest frames. All of these inadequacies of Wikipedia are discussed in detail below.

Keywords: Lorentz Transformation (LT), Asymmetric Time Dilation, Newton-Voigt transformation (NVT), Global Positioning System (GPS), Newton Simultaneity, Uniform Scaling.

I. INTRODUCTION

The Wikipedia online encyclopedia provides information in a wide variety of fields. By its own description, it is created and edited by volunteers around the world and hosted by the Wikipedia Foundation. In this work attention is centered on its treatment of Einstein's theory of relativity which was published in 1905 [1]. The centerpiece of his theory is the Lorentz transformation (LT) which was introduced by Larmor [2], and Lorentz [3], at the end of the 19th century. It has nonetheless been proven some time ago that the LT is not internally consistent and is therefore invalid [4-6]. The objective of the present study is to cause the Wikipedia Foundation to alter its various sections on this topic to bring it into agreement with this fact.

II. Problems with the Lorentz Transformation

The Lorentz transformation (LT) is a relationship between space and time variables measured for the same pair of events by two observers who are separating from each other along the x axis of the coordinate system at relative speed v. The respective time and spatial differences for the two events are given as Δt and $\Delta t'$ and Δx, Δy and Δz/ $\Delta x'$, $\Delta y'$ and $\Delta z'$. The following four equations give these relationships as follows [c is the speed of light in free space and $\gamma = (1-v^2c^{-2})^{-0.5}$]:

$\Delta t' = \gamma (\Delta t - v\Delta x c^{-2}) = \gamma \eta^{-1} \Delta t$ (1a)

$\Delta x' = \gamma (\Delta x - v\Delta t)$ (1b)

$\Delta y' = \Delta y$ (1c)

$\Delta z' = \Delta z.$ (1d)

Einstein derived the following relationships on the basis of the LT:

$\gamma \Delta x' = \Delta x$ (2a)

$\Delta t' = \gamma \Delta t.$ (2b).

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Eq. 2a is referred to as FitzGerald-Lorentz length contraction (FLC) while eq. (2b) is referred to as time dilation (TD). It needs to be recalled, however, that a basic premise of the LT is that both observers measure the speed of light to be equal to c in all directions. For example, if light is traveling along the x direction, then $\Delta x/\Delta t = c$. As a result of eqs, (1a-b), this means that the speed measured by the other observer is:

$\Delta x'/\Delta t' = (\Delta x - v\Delta t)/ (\Delta t - v\Delta x c^{-2}) = (\Delta x/\Delta t - v)/(1- vc^{-2} \Delta x/\Delta t) =$

$(c-v)/(1- v/c) = c.$

In agreement with the above premise.

These various conditions are incompatible with each other, however. When eqs. (2a) and (2b) are employed:

$\Delta x'/\Delta t' = \gamma^{-1}\Delta x/ \gamma\Delta t = \gamma^{-2}\Delta x/\Delta t = \gamma^{-2} c.$

As a practical example, consider the case of a train traveling along the x direction at speed v relative to the station platform [7]. If a stationary observer on the train measures the speed of a light pulse moving along the x axis, he must find that $\Delta x'/\Delta t' = c$, but his counterpart located on the station's platform must find according to the LT that eqs. (2a) and (2b) are satisfied. Therefore, he will find the speed of light to be γ^{-2} c, i.e. not equal to c.

III. Asymmetric Time Dilation, Absolute Simultaneity and the Global Positioning System

Since Wikipedia accepts the viability of the LT, it necessarily adheres to a number of false conclusions that follow directly from it. To begin with, consider Einstein's view that time dilation is symmetric [1]. This is illustrated by the application of Galilea's Relativity Principle (RP). Accordingly, exchanging the roles of the two observers in the LT equations must lead to an equally valid result for each of them. This situation can be simulated with what will be referred to as Galilean Inversion, whereby the positions of the two observers is exchanged and the direction of their relative speed is reversed, i.e. v is replaced with -v. Applying this procedure to eq. (2b) leads to the corresponding equation: $\Delta t = \gamma (-v) \Delta t'$. Since $\gamma (-v) = \gamma (v)$, this means that Δt is equal to $\gamma (v) \Delta t'$. In other words, the effect of the time dilation is *symmetric*. Each observer finds that it is the other's clock which is running slower. An analogous result holds for the FLC in eq. (2a). This means, for example, that when the two observers exchange light signals of the same frequency ν, each finds that the other's frequency is *red-shifted* relative to the standard value, i.e. it is smaller than ν.

This prediction of Einstein has caused great confusion among physicists over the past century and beyond [8, 9]. The first test of TD was carried out by Ives and Stilwell in 1938 [10]. They accelerated a light source in the laboratory and observed the effect on the wavelength of the emitted radiation. They found that the wavelength increased and therefore concluded that this is proof that the corresponding frequency had decreased (red-shift), i.e. by assuming the speed of the light waves is not changed from its standard value of c. Somewhat later, experiments with accelerated mesons [11], showed unequivocally that their lifetime increased. In both cases, it was clear that Einstein's TD prediction had been verified. These experiments were inconsequential with regard to Einstein's conclusion that the effect was symmetric in nature, however. They only considered the effect from the standpoint of a stationary observer in the laboratory. It was impossible to measure the wavelength using a device which was co-moving with either the accelerated light source or with the mesons moving through space.

This situation changed with the introduction of the Mössbauer effect in 1958 [12]. This enabled the accurate measurement of much higher light frequencies that had previously been possible. Hay *et al*., [13], mounted a gamma-ray detector on the rim of a centrifuge moving at high speed in the laboratory relative to the emitter located at the center. They found that the measured frequency was higher than that of the emitted radiation. In other words, *they observed a blue shift*, in clear violation of Einstein's Symmetry Principle [1] described above. Virtually the same experiment was carried out by Kündig [14], and Champeney *et al*., [15], with very similar results.

Kündig [14], pointed out explicitly that the rate of the detector clock at the rim of the centrifuge was slowed by virtue of its acceleration. Rather than to accept this result as a violation of the LT prediction of symmetric time dilation [9], they argued instead that this could be understood on the basis of Einstein's Equivalence Principle [16], which claims that kinetic acceleration and gravitational acceleration are two sides of the same coin. Sherwin disagreed [17, 18]. Claiming that the symmetry principle was indeed violated by these results, and suggested novel ways in which they could be put to use in practice. Nonetheless, Wikipedia continues to argue that the original interpretation in terms of the Equivalence Principle is correct.

The invention of the atomic clock made it possible to study the effects of time dilation in even greater detail. It was now possible to measure time differences on the order of one nanosecond. Hafele and Keating [19, 20], carried out a pivotal experiment in which atomic clocks were placed onboard commercial aircraft that circumnavigated the globe in opposite directions. It was found that the amount of elapsed time for a given portion of the flights decreased with the speed of the clocks relative to the polar axis of the Earth, or more simply put, relative to the Earth's center of mass (ECM). Their results show that the amount of time is inversely proportional to their speed v relative to the ECM. Specifically, there is a Universal Time Dilation Law (UTDL) which connects the elapsed times Δt and

Δt' read on the two clocks as follows (v and v' are the respective speeds of the clocks relative to the ECM):
$\Delta t' \gamma (v') = \Delta t \gamma (v)$. (3)

A correction for the effects of gravitation on the clocks was applied in each case. The reason for this designation is that it applies to all such comparisons provided the speeds are measured relative to a specific rest frame in each case, which has been denoted the Objective Rest Frame (ORS) in previous work [21]. It is the laboratory in centrifuge experiments [13-15], or more generally, the rest frame from which the clock has been accelerated by an applied force.

The fact that the effects of gravity and kinetic acceleration can simply be added to one another to obtain the total elapsed time in each case shows unequivocally that the two effects are completely separate from one another. This belies the claim in the interpretation of the centrifuge studies [13-15], that Einstein's Equivalence Principle [16], is somehow responsible for the observation of a blue shift in the frequency of the gamma rays emitted from the source. The experiments are carried out at the same gravitational potential, and therefore no correction should be made for the effect of gravity on the radiation [9].

Because of the Earth's rotation about its axis, there is an east-west effect on the timing results of aircraft travelling in opposite directions. A clock flying in the easterly direction arrives back at the airport of departure with less time than that of a local clock, while its counterpart flying in the westerly direction has registered more elapsed time than the latter. This behavior is quantitatively described by the UTDL, as verified by the HK results [19, 20], since the speed of the eastward flying clock relative to the ECM is greater than the ground speed of the plane, while the speed of the westward flying clock with the same ground speed is less than its speed relative to the ECM. In any event, it is clear that time dilation is an *asymmetric* phenomenon, contrary to Einstein's claim based on the LT [1].

The HK experiments with circumnavigating aircraft [19, 20], were very influential for the development of the Global Positioning System (GPS) for navigation. The basis rationale for GPS is to measure the elapsed time required for a light signal to pass between a satellite of known location to a point on the Earth's surface [21, 22]. The corresponding distance separating the two positions can then be obtained by simply multiplying this elapsed time with c, which is the speed of light in free space. This requires that the atomic clocks in both cases to be running at the same rate, however. The rate of an atomic clock on a satellite is affected by time dilation, and thus it is necessary to adjust it to run at the desired rate. For this to occur, a *pre-correction* procedure [23, 24], is employed to alter the rate of the atomic clock prior to launch so that it is the same as that of clocks on the Earth's surface when orbit has been achieved. The amount of this correction is determined on the basis of the UTDL of eq. (3); a gravitational correction is also made.

Such a procedure for equalizing the rates of the atomic clocks clearly only makes sense if both the emission of a light signal and its eventual reception occur *simultaneously at the two locations*. This assumption runs contrary to the prediction based on eq. (1a) of the LT. Accordingly, if both events occur simultaneously for an observer at one location, then their time difference for that observer is $\Delta t'=0$, but if both v and Δx are not equal to zero, the corresponding time difference for the other observer will not also be equal to 0, i.e. the two events do not occur simultaneously for him ($\Delta t \neq 0$). This effect is referred to as Remote Non-simultaneity (RNS). *Wikipedia assumes that RNS is a fact of nature.* The success of GPS is clearly predicated on the assumption of Absolute Simultaneity, i.e. the opposite of RNS. The continuous success of GPS on an everyday basis is therefore a verification of both the asymmetry of time dilation and the prediction of Absolute Simultaneity made by Newton and coworkers three centuries ago, and stands in clear violation of Einstein's conclusions based on the LT [25].

IV. The Law of Causality and the Newton-Voigt Transformation

The Law of Causality represents the view that nothing happens by chance. It has been instrumental in the development of the theory of physics over the ages. Newton's First Law of Kinetics (Law of Inertia) is a key example of how it has been implemented. It states that a body will continue to move in a straight line at constant speed until an unbalanced external force is applied to it. It can logically be extended to refer to the *properties* of such freely moving (inertial) objects, for example, to the rates of clocks. This application has been referred to as the Clock-rate Corollary of Newton's First Law [26, 27].

Space-time transformations always make use of two inertial clocks moving at constant speed relative to one another. The Clock-rate Corollary applies to both of them, which therefore leads to an important conclusion, namely that the ratio (Q) of their rates is itself a constant. This means that whenever timing measurements are carried out using the two clocks, their respective time differences ($\Delta t'$ and Δt) will always occur in the fixed ratio Q, independent of the object. This consideration therefore leads to the following proportionality relationship:
$\Delta t' = \Delta t/Q$. (4)

There are several important conclusions that can be drawn from this equation. First, if the two events in question occur simultaneously for one observer, i.e. $\Delta t'=0$, they must also occur simultaneously ($\Delta t=0$) for the other as well. For this reason, eq. (4) will be referred to as *Newtonian Simultaneity*, in recognition of Newton's firm belief in the Absolute Simultaneity of events

occurring anywhere in the universe. It is therefore completely opposed to Remote Non-simultaneity (RNS) discussed in the previous section. Secondly, comparison with eq. (1a) of the LT shows that the latter transformation is incompatible with the Law of Causality because of its mixing of space and time variables (space-time mixing). Wikipedia states on the contrary that RNS is an unavoidable fact of nature. One might argue that it is not necessary that the LT conform to this Law of Nature, but this conclusion is made moot by the fact that the LT is not a physically valid transformation anyway, as proven in Sect. II.

The question therefore arises as to whether another space-time transformation can be formulated which not only conforms to the Law of Causality but also to Galileo's RP and the equality of light speed values for the two observers. Accomplishing the latter objective is aided by a relationship introduced by Lorentz in 1902 [28], namely that the four LT equations can be modified by multiplying each of them with the same factor (ε) on their right-hand sides without altering their adherence to the equal light speed condition. Multiplying eq. (1a) of the LT with $\varepsilon = \eta/\gamma Q$ converts it into eq. (4). Hence, it is possible to satisfy both the equal light speed condition and the Law of Causality by simply multiplying each of the right-hand sides of the LT eqs. (1a-1d) with this value of ε. The result is given below:

$\Delta t' = \Delta t/Q$ (5a)

$\Delta x' = \eta/Q\ (\Delta x - v\Delta t)$ (5b)

$\Delta y' = \eta/\gamma Q\ \Delta y$ (5c)

$\Delta z' = \eta/\gamma Q\ \Delta z.$ (5d)

This set of equations was first referred to as the ALT in Refs [4] and [29]. More recently this designation has been changed to the Newton-Voigt transformation (NVT) [30, 31]. It also satisfies the RP by virtue of the identity $\eta\eta' = \gamma^2$ [32, 33], with the additional condition that QQ'=1, whereby both η' and Q' are obtained by application of Galilean Inversion to η and Q, respectively [34].

The parameter Q in the NVT and also in the Newtonian Simultaneity relation of eq. (4) can best be looked upon as a *conversion factor* between the elapsed times measured in the two rest frames for a given pair of events. It can be evaluated by combining the UTDL of eq. (3) with eq. (4) as follows:

$Q = \Delta t/\Delta t' = \gamma(v')/\gamma(v).$ (6)

Note that when Galilean Inversion is applied to eq. (6), the result is:

$Q' = \Delta t'/\Delta t = \gamma(v)/\gamma(v') = 1/Q.$ (7)

In other words, the above condition for satisfying the RP, i.e. QQ'=1, is automatically satisfied as a result.

This reciprocal feature for the exchange of observers is exactly the same as what one knows about conversion factors in everyday usage. For example, the conversion factor from dollars to cents is 100, whereas the factor in the opposite direction is 1/100. If the conversion factor were the same in both directions, i.e. 100, this would mean that the 100 cents obtained in the forward conversion would be equal to 10^4 dollars after the money was returned to the original investor. Repeating this a second time would result in 10^8 dollars for the original investor. This is an absurd situation [9], but it is what happens if you apply Einstein's Symmetry Principle [1], in this example. Wikipedia continues to promulgate the same nonsense up to the present day.

V. Einstein's Light-speed Postulate and the Relativistic Velocity Transformation

Another of Einstein's controversial positions on relativity theory is his light-speed postulate (LSP) [1]. Accordingly, the speed of light is equal to c for all observers located at the same gravitational potential. Consider the case of an observer standing on a street corner next to a truck carrying a light source [35]. The truck starts to move away with speed v while emitting a light pulse in the same direction. Consequently, we are to believe that the speed of the pulse relative to *both* the stationary observer and the truck is equal to c. Next consider the situation sometime later after time T has elapsed. The distance separating the light pulse from both the observer and the truck is *now cT for each of them.* This is clearly impossible, however, since it does not account for the fact that the observer and truck are now separated from one another by a distance of vT along the same straight line.

The same (*distance reframing*) procedure can be applied in a different way. The distance separating the stationary observer from the truck is now vT, while the corresponding distance separating the light pulse from the truck is cT. Therefore, the distance separating the light pulse from the observer is the sum of these two values, namely vT + cT = (v+c) T. Adding these two values together to obtain the total distance is quite normal, similar to the case when the length of a room is obtained by adding together a series of lengths measured contiguously across the entire room. By definition, the corresponding speed of the pulse relative to the observer is $v+c \neq c$. This result is not only contrary to the LSP, but is in full agreement with the Galilean velocity transformation. The latter transformation (GVT) is referred to as vector addition in modern terminology. When two light pulses approach each other along a straight line, their relative speed is 2c because each of them moves a distance of cT in a given time T, i.e. (cT + cT)/T=2c, in agreement with the GVT.

It is also clear that the GVT does not apply in all cases however. This was evident in the early 19th century from the results of an experiment with light passing through a liquid medium such as water. Fresnel concluded [36] that the speed of light c' in the medium was described as follows:

$c' = c/n + v(1 - n^{-2})$, [8]

And this was verified by Fizeau in 1851 [37]. The GVT prediction is c/n + v, and therefore does not have an explanation for the additional (light-damping) term in eq. (8). This led to a frantic search for an *ether*, i.e. a rest frame in which light is supposedly at rest, that was assumed to be essential in the theory of light propagation. Einstein [1] rejected this concept in his 1905 paper. He introduced a velocity addition law which is consistent with his LSP. It can be obtained from the LT by dividing each of its spatial components in eqs. (1b-1d) with the corresponding time variable in eq. (1a). The results are referred to as the Relativistic Velocity Transformation (RVT), whereby the velocity components are defined as $u_x=\Delta x/\Delta t$, $u_x'=\Delta x'/\Delta t'$, etc.:

$$u_x = \left(1+vc^{-2}u_x'\right)^{-1}\left(u_x'+v\right) = \eta'\left(u_x'+v\right) \quad (9a)$$

$$u_y = \gamma^{-1}\left(1+vc^{-2}u_x'\right)^{-1}u_y' = \gamma^{-1}\eta' u_y' \quad (9b)$$

$$u_z = \gamma^{-1}\left(1+vc^{-2}u_x'\right)^{-1}u_z' = \gamma^{-1}\eta' u_z'. \quad (9c)$$

The definitions of γ, η and η' are the same as used in eqs. (5a-d). In 1907, von Laue [38] applied the RVT to obtain the light-damping relation of eq. (8) after making various approximations based on the condition that v<<c by assuming that $u_x' = c/n$ in eq. (9a):

$$u_x = \eta'\left(\frac{c}{n}+v\right) = \left(1+\frac{v}{cn}\right)^{-1}\left(\frac{c}{n}+v\right) = \quad (10)$$

$$\left(1-\frac{v}{cn}\right)\left(\frac{c}{n}+v\right) = \frac{c}{n}+v-\frac{v}{n^2}$$

$$= \frac{c}{n}+v\left(1-\frac{1}{n^2}\right)$$

As discussed above, there are certain situations where the GVT is essential, however. The ranges of application of the two velocity transformations are actually mutually exclusive. In the case of the GVT, two observers are required who are moving relative to one another. Only a single observer is involved in successful RVT applications; he carries out measurements *under two different sets of circumstances*. For example, in the light-damping experiment, the water is at rest in one case, while it is moving with speed v relative to the laboratory in the other. Similarly, when attempts are made to increase the speed of an electron above a value of c, the starting point is to have the electron moving with a speed close to c relative to the laboratory, whereas the measurement carried out by the same observer occurs after an electromagnetic potential has been applied.

A key example for the difference of the GVT and RVT is important for understanding the cause of *stellar aberration*. Astronomical observations are made from a laboratory on Earth which is moving at speed v relative to a star. The cause of the effect is the fact that the speed of light received in the laboratory is affected by this motion. There are two clearly defined rest frames, namely that of the star/Sun and that of the Earth. Writing in 1727, Bradley ascribed it to the finite velocity of light and the motion of the Earth relative to the Sun, and he used the classical theory of motion (GVT) to quantify his position [39, 40]. There was longstanding wide acceptance for his arguments, but they eventually met with considerable skepticism because they were thought to be incompatible with new experimental data obtained at the beginning of the next century, such as for Fresnel/Fizeau light-damping. The latter results led to the development of numerous theories that posited the existence of an ether that was assumed to be essential to the true theory of the motion of light. Einstein [1], argued persuasively that there was no such thing as an ether, but also came to the firm conclusion that the GVT could not be used. This led to his false LSP claim, and as a consequence to his introduction of a factor of $\gamma=(1-v^2c^{-2})^{-0.5}$ into the classical expression for the angle of aberration of light emitted from the Sun or any other source, whereby v is the speed of the observer relative to the light source and c is the speed of light in free space (299792458 ms^{-1}).

For typical speeds of the Earth relative to the Sun, however, γ(v) differs from unity by on the order of only 10^{-8}, and this difference is therefore too small to be confirmed in actual observations [40]. It should be noted, however, that the RVT only differs from the GVT by the same factor and thus there is no *practical* difference between their respective predictions in this case. A similar situation holds for the derivation of Thomas spin precession [41, 42]. Thomas was able to successfully deduce the expression for angular velocity of the electron on the basis of the LT, even though it is not generally valid. The value of v in this case is infinitesimal, however, so this means that the LT and NVT are equivalent in this application, so both can be used to obtain the correct result. All three of the key parameters γ, η and Q tend toward a value of unity as v tends toward a null value. The same holds true for the original transformation introduced by Voigt in 1887 [43], for which $\varepsilon = \gamma^{-1}$ so that it also satisfies the required equal light-speed condition.

Which of the velocity transformations is required to explain the null interference result of the Michelson-Morley experiment [44]? The answer is that none of them is required. Instead, all that is needed is a new light-speed postulate to replace Einstein's LSP, namely that the speed of light in free space relative to its source is always equal to c [45]. This includes light reflected from a mirror. In this experiment, a light pulse travels the *same distance* between a single source and a mirror and back in different directions. It doesn't matter what time of the year it is when the experiment is carried out. No ether is required to explain the effect. This version of the light-speed postulate distinguishes light from sound. The speed of sound depends on the density

of air and thus may vary from one day to the next. On the contrary, there is no experiment which indicates that the speed of light in free space is ever different from c.

The RVT is used extensively in the analysis of particles emitted by rapidly moving sources. There is only a single observer (the laboratory) in which the particles are accelerated. For example, consider the case [46], in which a Σ^0 hyperon decays to a photon plus Λ particle. The variables which are to be inserted in eq. (9a) in one example are defined as follows: v is the speed of the Σ^0 particle in the laboratory rest frame, u_x' is the speed of Λ in this rest frame and u_x is the final speed of Λ after the decay has occurred. There is a collimating effect [46], such that the higher the value of v, the more the particles get beamed forward in the laboratory rest frame. The GVT is unable to produce the correct values of u_x in this example. This result is often claimed to be a verification of the LT, but it is not because the RVT is also compatible with the NVT and the Voigt transformation.

VI. Uniform Scaling of Physical Properties

As mentioned in Sect. IV, the parameter Q in the NVT and eq. (4) can be looked upon as a conversion factor between the elapsed times measured for the same event by two observers who are moving relative to one another. This consideration has led to the development of the Uniform Scaling Method, which was first introduced in 2008 [47-49]. Because the speed of light in free space in the same for both observers, this means that the corresponding *conversion factor for speed is unity*. Since speed is the ratio of distance travelled to elapsed time, the conclusion must be that the conversion factor for lengths/distance for the two observers also has a value of Q. Experiments carried out in 1909 for electrons moving in crossed electric and magnetic fields [50], indicate that Q is also the conversion factor for inertial mass. The corresponding scale factors for all other properties can be deduced on the basis of their composition in terms of the fundamental quantities of distance, time and inertial mass (mks system). As a result, each such factor must be an integral multiple of Q. For example, the factor for speed has been deduced from its definition as the ratio of distance to time to be Q^0=1. The corresponding factor for energy is derived from the definition of kinetic energy as $0.5mv^2$, i.e. a value of Q, the same as for inertial mass.

There is an analogous set of conversion factors for the effects of gravity [49]. It is based on the parameter S, which has a value of $1 + ghc^{-2}$ for small differences in gravitational potential (g is the local acceleration due to gravity and h is the difference in the heights of the two observers). It is based on Newton's gravitational theory and Einstein's $E=mc^2$ relation. The conversion factor for energy is S, also for frequencies. A list of the factors for many physical properties is given in Ref. [51]. The value for large potential differences is obtained by integration. It is equal to the ratio of A_o/A_p, where $A_i = 1+Gm_0/c^2r_i$; o stands for the observer and p for the object at a different gravitational potential (G is the Universal Gravitation constant, m_0 is the gravitational mass of the active mass such as the Sun and r_i is the distance separating the object/observer from the latter's center of mass).

The kinetic and gravitational scale factors can be combined to form a total conversion factor Z. For example, Z= QS for energy, Q/S for inertial mass and time, S for speed and force and Q^2 for angular momentum/Planck's constant. A key point is that any law of physics that holds in one rest frame must also hold in any other according to the RP. Consequently, the Q and S factors must be the same on both sides. For example, one has QS on both sides of the $E=mc^2$ relation and also for the Planck's $E=h\nu$ expression (the scale factor for frequency is S/Q, i.e. the reciprocal of that for time). On this basis, there is an addendum to the RP [52], *the laws of physics are the same in all inertial frames but the units in which they are expressed vary in a systematic manner from one frame to another*. It is also possible to extend the Uniform Scaling methodology to electromagnetic units. This is possible because of a degree of freedom in the laws of electricity and magnetism [53]. The conversion factor for electric charge is QS and the value for electrical permittivity is S.

The bottom line is that the Uniform Scaling Method, despite its obvious advantages for both students and professional scientists as well, is nowhere mentioned in Wikipedia up to the present time.

VII. CONCLUSION

There are many ways to see that the Lorentz transformation (LT) is invalid. The simplest is the fact that length contraction (FLC) and time dilation, which are both derived from the LT, are not consistent with the equality of light speed condition. The speed itself is a ratio. What these two claims say is that the numerator (FLC) can be decreased at the same time that the denominator (time dilation) is increased without changing the value of the ratio. This is utter nonsense. His claims of symmetric time dilation and remote non-simultaneity (RNS) have practical consequences. It would make no sense to adjust the clock rates on the orbiting satellite to be the same as for the clock on the Earth's surface if events did not take place at exactly the same time for both. Yet this is what is done in the everyday operation of GPS, which is proof that the LT predictions are fallacious.

Wikipedia takes no responsibility for their *modus operandi*, stating that their procedures are governed by *volunteers around the globe.* Someone has to decide who these experts are, however. This shows that the problem runs far deeper. The reviewers employed by Physical Review Letters are certainly such experts, but their editors have refused to even submit manuscripts for their consideration, as recorded in a

paper recently published in another peer reviewed journal [54]. When confronted with claims of the failure of Einstein's theory of relativity, they invent a variety of grounds supposedly justifying why they make this editorial decision, none of which apply to the manuscripts they have chosen to reject. They don't claim that the ideas are not correct. That would be *denying the indefensible* and thereby open themselves up to criticism at a much higher level.

The overriding question is why the scientific establishment has chosen to ignore the invalidity of the LT. There isn't a single member of this elite that can deny *in good conscience* the truth of the claims that have been made against Einstein's theory of relativity in this paper. This is not a recent development, one which was only exposed on the basis of new revolutionary experimental evidence. As soon as Einstein introduced the FLC and symmetric time dilation in 1905, it was already apparent that the LT is not internally consistent and therefore unviable. The real question is thus how long will the general scientific public continue to accept this attitude from its leaders.

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