

## Critical Analysis of Special Relativity

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Abstract

In this study, the theory of special relativity is critically analyzed.

Keywords: Light kinematics; Methodology; Pseudo science; Atomically precision Method.

**Introduction:** The special and general theories of relativity remain as they were at the beginning. Generally, the definitions/analyses in the first approach are updated and revised to become more accurate. Developments in science and technology not only increase our comfort, but also improve the scientific perspective. For example, in the field of medicine, there is the "microsurgery method" with the traditional methods. In sensitive operations, surgery under a microscope is preferred in order not to damage nerves and vessels; negative elements are reduced (success is not left to chance). Philosopher and mathematician Bertrand Russell emphasized the definition of "atomic precision method" (APM) for science and philosophy research. In summary, he suggests taking into account the content or elaborative explanation of the information/concepts used in scientific analyzes until they cannot be divided into smaller details (we can call it "scientific decision process"). When we apply this mentality to the special theory of relativity - so to speak - the theory flunks. As we will explain most of the steps in this study, it is described as a "superficial first approach" or "cursory" or almost like an illusionist's trick (like leaving some main factors out of perception).

Light kinematics should be analyzed with at least ten main factors [1]. The analysis made with two postulates may produce fantasy inferences - such as the negative weight - of the phlogiston theory, which is the first definition of burning event without knowing oxygen and oxidation.

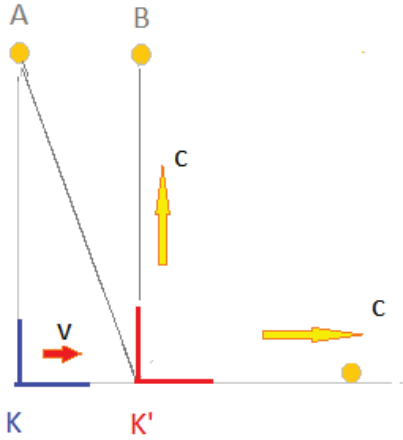
### Analysis by considering atomically precision method (APM)

One of two main postulates of the Special Relativity (SR) Theory - for the inertial frame - is that the source is in fixed velocity and linear motion ("Galilean principle of relativity"). The sample of this principle: if a pebble left from the top of the mast, it will fall to the bottom of the mast in the status of uniform motion of the ship; a result is obtained as if the ship was inert. But this principle is valid only between objects which have mass; that is, due to massively transferring, the pebble maintains the ship's movement direction and velocity as the first horizontal velocity vector. It is not valid in the relationship between photon and its

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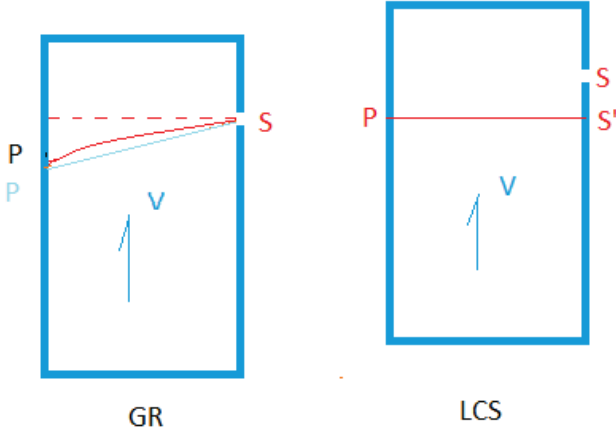
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source motion. A photon does not get any addition from the speed of the light source. When we put a photon instead of a pebble, this photon marks the back of the mast on the ship board. Interestingly, Einstein himself states that he agrees with general relativity (GR) [2].



**Figure-1** In SR, the path of perpendicular photon: K'B

As can be seen in Figure 1, it is understood that the K'B path is preferred for the photon going perpendicular to the source track in the SR (as it is stated that in theory, it will be ineffective due to projection). It seems, the SR's perpendicular photon gets an initial speed from its source just like a pebble. In GR, the perpendicular photon does not get a vectorial component from the motion of the cabinet/chest.



**Figure 2-** In GR and LCS, the perpendicular photon's way according to cabinet' wall.

Einstein leaves this Galilean principle for general relativity. In GR, the SP paths (figure-2) are suggested for perpendicular photon. Two theories, which are in the relationship of complementing each other, contradict each other; by disabling the Galilean principle of relativity, GR refuses one of the main foundations of the special theory of relativity. In the GR, he explains the gravitational lens phenomenon with the prediction that the photon path will be curved in the accelerating cabinet. This topic should be interesting to scientists; because the gravitational lens was proven by the Eddington experiment in the 1919 solar

eclipse. However, the hypothesis of gravitational lens still works without acceleration, that is, even if the elevator cabinet rises with fix speed; (this time the path is a diagonal line; the blue SP line in figure 2 (optionally). In the LCS method and for the external observer, the photon path is S'P. The cabin has moved up a little in the time it took for the photon to reach the opposite wall. Natural reality is S'P; local perception is SP<sup>2</sup>

They say that when a journalist asked him whether it was true that there were three people on earth who could fully understand the theory of relativity, Eddington thought for a while and asked the journalist "who was the third one?" It is possible to take this anecdote of Eddington seriously. The reasons that the theory is still adopted with admiration even today may be difficulty of understanding and the brilliant inferences of the theory. People, who start reading with the intention of understanding the theory, switch to plain reading after a point where they cannot make the logical connection [3] and are now willing to rely on memorization and general adoption instead of self-reasoning and comprehension.

Of course, some academics are able to rationalize other steps of analysis of the theory, as they label and use the measured speed of light as the "moving away from the source" or "exactly relative". This labeling, like a kind of shackle, now holds the person's mind captive. As known, the special theory of relativity was produced based on two postulates. But actually there is a third secret postulate. Since this postulate is secret and under the influence of a dogma. It is not necessary to mention it in the explanations. At this point, if Einstein and the theory supporters were able to operate the scientific decision process (if they could apply the microsurgical method or "atomic precision" ability), they would already be able to see the basic error of the theory. In mechanics (the world automatically becomes the common operating framework) the measured speeds are the speed of moving away from the medium of measurement; no problem occurs. This definition is became entrenched concept in minds because of local events. This habit had used for light velocity too in the SR analysis. When we open this first approach: A car gains its speed by pushing on the road accompanied by friction; the road has an interactive contribution; without a road, a car has no speed. Due to this interaction, the speed of the car is "exact relative" according to the road.

In Latin languages, the concept of relativity is coded with a single word "relativity", a distinction is not emphasized; therefore, the coding "exact relative" and "hypothetical relative" should have been used. Could theory have fallen into the trap of language? Theories of relativity accepted the speed of light as "exactly relative" according to the local place or its source (or as the speed of divergence from its source), and the analysis continued with this acceptance (this is the secret postulate of SR; it is not questioned, it is not mentioned; it is known to everyone or used like a dogma). If Einstein could distinguish

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<sup>2</sup> In the theory GR chest/cabinet is the reference frame; therefore, we say cross/oblique path. In the reality of nature, the photon directed by the perforated plate has no choice but to go horizontal. As a matter of fact, the photon path in the LCS method is S'P (Figure 2); The photon path is fixed and horizontal S'P, and in fact the cabin is slightly displaced.

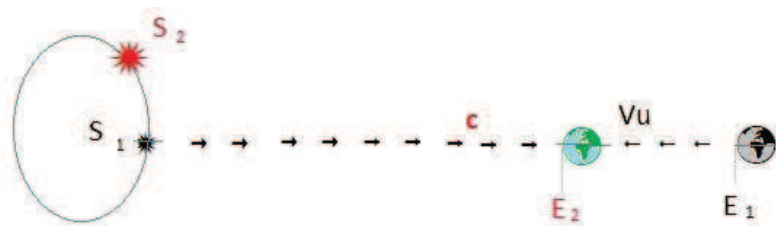
between "exact relative" and "hypothetical relative", he would use the scientific decision (by APM) process, well directed analysis would generated which type of the motion relationship of light source and photon. But, SR and GR used the value ' c ' by the wrong concept that is valid for the car-road motion relationship (Locality effect). When we examine the photon's relationship with its source under the microscope, the source produces and releases the photon; it does not push or throw the photon, and the photon does not push the source. The photon travels with the electro-magnetic cycle as in Maxwell's definition, the object from which the photon provides its speed is not its source; there is no "exact relativity". The environment in which the photon/light provides its speed, that is, which requires the definition of "exact relative", is the "space vacuum". The point where the photon starts its movement (x; y; z, T) must be marked in space; practically in LCS (LCS: Light Coordinate System) (\*). Photon moves away from this point marked in LCS with speed c; the source has passed through this point at the moment  $T_i$ . The type of relative motion with the source of the photon is "hypothetical relativity". Returning to the road-car illustration, the motion relationship of two different cars (A, B) on the same road is "hypothetical relativity"; These vehicles acquire their speed without the contribution of the other, and the increasing/decreasing speed of the distance AB is the arithmetic/vectorial addition of the speeds of these vehicles:  $V_A \pm V_B$ . Player-ball relationship can also be given as an example: When the player throws the ball, its speed is the "exact relative" speed with respect to the ground in the following moments; Since the player can freely move to the new position, the claim of "the distance between the player and the ball changes with only the ball's speed" never be valid<sup>3</sup>. After the moment of emission of the photon, the source can freely move in other directions; the relationship transfers to hypothetical relativity.

(\*) Scientific studies are generally analyzed within a common framework; this is the gold standard. The world we live in has assumed the role of a common framework since the time when curiosity and consciousness were activated. This situation continued with spontaneity and automatically ensured the equivalence of the parameters. On the other hand, the "relativity method" is also an auxiliary/second method; the results of this method can be check by the main method (the common frame method). In the relativity method, one of the actors is selected as the reference role and the relative role is applied to the other actor; this rule is valid in case of equivalence of partners (e.g. between two vehicles on the same road). "Is there equivalence?" this question would can be considered for the preference in SR; but, this has not been done. In the Copernicus/Galilei event, we learned that the one with the higher capacity should be chosen for reference role; we have determined and learned that the earth-centered perception and decision -although visual/experimental evidence- that "the sun turn around the earth" may be wrong (?). This rule seems to have been forgotten for five centuries. When we consider the motion relationship between light and its source, it is necessary to question - first of all - that is there the unity of character between these objects: one is matter and the other is energy. When this relationship is wanted to be analyzed due to the speed of light, in the first approach in SR, the world or the light source (local

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<sup>3</sup> When the player-ball relationship is considered in space conditions, the ball speed is relative to the player due to the action-reaction law. However, if the photon is considered instead of the ball, this Newton's law is invalid; There is no mass interaction.

object, observer, train in a mental experiment, etc.) has been chosen as the reference frame, because of locality. If we apply Galileo's experience, we actually need to assign "the light" as the reference frame due to its universality feature (Light does not accelerate and travels linearly. According to the Galileo principle of relativity, the reference frame for SR is actually "the light"). But light is not a "tangible" object; Can we consider the "space vacuum" for reference role? Space is not "tangible" too. With the abstract mathematical thinking, it is possible to assign "the space" as "Light coordinate system: LCS"; processing/analysis frameworks. Nature never assist a creature's curiosity; But we are not desperate: with the LCS method, a sheet of paper is practically functional for analysis; We can use the LCS in providing the gold standard "common frameworks". Of course, in this case, in order not to violate equality, the universal speed ( $V_u$ ) relative according to the space must be used instead of the local speed  $v$  of the light source or data of other actors. This APM mentality detects that to use the parameters universal  $c$  and local together in the same equation is a violation (in Lorentz transformations).



**Figure – 3** The photon always comes to the observer with speed  $c$ .

The theory of special relativity uses the observer as a main actor or indicator while analyzing the motion relationship between light and its source. Thus, he considers the perceptual constraints of the observer as the natural flow of the event. As known, the speed of light is not infinite, but it is a finite and limited value; we cannot see anything simultaneously. At astronomical distances, time deformation increases by significant amounts. In other words, the observer perceives the events by the speed  $c$  that even if the event is occurring with the speed value interval  $c$  and  $2c$  (figure-3)<sup>4</sup>. He cannot see the event in its real flow, but in a deformed state. To use a visual perception as evidence may be not always accurate. The fact that the earth rotates around its own axis causes the perception that the sun turns around the earth when viewed from the earth<sup>5</sup>. This perception does not actually change the fact that the earth turns around the sun (the testimony or mental power of billions of people is invalid).

This mentality of SR hinders science by claiming and imposing that the rate of change of natural events is limited by  $c$  [4]. Science (which develops and creates wonders) must not insist to continue this shame. While the limit speed in exact relativity is  $c$ , the upper limit for speed in "hypothetical relativity setups" is  $2c$ . The collision speed of particles at CERN is  $c < V_{(COLLISION)} < 2c$ . Photons (which released simultaneously from a star) form a spherical surface whose radius increases with speed  $c$ ;

<sup>4</sup> There are such natural events; For example, the speed of each of the clumps formed after the big bang is at large fractions of the speed of light, and their distances increase with a speed greater than  $c$ . It cannot be claimed that the growth rate of the distance between these objects is limited to  $c$  because the observer cannot see them. Natural phenomena do not care about perception. The diameter of the light sphere, whose radius grows at speed  $c$ , grows at speed  $2c$ .

<sup>5</sup> The reason for the misperception is that the world rotates around its own axis; For this reason, Galileo stands closer to Copernicus. Galileo was willing to sacrifice himself for science.

the diameter of this light sphere will increase with  $2c$ . The claim "The increasing speed of the diameter is the value  $c$ " is contrary to causality. The observers (to be on the CERN particles and the third observer at the collision point) will perceive the collision simultaneously. Simultaneous perception requires that the collision speed becomes the arithmetic addition of the speeds of the particles (However, the hypothetical observer on the particle cannot perceive any flowing bigger than  $c$ ). Nuance has high effective. The motion relationship between light and its source is also in the definition of "hypothetical relativity", there is no "exact relativity" and the distance between the source and the photon changes with the speed at  $c \pm V_U$  (even if, the  $c$  value is found by a measurement: discussion sec. 4).

In SR, photons going in different directions according to their source had not been analyzed; It is stated in a sentence that it is ineffective only for the photon travelling vertically "due to projection". Whereas the methodology always requires the analysis for other directions/options. If the scientist prefer reduction method for simplicity; thereafter, the superposition processing must not be neglected. When we do these analyses –for example, while the photon goes in the (+)  $x$  direction and its source goes in the (-)  $x$  direction – the tempo of time (although the slower tempo remains the same as in Lorentz's calculation, and for the same photon- :  $T'_{(\text{opposite direction})} > T'_{(\text{same direction})}$  . That is, the clock in the relative  $K'$  system has to show two different times for the same moment, which is against causality. If other directions are considered, the relative clock cannot cope with this large number of different times. Those (who claim that SR's inferences works in nature or life) pass to off-side position.

In the photon and source motion relationship, the intermediate distance changes with the value  $c \pm V_U$ ; but when the speed of the photon is measured, the  $c$  value is found again. Because the current mirrored round-trip and continuous photon flow measurement experiment can only measure the speed of light relative to the vacuum of space or LCS (it cannot measure the speed at which it moves away from its source). This option has "simple and straightforward" experimental evidence: The measurement results are isotropic; that is, it is independent of direction. It is a shallow habit to interpret the result of the present experiment according to the initial intention; with the same mentality, if the initial intention was to "measure the speed of light relative to the vacuum of space", the same experiment would be used and the resulting value " $c$ " would be defined as the universal speed of light. In order for the measurement experiment to measure<sup>6</sup> the rate of change of the intermediate distance, a unidirectional light speed measurement experiment or theoretical analysis is needed [5].

Using the principle that "the laws of physics are the same everywhere in the universe," SR claims that the speed of light will be at the same  $c$  value with respect to both the source and the observer, or other reference frames. This principle is plausible; When we examine SR's this phrase with "atomic precision", the accurate expression is as follows: "The current mirrored measurement experiment gives the universal speed of light for everywhere in the universe." SR has added more meaning/interpretation beyond this simple determination or

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<sup>6</sup> To research what hypotheses other than the initial intention an experiment supports may be a new rule of methodology.

this principle; In other words, SR actually wants to apply this principle for "the speed of moving away from every frame". Whereas the subject of this principle is the "measuring". The nuance is within the human cognitive capacity with APM.

Why are Lorentz transformations imperfect? In Lorentz transformations, the universal light speed  $c$  and the source's local speed  $v$  are used in the same equation; this is against scientific integrity/equivalence. But there is a more important flaw: When the  $L'$  and  $t'$  values in the relative  $K'$  system calculated numerically in Lorentz transformations are divided,  $L' / t' = c = \sim 300\,000$  relative km / relative seconds are obtained. In the reference  $K$  system,  $L / t = c = 300\,000$  reference km / reference second. This is the main claim of Lorentz and the theory. But:  $300\,000$  reference km / reference second  $\neq$   $300\,000$  relative km / relative second. **It is not equal.** In other words, the number  $300\,000$ , with different units, does not indicate that these speed values are equal. In normal reading, the mind can be deceived. Because units contain the potential power of the parameter; it's like the "purchasing power of money". If,  $300\,000$  USD is equal to  $300\,000$  Japanese yen, Lorentz and Einstein are right.

Lorentz transformations are not produced by following the systematic formula. They are mathematical equations. In formulas, variables have units and the unit of the resulting data is obtained from the operation of these units. Variables in mathematical equations do not contain units; Lorentz transformations therefore focus on finding the number  $300\,000$ ; Units are added by mental error.

Light is a derivative of energy. Although its speed is not infinite, it is high enough to be very difficult to manage;  $\sim 300\,000$  km per second. That's why it is necessary to use a continuous photon flowing in experiments. However, methodology requires using a single and defined object (photon) in experiments. It is also important or essential to direct with a perforated plate filter. When there is a continuous flow of photons, it cannot be guaranteed that the photon at the beginning of the experiment is the same as the photon that determines the result. Similarly, in the Michelson-Morley interferometer experiment, it cannot be guaranteed that two photon packets that reaching the interference screen are halves of the same photon packet; they can be emitted at the moments  $T_1$  and  $T_2$  [5]. A single photon can be considered as a photopsy of a photo-flash in theoretical analysis. In experiments, the first point marked on the analog film can be taken into account.

## Discussion

- 1- In special relativity, there is an actor that moves linearly and at a constant speed: the light itself; according to Galileo's principle, the inertial frame is light; light does not even accelerate.
- 2- SR emphasized the necessity of four-dimensional analysis on a universal scale; Four-dimensional analysis prioritizes evaluating the flow of the event by watching it like a



movie. Traditional scientific methods had analyzed through instantaneous balances. It cannot be said that SR and GR go beyond this traditional attitude; because in the SR, the analysis was realized by a photograph at  $T_2$  moment. Somebody uses the diagonal path of the photons in a moving train to find the Lorentz equations with Pythagorean formula. But the photons that are directed by a perforated filter do not travel on diagonal path. They will be lined up like the steps of a stair. And in this status the amount of the way of photon remain the same; it doesn't diagonally increases. Similarly in GR cabinet, the positions of the photon at the moments of  $T_1$  and  $T_2$  are considered and these points are mentally unified as curved or diagonal. The motion of the photon is not considered for its every moments like a film. When applied the APM mentality, it can be understood that the consecutive photons directed by the perforated plate filter would travel like the risers of a stair and the total photon path would not actually change. This is a contradiction, even though the GR assign the cabinet for the reference frame.

- 3- The special theory of relativity does not allow any cosmological analysis due to the asynchronicity problems of celestial objects. The LCS method allows cosmological analyses with some assumptions and performs a multi-factorial and detailed calculation of the age and dimensions of the universe [6] [7]. The LCS method supports multiverse intuitions.
- 4- The observer side of SR's belief that "The speed of light is the same for every frame and observer" is confirmed in the LCS method. As can be seen in Figure-3, the distance which is traveled by the photon at the time interval  $T_1$  and  $T_2$  perception is  $S_1E_2$ , and it is scanned entirely with the speed of the photon at  $c$ . The distance between the observer and the source at time  $T_1$  was  $S_1E_1$ ; this distance is jointly taken jointly with the speeds  $c$  and  $V_u$ ; however, when the observer is an actor of the event/analysis, the  $E_1E_2$  distance may - at first thinking - remain out of analysis.
- 5- In the light speed measurement experiment, the mirror (that allows the photon to come back to the measurement medium) can be considered like an observer. In this case, in the speed of light experiment measured with a mirrored and continuous photon stream, the travel and return distances traveled by the photon are actually scanned only with speed  $c$  like in the figure -3. When the measurement experiment is examined with the LCS method, it cannot be guaranteed that the experiment will be realized with a single same photon. In addition, the distance used in the measurement is too short/asymmetric according to the very high speed value of light (This situation is effective in the LCS analysis of the experimental setup). The photon that reflects from the mirror and returns to the rotor due to the resultant motion of the Earth on a universal scale or according to the LCS and determines the time may not be the photon that represents the initial  $T_1$  moment of the measurement. The photon in question may have been released at the moment  $T_2$ . In this way (rigid distance between the light source and the mirror =  $L$ ), the moment  $T_2$  can be elected so that the measurement always gives the result  $2L / c = T_2 - T_1$ . In other words, there



is an option to perform the measurement experiment with two separate photons. There seems to be no end to the chey that light plays with the human mind.

- 6- In the field of science, articles are approved by referees. Since the in-depth analyzes that the referee must make are shared in this study, readers can act as referees themselves. Those who need references from third persons will wait for "approval".

## Conclusion

As can be seen from this report, the special theory of relativity is a first approach. The main subject should have been "light kinematics". Light kinematics analyses require at least ten main factors. SR analyzed with the 2 + 1 (hidden) postulates. For this reason, although SR inferences play a hindering role especially for theoretical physics and cosmology sciences, they have become an idol and motivational tool for people to be interested in science due to its inferences such as "time travel". Moreover, the exposure of its flaws became the seed of valuable new rules for methodology; this is important. Humanity has lingered for more than a hundred years; But SR will be the reason for humanity to level up its scientific performance.

The reason why the mistakes of the theory have not been noticed for more than 100 years and remained exempt from scrutiny can be shown as the lack of comprehending at level of internalization, the misdefinition of speed measurement as the speed of departure from the local source, and the disinformation of some with their articles supporting the theory. Einstein declares at the beginning of his book [8] that he adopted Maxwell's hypothesis about the propagation of light; But SR theory offers a theoretical explanation for the Fitzgerald contraction, which revives and supports the ether hypothesis. The beginning and the conclusion contradict each other. Since it is not expressed, even this situation supports the opinion that the essence of the theory has not been read carefully. Besides, the relativity theories are guarded by the power of the archetypal mystery passion.

In the future, relativity theories will be described as "pseudo Science" and will take their place in the history of science. However, their contributions to methodology will not be forgotten; probably, referred to as "second Galilean event".

Nature cannot be deceived (R. Feynman)

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