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On The Problem of Special Theory of Relativity According to Albert Einstein

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ABSTRACT:

This paper re-examiners the principle of special theory of relativity according to Albert Einstein, which states that, "the speed of light in vacuum is the same in all inertial frames of reference". This postulate is a misconception. If the speed of light can be reduced in certain medium, then there should be no restriction to the speed of light exceeding "c" in other medium /reference. The conceptual "time dilation" and "length contraction" are misconceptions; they are intrinsically the same classical concepts of the refraction of light. The resultant refractive index can be used to predict speed moving beyond "c".

Keywords: Time dilation ,Length Contraction, Speed of Light and Relativity

1. INTRODUCTION:-

The postulates for the special theory of relativity by Albert Einstein are incidentally not now. They are intrinsically within the limitations of classical physics. Any one, or aspects of, the postulates that seems to presuppose or protrude beyond the limitations and implications of classical laws, equally seems to be deceptive, misleading and amounts to mental or theoretical illusions.

The idea of time dilation and length contraction are fundamental misconceptions/errors, holding the exception that time (a homogeneous quantity) and length (a homogeneous and isotropic) are fundamental physical quantities that have fundamental units and definitions, and as yet have not been disputed. In the context of time dilation and length contraction, no mention was made of quantities that formed the co-ordinate system in which time and length are assumed to vary, and be measured with respect to. It is a fundamental concept and belief that time and space or length are fundamental obstacles to man, and so every technology is revolving around time and length (space), but not velocity of light (E).

The mathematical derivations of time dilation and length contraction are mentally not logical. The speed of light which is a finite quantity that can increase or decrease was arbitrarily fixed in the proof of time dilation without reason. They are intrinsically the same optical concept of refraction of light waves.

The almighty speed (upper limit) ascribed to the speed of light (c) is not true. The speed of electrical impulses or electric current which are almost independent of length and time are greater than the speed of light.

Concepts and derivations based on the second postulates of the special theory of relativity are hence not correct to every extent they are associated with the postulate and the special theory. The scientific achievement that was believed to be as a result of Albert Einstein's special theory of relativity are misconceptions, they were still achieved based on the same principles of the classical relativity of the Galilean transformations, (See Appendix A).

2. THE RELATIVITY PROBLEM:

In modern long-range navigation, the precise location and speed of moving crafts are continuously monitored and updated. A system of navigation satellite called NAVSTAR permits locations and speeds anywhere on earth to be determined to within 16m/s and 2cm/s. However, as claimed if relativity effects were not taken into account, speeds could not be determined any closer than 20cm/s, which are unacceptable for

modern navigation systems". This claim is not correct in the background of the fact that, this achievement, if closely looked into, is still under and within the good work of classical physics, and not of the Albert Einstein's special theory of relativity.

The special theory by Albert Einstein between 1900 and 1905 as regards time dilation and length contraction is not completely correct. It has only confirmed the authenticity of classical mechanics up to the extent and beyond the speed of light, and further exposed the limitations of speed of light (not almighty speed but, the highest speed known then). It is rather a continuation of relativity in classical physics (Galilean transformations) up to and beyond the speed of light. It can only take wave or particle of infinite speed (m/s) to be almighty speed, and not c=3.0 X 10^8m/s, which is of finite magnitude. After all, 300,000,000 + 50 gives us 300,000,050m/s but, $\infty + 50 = \infty$m/s. A misconception might be that an addition of small speeds to very high speed such as of light 'c' will not amount to a meaningful difference, and can therefore be neglected. But this does not mean that the speed change does not exist.

3. THE SPECIAL THEORY OF RELATIVITY AND ITS DEFECTS:

3.1 BASIC CONSIDERATION

One principal focus of relativity has to do with measurements of events, where and when they happen (space and time), and by how any two events are separated in space and time. Here, relativity itself is considering space (length) and time as fundamental references quantities. It is very uncommon to use quantities that are easily subject to change as reference quantities. Note that velocity of any kind is not used as fundamental quantity.

In addition, actually should not be confused with reality. The claimed by Einstein that "time does not pass at a fixed rate", is wrong. The Green-which-meridian is there, and every other time is calculated relative to that. This relative calculation of time demonstrates that time passes at a fixed rate, as if it was ticked off with mechanical regularity on some other master grandfather clock that controls the universe.

Time is the dimension that enables two otherwise identical events that occur at the same point in space to be distinguished. Interval between such two events forms the basis for time measurements. For general purposes, the earth's rotation on its axis provides the unit of the clock, and the earth's orbit round the sun provides the unit of the calendar. For scientific purposes, intervals of time are now defined in terms of the frequency of a specific electromagnetic radiation. The S.I. unit of time (second) is equal to the duration of 9,192,631,770 periods of radiation corresponding to the transition between the hyperfine levels of the ground state of the calcium – 133 atom. The second is also the unit of angle equal to 1/3600 of a degree or 1/60 of a minute. The question then is; are we going to redefine time in different frames of reference or at different velocities? The answer however is no again, instead, velocity summation of the classical laws should possibly be extended to include velocity of light 'c' and beyond. The classical physics has not yet distinctively recorded any failure in the direction of the special theory of relativity, neither has the special theory of relativity recorded any success beyond classical physics, free of illusions.

Length is a measurement from one end to the other. The S.I unit of length is the metre. The metre is the length of the path traveled by light in vacuum during a time interval of 2.99792458 seconds (1/3.0 x 10^8 seconds), adopted in 1983 (October) by the general conference on weights and measures. As we can see if we suppose the time to increase, the velocity of light © will decrease and the length to contract, the velocity of light © will also contract. In the face of this argument on time, length and velocity of light (c), do we still conclude that the speed of light 'c' is the same in all inertia frames of reference, or do we reverse to say that time and length are the same in all inertia frames of reference? Is this not simply an illusion that time and length can vary instead of velocity?

3.2 THE POSTULATES AND ITS DEFECTS:-

The first postulate states that: "the laws of physics are the same in all inertia frames of reference". Common sense should tell us that this postulate was implied in classical laws as there was no exception to any inertial frame of reference in classical relativity principle.

The second postulate states that "the speed of light in free space is independent of the motion of its source and of the motion of the observer or it's the same in all inertial frames (5 and 6)." This second postulate should be unacceptable to common sense, mathematical law, and it is incorrect. From theoretical point of view, vectorial summations of velocities have not been disproves by this postulate. The fact remains that there has been no appropriate experimental techniques available to man to test addition or subtraction of velocity of light to another velocity. The fundamental problem of Albert Einstein;s relativity concept is the initial belief that velocity (ies) up to velocity of light © cannot be vectorially added to another velocity of light © can be added vectorially.

Furthermore in the Michelson – Morley experiment used to find out whether there can be relative change in the speed of light, which gave a null result, the apparatus is not appropriate. The dimensions of the apparatus is too small compared to the speed of the light. The beams of light traveling at right angles to each other, according to the experiment, reflected effects of action and reaction (to and fro). Such an experiment is a cyclic process experiment that is conservative in nature, and hence should obey conservative laws. The principle of reversibility of light states "if a reflected or refracted ray be reversed in direction it will retrace its path", (MCKENZIE 5). Hence, Michelson – Morley experiment should not form any basis for establishing that speed of light does not change in difference frames of reference.

The "Lorentz –Fitzgerald contraction" which waspropose d independently by H. A Lorentz and G.F. Fitzgerald (1851 – 1901) in 1892 to account for the null result of the Michelson – Morley experiment was baseless; the resultant Lorentz – transformations were, however, equally baseless. It can be believed that time and length project indefinitely into the past and future of the universe. Every event can also be located in space-time coordinates, into the past and future of the universe. Speed of light cannot be associated with all these attributes of space and time.

If the speed of light can reduces in certain medium with proof then, logical proof should also be provided to restrict the same speed of light from increasing beyond 6=3 x 10^8m/s in some other medium and frames of reference. Common sense can reveal to us that if there can be a fast moving and continuous medium or frame of reference like a long train or a river that can carry a source of light, and within less than a second, measurements are taken, you will find Galilean summation of velocity in action. Can we deny that there is relativity between the speed of earth's rotation and speed of light? No! The various examples in this respect in various textbooks (i.e. invariance of speed of light) are not appropriate for this exercise. For example, whenever a moving source or frame fires a shot, the light as a result of the shot is no more being controlled by the reference frame of the moving source or frame, but by the earth's common or general references frame. In fact, if the speed of light is subjected to similar conditions of the classical machines of velocity addition or subtraction, the value 'c' must change.

Actually, from real life experiences, velocities (not time) can vary if added appropriately. The variation might depend on whether the signal wave velocities are both transverse and /or longitudinal. The concept of sound waves about 345m/s in air (longitudinal wave) being added to a carrier wave or electromagnetic wave (transverse wave) of about 3.0 x 10^8m/s (speed of light 'c') to produce waves of different frequencies/velocities (frequency band), implies velocity change of speed of light ©. This sceneries makes possible the multiplex communication and time division multiplex systems. The concept of phase and group velocities from only a signal and carrier waves, modulation and demodulation, also strongly imply velocity change, and not time. These concepts need to be investigated widely.

3.3 THE MISCONCEPTION OF RELATIVITY OF TIME

The universe is not just a haphazard phenomenon. It can be assumed to consist of an ordered wide range of infinite phenomena of varying magnitudes lying between negative infinity and positive infinity, in all directions in space and time. The speed of light cannot be the highest speed limit in this infinitely phenomenal order of kinematics, constituting an exception without reason or sound mathematical relation.

Time dilation or time expansion is not real. The difference in time measurements by observers in both moving and fixed frames of references goes to show to show, really that it takes light wave of velocity 'c' (not ∞) longer time to reach a particular point in the space coordinate in a moving frame of reference than to reach the same point in the space coordinate in a moving frame of reference than to reach the same point in a stationary

frame. This demonstrates the finiteness of speed of light. The time difference was mistaken for time dilation or expansion.

In the proof of time dilation, the speed of light 'c' and the speed of the moving frame 'v' were only considered to be moving in the same direction. There is no law that restricts this consideration in opposite (other) directions. There is little or no reason to belief that it is only velocities approaching speed of light that disobey classical laws. The entire wrong concept should rather be ascribed to man's inability to develop appropriate experimental apparatus. By the third law of Newton: "Action and Reaction are equal and opposite", addition or superposition of a velocity to the velocity of light 'c' cannot remain 'c'.

The confusion to many might be that if a small velocity 'v' is superposed on velocity of light 'c', the difference appear very little and can be neglected. But this does not mean that if there is an equipment that can vectorially and relatively add one speed of light to another speed of light, that it will still remain 'c'.

The velocity of light of all wave lengths is the same in vacuo, but the velocity of light of longer wavelength, is grater in dispersive medi, such as air or glass, than that of shorter wavelength; hence, white light in a dispersive medium consists of a group of waves of differing velocities, and the group velocity is less that that of the individual waves, the latter being known as the phase or wave velocity. It is said that: "Determinations of the velocity of light in air give the group velocity. The difference between the phase and group velocities in air at N.T.P. is about 6km/sec or 1/50,000. The difference is very much greater in a highly dispersive medium such as carbon disulphide".

It was also implied that for non relativistic particles, the phase velocity of the waves greatly exceeds the speed of light, and this explains the need for Lorentz transformations under all circumstances . Thus, the idea of the phase velocity being greater than the group velocity or the speed of light strongly necessitated the transformations by Lorentz. And so, there could have been no need for Lorentz transformations clearly arose only because of the fact that the speed of light was exceeded.

It is pertinent to point out here that the Lorentz transformations recognized the role of the speed of the moving reference inertial frame 'v', but in the proof of the time dilation, the same speed 'v' of the moving inertial frame of reference was not considered to play any "time-role", but was involved in formulation. One winders the kind of sense of mathematical singularity accorded to the speed of light 'c', to even consume the role of the time impact of the distance covered by the speed 'v' of the moving frame.

All these imply velocity change of speed of light 'c' in air. No condition was given in the second postulate and so, there are indeed very strong arguments against the constancy of the speed of light in air.

3.4 THE MISCONCEPTION OF LENGTH CONTRACTION:

The relativity of length is a direct consequence of time dilation, and hence it is a misconception to the extent the time dilation is misconceived. Length contraction is simply the reverse or inverse of time dilation. It is actually our interpretations about events with respect to space and time that changes, and not the vents themselves, Generally, relativity of length can be described as optical illusion (Appendix B). Time and space (length) are the cost fundamental universal concepts, and this explains reasons why all other physical quantities are studied with respect to time and (space) length. Thus, we talk $_{d/dx}$ and $_{d/dt,}$ fundamentally.

We note that when light travels from a less dense medium to a more dense medium, and vice versa, the speed decreases or increases. Hence,, when a length of rod is dipped into a bowel containing water, the length of the rod appears shorter than the actual dept. We refer to the two cases as refraction, (see Appendix B).

In the case of length contraction" and time dilation", they can be viewed as the same change of speed of light wave, that brings about refraction. Now, for the length contraction", a stationary observer, observer observed in a moving frame that a length is contracted. The original length of the contracted length was recorded only in a stationary frame by stationary observer or moving frame by moving observer in the same moving frame (less dense), and the contracted length was recorded in a moving frame by a stationary observer, a situation of optical superposition of both stationary and moving frame (more dense medium). The superposition of stationary and moving frames is theoretically more compressive, and hence a denser medium than just a stationary frame. Note that in actuality, the length has not changed, just as the length of the rod immersed in a bowel of water did not truly change but, changed apparently. Thus, it can be stated that both time dilation and length contraction are the same phenomena of refraction of light traveling from one medium to a denser medium and vice-versa. Hence,

length contraction and time dilation can be used to predict the resulting change in the velocity of light when moving and stationary frames are involved, (see Appendix B). We note that length contraction is equal to reciprocal of time dilation for the same condition only.)

4. THE SPEED OF LIGHT IS NOT THE HIGHEST SPEED KNOWN IT IS THE SPEED OF ELECTRICAL IMPULSE!

4.1 THEORETIED CONSIDERATIONS

To determine the speed of electron flow through a wire, one must first establish what is being measured. As we know earlier from the text current is the flow of electrons through a conductive substance. Assume for a moment that it is possible to remove a single electron from a wire and identify it by painting it red. If it were possible to observe the progress of the identified electron as it moves from atom to atom, it would be seen that a single electron moves rather slowly. It is estimated that a single electron moves at a rate of about 3 inches per hour, at one ampere of current flow .

The impulse of electricity, however, is extremely fast. Assume for a moment that a pipe has been filled with ping-pong balls (see diagram below in FIG 1). If another ball is forced into one end of the pipe, the ball at the other end of the pipe will be forced out. Each time a ball is forced into one end of the pipe, another ball is forced out at the other end. This principle is also true of electrons in a wire or conductor, no matter the length. If an electron (current) enters one end of a wire, another electron is forced out at the other end. This constitutes current flow.

Fig 1.0 When a ball or electron is pushed into one end, another ball or electron is forced out at the other end almost immediately no matter the length.

For many years, it was assumed that the speed of electrical impulse has a theoretical limit of 186,000 miles per second, or 300,000 kilometers per second, which is the speed of light ‘c’. In recent years, however, it has been shown that the impulse of electricity can actually travel faster than light . Assume that a wire or conductor is long enough to be wound around the earth 100 times. If a strong power source and a switch were connected at one end of the wire and the bulb connected at the other end,(see Figure 2),the bulb would turn on at the moment the switch was closed. It would take light approximately 13.37 seconds to travel round the earth 100 times. This is expressed mathematically below, and thus we can see that the speed of light has been exceeded by electrical impulse.

5.2 Mathematical Expression:

Radius of the Earth = 6.38×10^6m

Circumference of any circle is given as:

$$\text{Circum} = 2\pi r$$

For the earth; we have

$$\text{Circum.} = 2 \times \frac{22}{7} \times \frac{6.38 \times 10^6}{1} \text{ meters}$$

Now 100 times; we have:-

$$2 \times \frac{22}{7} \times \frac{6.38 \times 10^6}{1} \times 100 \text{ meters}$$

Now, speed of light $= 3 \times 10^8$m/s

Time it will take light to travel round the earth 100 time is;

$$T = \frac{\text{Distance}}{\text{Speed}}$$

$$2 \times \frac{22}{7} \times \frac{6.38 \times 10^6}{3 \times 10^8} \times \frac{100}{1}$$

$$2 \times \frac{22}{7} \times \frac{6.38 \times 10^6}{3 \times 10^8} \times \frac{100}{1} \text{ Seconds}$$

$$\frac{44 \times 6.38}{21} = 13.367619 \text{ seconds}$$

$$= 13.37 \text{ Second}$$

This expression shows that it will take speed of light 13.37 seconds to travel round the earth 100 times. But it will take the speed of electrical impulse something less than a second to travel any distance. This automatically disproves that the speed of light is the almighty speed or highest limit of speed known.

6. CONCLUSION:

The speed of electrical impulse which is almost independent of length and time is greater than speed of light, and so speed of light should no more be regarded as the ultimate speed. Length and time are quantities that are more fundamental than velocity, therefore, velocity should be assumed to vary instead of length and time. The idea of time dilation and length contraction are mental and optical illustrations. Time dilation and length contraction are the same physical concept of refraction of light wave traveling from one medium to the other or vice-versa. The resulting refractive index can be used to predict speed up to and beyond the speed of light since there is no yet appropriate apparatus to measure speeds up to and beyond the speed of light.

All concepts that are in one way or the other related to or associated with the concepts of time dilation and length contraction such as relativistic momentum, velocity, energy, mass, dynamic equilibrium, principle of equivalence, general theory of relativity Lorentz-transformation, twin paradox, Fitzgerald contraction etc, are to varying extent illusory and should be revisited in relationship with classical Physics: without time and length, there can be no velocity.

We note that when light travels from a less dense to a more dense medium or vice-versa, the speed decreases or increase. Hence, when a length of rod is dipped into a bowel containing water, the length of the rod appears to be shorter than the original length. Also, the buttons of a block of glass or swimming pool appears to be shorter than the original length. Also, the buttons of a block of glass or swimming pool appears shorter than the actual depth. These are the same cases of time dilation and length contraction.

Finally, the effect of a velocity (including velocity of light) is to cover a distance in space with respect to time. The principle of superposition states that, “when several effect occur simultaneously, their net effect is the sum of the individual effects . And so logically, speed of light cannot remain invariant in all inertial frames of reference. Direct proof of the independence of the velocity of light to the relative motion of light source and observer is not available yet , and this makes the indirect evidence very strong and seemingly very attractive

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APPENDICS

Appendix A:

Galilean Transformation:

This follows the principle of relativity according to classical physics.

$X^1=X-Vt$

$Y^1=Y$

$Z^1=Z$

And $t^1=t$

Where x,y,z and t are variables of stationary frame and x^1,y^1,z^1 and t^1 are moving frame.

Appendix B:Refraction/Refractive Index

Reafraction is the change of direction suffered by wavefront as it passes obliquely from one medium to another in which its speed of propagation is altered.The phenomena occurs with all types of waves,but is most familiar with light waves.The change of direction results from a change in speed of propagation and the consequent change in wavelength .Also,the length of a rod dipped into a bucket of water,as well as thedepth of the bucket containing the water appears shorter than the original length or depth.

The (absolute) refractive index ‘n’ of a medium is the ratio of the speed of light in (free space) or one medium to the speed of the light in another medium.it is also the ratio of original length or depth to the apparent length or depth.

$$N=\frac{\text{speed of light in air 'C'}}{\text{Speed of light in a medium}}=\frac{\text{True length}}{\text{Apparent length}}=\frac{\text{True dept}}{\text{Apparent dept}}$$

For the time –dilation

$$n=\frac{\text{dilated time}}{\text{Real time}}$$

For the length contraction

$$n=\frac{\text{Real length}}{\text{Contracted length}}$$

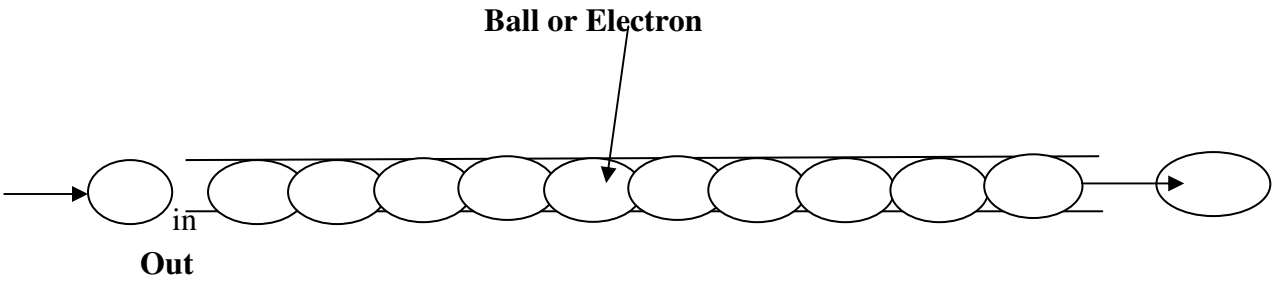

FIGURE 1

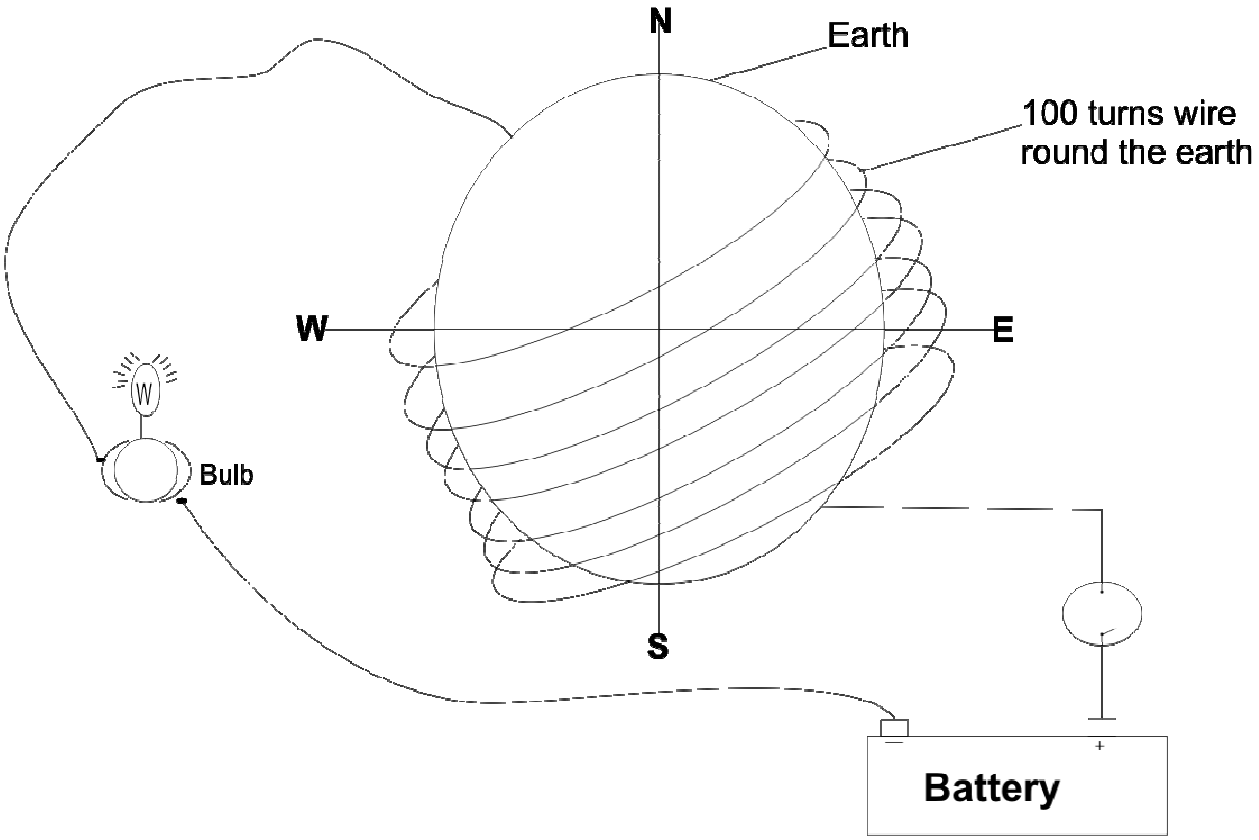

Fig. 2.0 The impulse of electricity can travel faster than light

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