

## Limit velocity: 2c

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**Abstract:** Einstein had determined the speed of light for the speed limit and even offered a reductive formula. For the relative speed definition, the speed of light limit applies. In this study, the "hypothetical relativistic" speeds are defined and the limit of this speed is shown to be  $2c$ , and a false notion in cosmic analyses and CERN is clarified.

**Introduction:** Newton did not suggested a speed limit and Newtonian physics remained constrained. Einstein considered the highest speeds and carried the physics to the next level. However, In Special Theory of Relativity (SR), Einstein accepted all velocities in their "genuine relative" context, and his concept of upper limit put a kind of blockage on physical science. In CERN, for this reason, the upper limit for the collision speed or decreasing speed of the distance between these two particles (that accelerated at large fractions of the speed of light) has been accepted as  $c$ . This mentality says that the observer is a main factor in relativity analyses and the perception restriction of an observer is considered as a real physical event. However, the observer cannot see an event flow greater than  $c$ ; since the speed of light is limited and finite and the image can come to the observer's eye only with the speed of light (Figure 1). That is, even if a physical event realizes with a speed of  $c < V_R < 2c$ , the observer or the observer will be able to see that the speed of  $c$  allows. It is a humanly habit to respect for the visual events (remember the dogma "The sun turns around the earth").

### Theoretical and applied review

A car acquires its velocity ( $V$ ) by pushing the road, and the velocity of the car is defined relative to the road; since the road is the mandatory/interactive factor for this velocity the velocity  $V$  which is the distancing speed from the starting point for following times, this is the "genuine relative" velocity value. When we throw a pebble forward from this car with a speed of  $v$ , the resultant speed of the stone relative to the external environment or the road becomes  $V + v$  due to mass transfer. However, in the limit state  $(V + v) < c$  must be. Einstein's equation is intended to provide this  $[v' = (V + v) / (1 + V v/c^2); [1]]$ .

On the other hand, a different definition/type of relativity is possible; it is a phenomenon / event existing in nature: when two vehicles (A; B) are considered on the same road, they will acquire their specific relative speed due to the road. However, when the relativity calculation method is used, the speed of increasing/decreasing of the distance AB becomes  $V = V_A + V_B$  (In classic relativity method, when one of them is assigned for reference role). These vehicles change the distance jointly; this speed is different from the "genuine relativity" character, we can define this status with the new cod "hypothetical relativistic". Einstein and majority

ignored this type of relativity and used the  $c$  limit for all velocity. This arithmetic adding method is valid; because the observers on these vehicles and at the collision point perceive the collision at the same time, and this simultaneous detection is decisive for the arithmetic sum of the velocities. The upper limit of hypothetical relative velocity for some natural physical phenomena is  $2c$ ; Although the speed of each of the partner objects is less than  $c$ , the increasing/decreasing speed for the distance  $AB$  can be  $c < V_{(RESULTANT)} < 2c$ . However, in the case of measurement - especially for light - Always it will be found the value  $c$ ; because the current measurement experiment can only measure the "genuine relative" speed of light according to space [2] (it cannot measure the distancing speed from its source; experimental evidence: the measurement results are isotropic).

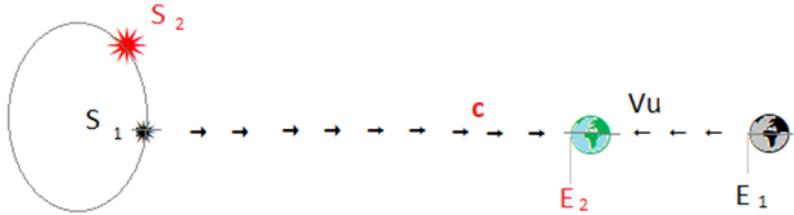


Figure 1- The photons always arrive to the receptor/eye with speed  $c$ .

In Figure-1, it is seen that the distance  $S_1E_2$  is scanned with the speed  $c$  (the time of  $T_2 - T_1$ ). Actually, the distance at the moment  $T_1$  was  $S_1E_1$ , and this distance is jointly decreased by this photon's speed  $c$  and the observer's speed  $V_u$  ( $V_u$  is the resultant velocity of the observer at the universe scale). The image transmitted with light arrives to a receptor/eye with the speed of  $c$ ; but the intermediate distance ( $E_1S_1$ ) at the time  $T_1$ , the beginning of the Event, is taken with velocity  $c + V_u$ ; the perception of the observer is limited to  $c$ . When the observer is the perceiver of the experiment and thus the determining factor of the event, as if, the distance  $E_1E_2$  is excluded from the analysis.

For the "hypothetical relativistic" speeds, the limit speed of resultant velocity is  $2c$ . It is not a mention that each one of event's partners travels with this value of speed. Photons emitted simultaneously from a star form a sphere surface whose radius increases with velocity  $c$ ; the diameter of this sphere of light grows at the value of  $2c$ . In the light sphere, the -virtual- eye (which located at one tip of the diameter) will sees the other photon on the against tip of diameter, like an image at the sphere centre (although the physical event actually occurs at a speed of  $2c$ ). When we apply this mentality to big bang cosmology (figure-2), for example, the radial velocity of a celestial body on the  $x$ -axis is  $V_{RADIAL} = V_{OBSERVER} + V_{GALAXY}$ . In the case of  $VR > c$ , it is not necessary to reduce this value to a value smaller than  $c$  by Einstein's equation [1]. The observer component of the radial velocity is the cosine of the universe expansion velocity vector at the time of observation; likewise, the radial velocity component of the target object is the cosine of the ancient universe expansion velocity vector [3]. For example, the observer component of the radial velocity is simultaneous (eg.  $0.60c$ ), if the target galaxy/cluster is  $0.72c$ , the resultant speed of distancing; that is, the radial velocity, is  $1.32c$ . In the real state of the event, free from observer perception restrictions (by God's eye), the

intermediate distance change rate is  $1.32c$ , and there is no need to reduce this speed because it cannot be faster than  $c$  (Figure-2).



Figure 2- The limit of the increasing speed of the distance between celestial bodies is  $2c$ .

In CERN, the particles are accelerated at the high speed (to nearly  $c$ ); these particles collide with the faster speed value than  $c$ . The flow rate of the event is between  $c < V_{\text{COLLISION}} < 2c$ .

## Discussion

In scientific studies, giving the role of reference to the one with the larger capacity or using a common processing framework is a methodological requirement. Giving a reference role to a local object (light source or train and elevator car) in the special/general theory of relativity violates this principle. In addition, in the relationship between the photon and its source, the speed of the photon is labeled/used in the definition of "genuine relative" to its source. However, the photon and its source relationship is actually "hypothetical relative" (SR used this relationship to mean "genuine relativity"). However, as in the player-ball relationship; the player, after throwing the ball, can freely move in all directions; the speed of the ball is not "genuine relative" according to the player; it cannot be said that "the speed of change of the distance between the ball and the player in the flowing moments of time is the speed of the ball" (the speed of the ball is relative to the ground; the player-ball motion relationship is "hypothetical relativistic"); Similarly, a photon and its source relationship is "hypothetical relativistic"; but in the SR, there is a claim that "the distance between the source and the photon is always increases with  $c$ "; as if, the relationship has been "genuine relativity".

Of course, when we examine the player-ball relationship in space conditions, while the player throws the ball, the ball gives some speed to the player -in the opposite direction- in proportion to their masses. In space conditions, the rate of change of the intermediate distance is of an "genuine relative" character; While this conclusion may convince many, Newton's third principle of action - reaction applies only to objects with mass. In the case of light, this principle does not apply because the photon has no measurable mass (the photon does not accelerate by pushing the source; the light source does not throw the photon either), and the distance (between the photon and the light source) increases with the value  $c + V_{\text{YILDIZ}}$ . Einstein and the majority label/use the measured value of  $c$  in SR, as the speed of moving away from the source for the next moments too. This mentality is a mechanics science habit (a kind of dogma). Whereas, the measurement made with a mirrored, round-trip and continuous photon stream device gives the speed of light only in the vacuum of space (not the speed of moving away from its source or its "genuine relative" speed with respect to its source) [4]; experimental evidence is that the measurement results are direction independent (isotropic).

## Conclusion

In Latin languages, the content of "genuine/hypothetical relativity" is coded with a single word (relativity). However, in addition to the "genuine relative" type of relativity originating from mass interaction and transference, there are also natural events in the "hypothetical relativistic" content that is not associated with mass transfer. In essence, the upper limit of genuine relative speeds is  $c$ ; the upper limit of the hypothetical relativistic velocities is  $2c$ . This nuance refutes the special theory of relativity; because the photon motion relation with its source is not "genuine relativity"; falls into the category of "hypothetical relativistic" events. In the later moments of the flowing time, the distance between the source and the identified photon increases or decreases with the velocity value of  $c \pm v_U$  (The known/specific measurement experiment can measure the speed of the light according to itself or to the space [5]; therefore, the measurement result cannot be a proof for SR).

For over a hundred years (and still?) Einstein's upper speed limit was  $c$ , in line with the observer restriction. In this study, the definition of "hypothetical relativity" - for some physical events in nature - is emphasized and it has been shown that the upper limit of the hypothetical speeds is  $2c$ . These definitions paved the way for cosmological analysis in company with the LCS (Light Coordinate System [6]) method and gave the opportunity to determine the age of the universe in a multi-factorial and detailed analysis [3].

## References

### References

- [1] Einstein A., İzafiyet Teorisi, Say yay. Çev. G. Aktaş, 1998 5. Bas., İst.
- [2] "Weakest Point of Special Relativity" <https://www.researchgate.net/publication/339428643>
- [3] Ersan Ö. Ersan I. Physicsessays, **26.1**, 49, 2013
- [4] "Alternative Interpretation for Light Experiments" <https://www.researchgate.net/publication/365343613>
- [5] "One Way Speed of Light" <https://www.researchgate.net/publication/342438271>
- [6] "Secret of Special Relativity and new method" <https://www.researchgate.net/publication/367175962>