RELATIVITY OF SIMULTANEITY: DISANNULMENT THEREOF

Relativity of Simultaneity

Definition

Relativity Theory's foundation consists of what is referred to as the "Relativity of Simultaneity". It asserts that 2 events that are considered simultaneous in one reference frame may not be considered simultaneous in another reference frame.

Accordingly, Relativity holds that there is no such thing as absolute simultaneity.

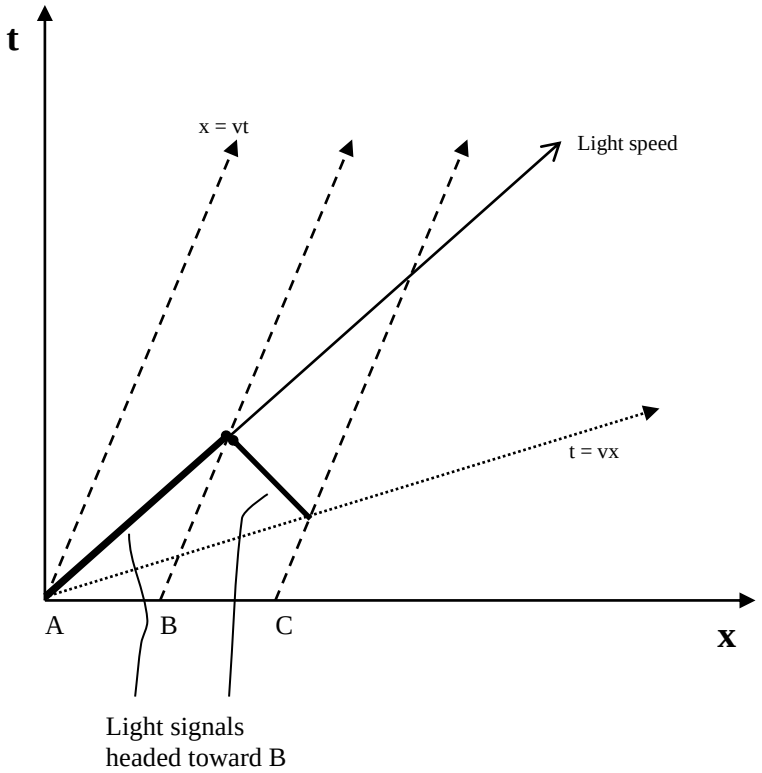
Exemplification

Three people A, B and C (hereafter also referred to as "the system") are positioned on the x axis, with B midway between A and C. They are moving together to the right. At an agreed-to time according to each of A and C's clocks, A and C fire a light signal to B.

Because B is moving toward C's signal and away from A's signal, C's signal has a shorter distance to travel. However this is offset by the fact that C's signal just happens to be fired by just the right amount later than A's signal for the 2 signals to arrive at B at the same time.

B therefore concludes that the 2 signals were fired at the same time and, given that they were fired at an agreed-to time according to each of A and C's clocks, also concludes that A and C's clocks are synchronous.

Position-to-time graphical depiction:



Relativity of Simultaneity (Cont.)

The philosophy

According to the Relativist, B's conclusion that A and C sent their signals at the same time, materialises as fact because it is not possible for B to know otherwise. (This is coextensive with another of the Relativist's assertions, namely, that it is not possible to know whether an inertial system is moving on an absolute basis.)

The line $t = vx$ which connects A to C and which declares all clocks along it to be synchronous then plays a central role in the algebraic derivations of the Lorentz Transformations, which are coextensive with Relativity Theory.

Why the philosophy is wrong

The philosophy is wrong because:

1. It is indeed possible to determine whether an inertial system is moving on an absolute basis.

2. Light will only work as a medium of synchronisation when the system is stationary on an absolute basis.

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Absoluteness of Simultaneity

The correct methodology

With reference to the example we have been discussing, when A and C each fire their light signals, they must also fire a massive entity.

If the 2 masses arrive at B at the same time, A and C's clocks are synchronous (regardless of whether the system is moving on an absolute basis). If the 2 masses do not arrive at B at the same time, A and C's clocks are not synchronous (regardless of whether the system is moving on an absolute basis).

If the difference in arrival time at B between the mass sent from A and the mass sent from C, is equal to the difference in arrival time at B between the light sent from A and the light sent from C, then the system is stationary on an absolute basis. Otherwise it is moving on an absolute basis.

The comprehensive picture

With reference to the table below, the 4 possible scenarios are:

1. C's signals sent same time as A's signals. System stationary on an absolute basis. (Cell A1)
2. C's signals sent same time as A's signals. System moving on an absolute basis. (Cell A2)
3. C's signals not sent same time as A's signals. System stationary on an absolute basis. (Cell B1)
4. C's signals not sent same time as A's signals. System moving on an absolute basis. (Cell B2)

Legend:

AtM_C Arrival time at B of mass sent from C
AtM_A Arrival time at B of mass sent from A
AtL_C Arrival time at B of light sent from C
AtL_A Arrival time at B of light sent from A
St_C Send time from C
St_A Send time from A

		1	**2**
		$[AtM_C - AtM_A] = [AtL_C - AtL_A]$	**$[AtM_C - AtM_A] \neq [AtL_C - AtL_A]$**
A	**$AtM_C = AtM_A$**	$St_C = St_A$ System stationary	$St_C = St_A$ System moving
B	**$AtM_C \neq AtM_A$**	$St_C \neq St_A$ System stationary	$St_C \neq St_A$ System moving

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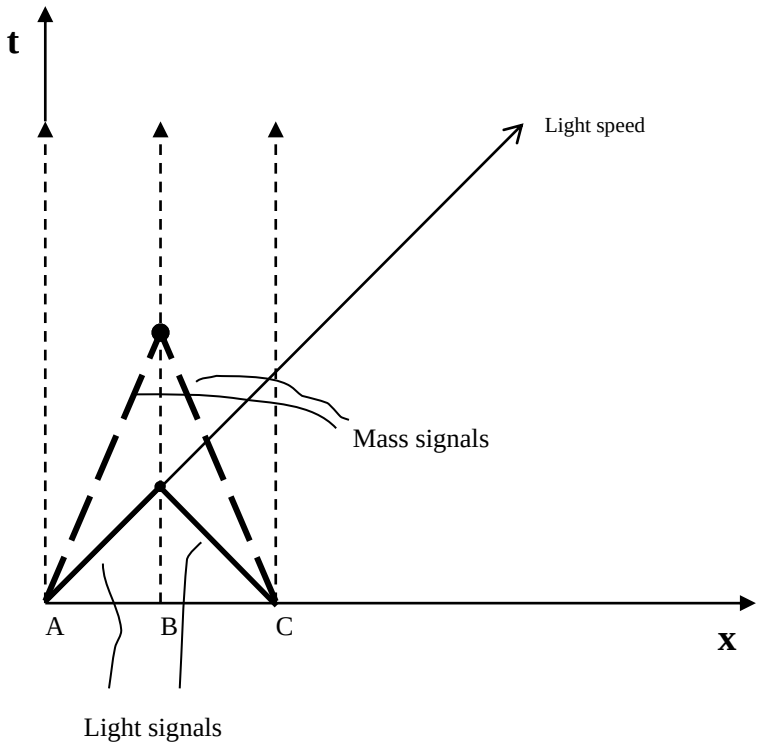
Absoluteness of Simultaneity (Cont.)

The comprehensive picture (Cont.)

The following graphic depicts cell A1 in the table.

The arrival of the 2 masses together at B indicates that A's mass was sent the same time as C's mass, and therefore that A and C's clocks are synchronous.

That the difference in arrival time at B of the 2 masses is equal to the difference in arrival time at B of the 2 light signals (both differences are 0) indicates that the system is stationary (on an absolute basis).



RELATIVITY OF SIMULTANEITY: DISANNULMENT THEREOF

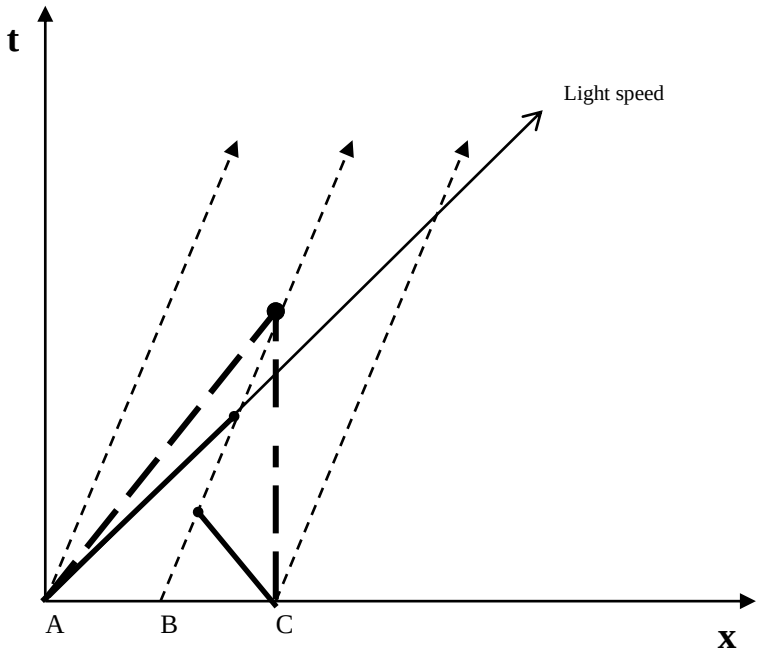
Absoluteness of Simultaneity (Cont.)

The comprehensive picture (Cont.)

The following graphic depicts cell A2 in the table.

The arrival of the 2 masses together at B indicates that A's mass was sent the same time as C's mass, and therefore that A and C's clocks are synchronous.

That the difference in arrival time at B of the 2 masses is not equal to the difference in arrival time at B of the 2 light signals (the former is 0, the latter > 0) indicates that the system is moving (on an absolute basis).



RELATIVITY OF SIMULTANEITY: DISANNULMENT THEREOF

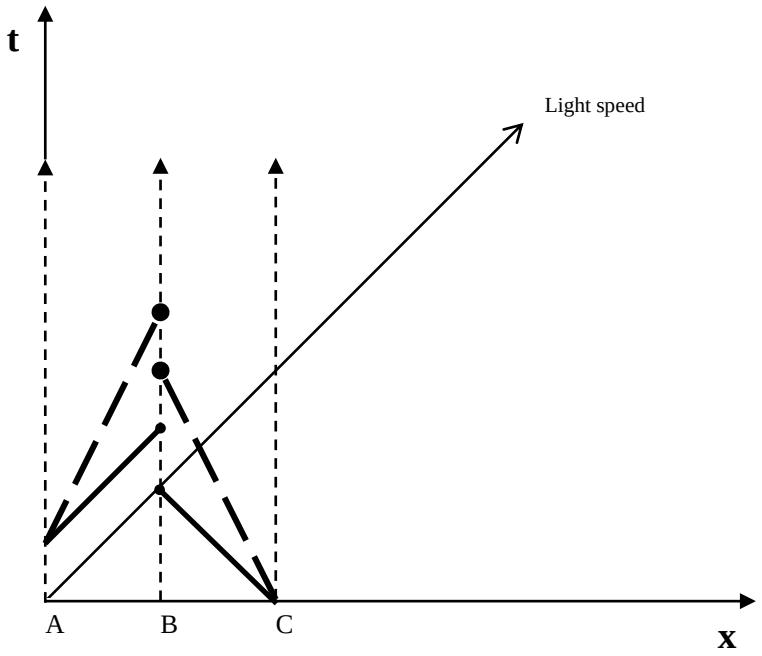
Absoluteness of Simultaneity (Cont.)

The comprehensive picture (Cont.)

The following graphic depicts cell B1 in the table.

The arrival of the 2 masses at different times at B, indicates that A's mass was sent at a different time to C's mass, and therefore that A and C's clocks are not synchronous.

That the difference in arrival time at B of the 2 masses is equal to the difference in arrival time at B of the 2 light signals, indicates that the system is stationary (on an absolute basis).



RELATIVITY OF SIMULTANEITY: DISANNULMENT THEREOF

The Absoluteness of Simultaneity (Cont.)

The comprehensive picture (Cont.)

The following graphic depicts cell B2 in the table.

This is the example we began with in this paper, and thus it is here that we most particularly disannul the Relativity of Simultaneity.

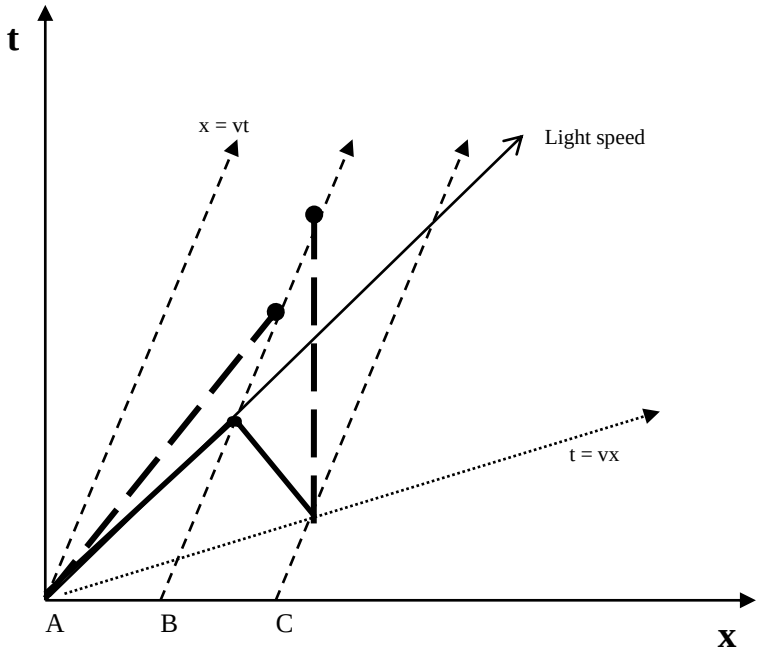
The arrival of the 2 masses at different times at B, indicates that A's mass was sent at a different time to C's mass, and therefore that A and C's clocks are not synchronous.

That the difference in arrival time at B of the 2 masses is not equal to the difference in arrival time at B of the 2 light signals (the former is > 0, the latter is 0) indicates that the system is moving (on an absolute basis).

Thus using this methodology, B would conclude that because the 2 masses did not arrive at the same time, they were not sent at the same time, and that given that the light signals were sent the same time as the masses, the light signals were also not sent at the same time.

B would therefore conclude that the reason for the arrival of the light signals at the same time was simply because the system is moving (on an absolute basis).

Accordingly, the line t = vx is of no import and the Lorentz transformations that are based upon it necessarily null and void.



Conclusion

We have shown that simultaneity is in fact not a relative concept at all, but absolute.

Commensurately, its definition is rooted not in the empirical, but the existential: when a whole is cut in 2, the resulting 2 halves come into being simultaneously**:** whether anyone watching happens to be flying by faster than a speeding bullet, is neither here nor there.

The Relativity of Simultaneity is the foundation of Relativity Theory. We have shown that it is false, therefore we shown that Relativity Theory is false.

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