

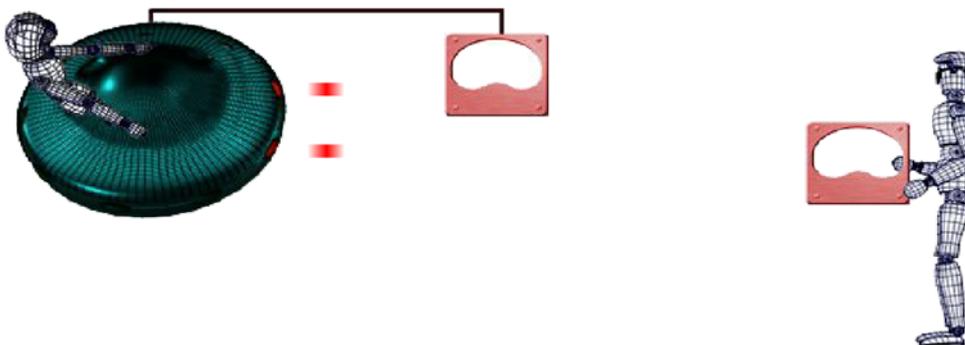
Ambiguity in Special Relativity: lightspeed constancy

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There are numerous ambiguities in special relativity (SR), such as the ambiguity of claim of the lightspeed constancy (in vacuum).

1. Wolfe's teaching

As presented by Professor Joe Wolfe [1], he has Jasper in his rest frame watches Zoe in her spaceship moving by.



Zoe

Jasper

Wolfe says [2] : “How weird is the invariance of the speed of light? Is the principle of Special Relativity really counter-intuitive?”

He then seeks to answer that question and says: “It depends on how one expresses it, and to whose intuition one appeals. For example, it does seem counter-intuitive that the speed of light does not depend on the motion of the observer. In our animation, Zoe turns on the headlights of her spaceship. She measures the speed of light from her headlights as c with respect to her. Jasper sees her travelling towards him at (let's say) v . He measures the speed of light from her headlights as c , not $c+v$, but just c . Surely this is counter-intuitive? Maybe even crazy? Surely relative speeds add up? Let's consider first two more familiar cases.”

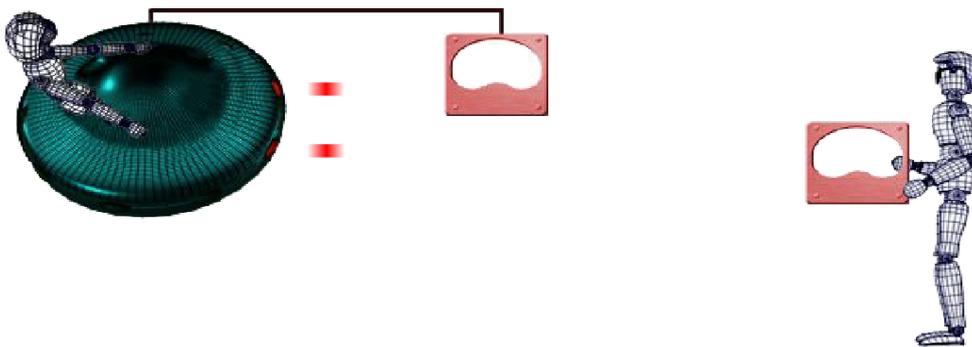
The familiar cases he wants to consider are sound waves and arrows which are not relevant.

What he has said regarding Jasper and Zoe is totally ambiguous.

It has been the methodology of many relativists and teachers of relativity to be ambiguous, and that has been a big contributor to cover up the mess.

Jasper measures light speed emitted from Zoe's spaceship, but relative to what? Does he measure it relative to a fixed point in his rest frame or relative to a point in Zoe's spaceship (that is moving relative to him). This is left completely ambiguous/unclear.

i.e. relativists have been messing up discussion of reference frames.



The question to ask is: for Jasper relative to a non-moving point in his rest frame is the speed of the light = c (?), if it is that then relative to a moving point of velocity v along the same direction as that point is moving surely it cannot be c as well.

This is left unexplained, do we have nonsense math of form that $c+0 = c-v = c$, or do we have c relative to the non-moving point as c and relative to the moving point as $c-v$, where this $c-v$ is less than c .

If Jasper says it is c both times, surely he is talking nonsense.

The second postulate does not make anything clearer, it just says speed of light constant or some such thing, never saying whether that is relative to a non-moving or moving point etc. Going by Newtonian physics, if we say c in the first case then we say $c-v$ in the second case (with $c-v$ less than c).

Wolfe on his teaching of relativity he says: "At this stage, many of my students say things like "The invariance of the speed of light among observers is impossible" or "I can't understand it". "

Well of course it is nonsensical in the ambiguous way it has been presented.

However, he of course defends the nonsense he presented and says: "Well, it's not impossible. It's even more than possible, it is true. This is something that has been extensively measured, and many refinements to the Michelson and Morley experiment, and complementary experiments have confirmed this invariance to very great precision. As to understanding it, there isn't really much to understand. However surprising and weird it may be, it is the case. It's the law in our universe. The

fact of the invariance of c doesn't take much understanding: what requires understanding are its consequences, and how it can be integrated into what we already know."

i.e. he appeals to experiment to support the nonsense, but that just means the experiments are being interpreted by nonsense.

2. SR attacker versus SR defender

(SR attacker is person attacking SR, and SR defender is defending SR.)

Some feeble attempts at defence of relativity I have encountered are as follows:

1. What Wolfe says is not meant to be precise.
Reply: It does not seem to be precise anywhere in the relativity literature, and seems to be relativist methodology of being imprecise i.e. vague and ambiguous.
2. We should look at the meaning of sentences have in context.
Reply: But in the case of relativity, the point is that terms are often vague and taking on different meanings throughout a calculation i.e. terminology is messed up.
3. It is Einstein being ambiguous, not SR.
Reply: SR is usually interpreted by relativists as what Einstein says in his papers on relativity. Going by Einstein such things as the variables are messed up so as to keep lightspeed (in vacuum) constant etc. It seems an intrinsic part of SR to keep things messed up and ambiguous. And that is of course a Logical fallacy.
4. There are mistakes in teaching of SR and in popular accounts presented to us by relativists.
Reply: This is almost meeting my point-of-view: yes the teaching of relativity is bad, but it is worse than just that, it seems to be intrinsic part of relativity that it is a mess. What relativists tell us is often misleading and false because their starting point is from Einstein's formulation of SR that is a mess. No formalism seems to have been presented by the relativists for SR that is not a mess. Einstein kept changing his mind about issues like aether, and have never been made clear by him or anyone else, leaving SR as ambiguous. [3] The teaching of SR is bad, because "they" try to gloss over the mess in it, and not make it explicitly clear that there is a mess. Also trying to fix SR without explicitly stating that is what "they" are trying to do is really a Logical fallacy of moving the goalposts.

Now based on email communications [4] :

Person 1: I agree that if we were to engage in a line by line analysis of Einstein's 1905 paper that would produce a lot of ambiguous points and issues of conflicting interpretation. That is obvious from the last 100 years of controversy and discussion that has not produced any agreements as to the meaning of SR. If one tries to resolve the disagreements by reference to Einstein's 1907 paper, and his other papers, one is faced with the same problem. Particularly since the 1907 paper is significantly different from the 1905 paper. One could argue that they are two different theories and so there are different versions of SR due to Einstein. The significant fact about Einstein and SR is that Einstein never produced a definitive formulation of his SR theory. That job was left to others who didn't do a better job than he did. This leaves us in a quandary. It seems very clear that we cannot critique Einstein's papers and writings on SR, because he never produced a definitive formulation of his theory. It also seems that we cannot critique other versions of SR either, since there is no agreement as to which one is the correct formally complete version of SR, since there is disagreement between them so as to cover up the contradictions and hence the ambiguity as to

what is the definitive correct version of SR. In the meantime, we have lots of different confusing and contradictory versions that make no sense, as for example the one that you cited from The University of New South Wales.

Person 2 : Einstein's relativity in the way that Einstein described it is somewhat ambiguous; it was not presented that well. But one can bypass Einstein's work by reading Poincare's version that came several years earlier.

I call person 2's point-of-view as "deviant" because it does not seem to conform to the mainstream point-of-view in relativity: that Poincare's theory is a different theory to Einstein's. After all if it were "Poincare's relativity" then it would be called such instead of "Einstein's relativity." So, such a deviant viewpoint only creates more confusion in relativity.

Person 1: There is no definitive description of the correct SR formalism that resolves the contradictions inherent in the Einstein version of SR.

Person 2 deviant respond is: Forget Einstein. If you don't like an action movie, do you keep watching it ad vitam aeternam (Latin for: to life eternal)? No, you try a different one! They are all action movies, but some are just better than others, all relative to the viewer! For instance, take the simpler version of SR as the Lorentz transformations with the physical meanings of the parameters.

But it is not really possible to "forget Einstein", because modern physics said by many people to be based on him, and hence has been very influential. By going to a "simpler version" is presumably meant: Poincare's theory; but that is not Einstein's SR. And that is just going by some other theory than the mainstream supposedly goes by, and is the fallacy of moving the goalposts.

Person 2 also decides to believe: SR is NOT what Einstein said it is. SR existed way before Einstein, way before the dinosaurs, just like Pythagoras's theorem existed way before the dinosaurs. SR was discovered by many independent people.

Once again I call it "deviant", because I am sure it is a viewpoint contrary to most relativists. In the relativity literature for instance, we find relativity credited usually solely to Einstein.

Person 1 response to person 2: I don't think that we can take seriously this Platonic theory version of SR as a pre-existing idea in the mind of the universe, and so it is correct because of that. Physics is a human invention and so is subject to being mistaken. In the case of SR it seems obviously to be mistaken since we cannot make sense out of its nonsensical claims. (n.b. not verbatim)

Person 1 decides: Einstein's SR is false because it is ambiguous and misleading. That accounts for the illogical presentation given by The University Of New South Wales. Looks like we can safely dispense with SR and all of the associated explanations of it like the ones found in physics textbooks and web sites published by universities, since Einstein's version is false and Poincare has the correct version. But I don't think we should call that SR. It should be called Poincare Relativity or PR.

The problem there is who would agree with us to do that; because it seems impossible to get the establishment to agree to anything like that.

Person 2 did not want to agree to that, and seemed to think SR makes sense to those who put the effort into trying to understand it.

Person 1 thought that was nonsense, and person 2 was trying to maintain the point-of-view that a theory that is ambiguous is not false. Person 1 deemed person 2's point-of-view as confusing and

illogical, since if the theory is ambiguous then it is subject to different interpretations and hence conflicting conclusions. That means that one cannot say that it is true, so it must be false, since it makes no provably true statements, only ambiguous ones that cannot be verified as true.

In the case of Einstein the fact that he is ambiguous and be subjected to lots of different interpretations is what makes his theorising unsuitable for precision required of science; for instance he is ambiguous over whether there is an aether after changing his mind several times

The issue is that there are numerous theories that can be developed using the Lorentz transformations. Einstein is credited with discovering SR based on the Lorentz transformations, instead of Poincare, or Lorentz, or FitzGerald, or Larmor. These earlier pre-Einstein people were all are working at developing the Lorentz transformations. One approach being via the aether hypothesis and the other via the relativity hypothesis.

The establishment claim is that Einstein discovered the correct theory based upon the relativity hypothesis. So, they stick to his ideas regarding space and time that produce a lot of illogical, absurd, contradictory, ambiguous, weird results. Einstein's relativity is full of ambiguities and mistakes as well as leading to some very bad conclusions.

The establishment has not done anything to clean up the Einstein mess, and that is the issue. Relativists refuse to acknowledge that simple fact and so they defend the indefensible with insults and attempts to ridicule the belief that physics needs a drastic makeover.

The real issue is how to clean up the morass of confusion in physics. We have a really bad paradigm in Einstein relativity and so we need some way to pare away the illogical elements in physics and replace them with some really solid ideas that make sense out of the universe instead of messing up our understanding of it.

The believers in relativity seem to not really understand relativity, and not to understand the Lorentz transformations. Often they resort to the method of just calculate and ignore the contradictions and weird absurd results. That is not legitimate science. On top of that they use the ambiguities of the theory to say that the experiments prove it is valid, when the experiments don't.

So science is pretty much of a fraud and they need to keep the fraud going and prevent it from being exposed. Science is just like politics, the group with the most power wins as long as they can keep people believing in the illusion. The illusion needs to be destroyed.

According to Internet Encyclopedia of Philosophy [5]: "Popper's falsificationist methodology holds that scientific theories are characterized by entailing predictions that future observations might reveal to be false. When theories are falsified by such observations, scientists can respond by revising the theory, or by rejecting the theory in favour of a rival or by maintaining the theory as is and changing an auxiliary hypothesis. In either case, however, this process must aim at the production of new, falsifiable predictions. While Popper recognizes that scientists can and do hold onto theories in the face of failed predictions when there are no predictively superior rivals to turn to. He holds that scientific practice is characterized by its continual effort to test theories against experience and make revisions based on the outcomes of these tests. By contrast, theories that are permanently immunized from falsification by the introduction of untestable ad hoc hypotheses can no longer be classified as scientific."

Thus person 2's attempt to say Einstein's relativity is other than what Einstein said is an attempt to immunize Einstein's relativity from being falsifiable.

For those Relativists that go by Einstein's theory as SR and not the belief that Poincare's theory is SR, the type of arguments they give against having Poincare's theory as SR are:

1. they say experiments have confirmed Einstein's theory NOT Poincare's theory
2. SR is Einstein's theory because it is called "Einstein's relativity" NOT "Poincare's relativity" if it was really Poincare's theory then it would be called "Poincare's relativity" NOT "Einstein's relativity".

So by saying it is Poincare's theory NOT Einstein's theory then it is claim that MS (mainstream) have got things very wrong. AND of course they (MS) would want proof that they have gone wrong.

If it were "Poincare's theory" NOT "Einstein's theory" then with all the publicity in popular science about Einstein being the greatest scientist ever that would be wrong; with Poincare as a relative unknown to most people in the general public; if they had to reverse that and say Einstein messed up (or took credit for) Poincare's theory that causes all sorts of political agenda problems.

Ricker [6] gives the different meanings that Einstein gave the light speed constancy postulate as follows:

"Einstein never gave clear and consistent definitions of his principles. Here we will see that he gave different and consequently confusing definitions of his principle of light constancy in his many different publications. In his different papers he gives the following definitions:

(1a) 1905: "...light is always propagated in empty space with a definite velocity c which is independent of the state of motion of the emitting body."

(1b) 1905: "Any ray of light moves in the "stationary" system of co-ordinates with the determined velocity c , whether the ray be emitted by a stationary or by a moving body."

(2) 1907: "We now assume that the clocks can be adjusted in such a way that the propagation velocity of every light ray in vacuum-measured by means of these clocks-becomes everywhere equal to a universal constant c . Provided that the coordinate system is not accelerated." (Italics in the original.)

(3) 1910: "A ray of light in vacuum always propagates with the same velocity c , which velocity is independent of the body that emits the ray." (Original in italics.)

(4) 1912: "There exists a coordinate system with respect to which every light ray propagates with the velocity c ."

(5) 1915: "...every light ray in a vacuum always propagates (at least with respect to a certain coordinate system K) with the definite velocity constant c ."

(6) 1917: "...relative to every inertial system -given the correct definition of time- the theorem of the constancy of the speed of light holds true."

(7a) 1920: "...one has to accept as an expression of experience (e.g. from the Michelson experiment): the systems K and K' are equivalent with respect to the law of light propagation. Experience shows at least that also with respect to K' , all directions are optically equivalent."

(7b) 1920: "In this conclusion, the validity of the principle of the constancy of the speed of light has been assumed -in agreement with the principle of special relativity- for both systems K and K' ."

(7c) 1920: "...according to the principle of relativity the propagation of light must be the same relative to K as it is relative to K', the same process of propagation relative to K' must also be described by a spherical wave of propagation velocity c."

(7 a, b, and c are all from the same paper, which does not give a formal definition of the principle. Note the change in emphasis that makes the principle of relativity superior to the principle of light constancy, which has been diminished in importance. In this paper, the light constancy postulate appears to be a consequence of the principle of relativity.)

These definitions are all defective for the following reasons. First, he never defines what he means by a coordinate system in a consistent way. Second, he never defines the units of measure that apply to the definition of the universal constant c. Third, he never clearly defines how the measurement of light velocity is defined in a consistent manner. This author believes that only the 1907 definition is stated correctly, and that statement needs more rigor.

It is surprising that the most correctly rigorous of these definitions, the one given in 1907, is not the universally accepted definition. That definition is not found in the above list.

Where did it come from?

Finally, it should be noticed that in the definitions given in 7 a, b, and c, that Einstein assumes that his theory makes light velocity isotropic in all moving frames, but as noted above this does not appear to follow from the Lorentz transformation equations. It would appear that it is not true as Einstein claimed, without actually proving it, that light velocity is isotropic in all inertial frames. He relies on the Michelson experiment to justify this claim."

Given that the concept changed by the later versions of SR, the problem is how can we make sense of SR.

In the Einstein quotes, as far as I am concerned: it does not clarify anything, because Einstein was still being ambiguous about measurement of lightspeed relative to moving point and non-moving point.

When says things like: "...whether the ray be emitted by a stationary or by a moving body..." – it does not say who is moving etc., is it you (as observer) stationary and measuring with respect to a stationary point; and when moving (as an observer) are you then measuring with respect to a point moving along with you (i.e. co-moving) OR what. It is not explicitly stating all the 4 possibilities:

1. person deeming himself stationary and measuring wrt stationary point
2. person deeming himself stationary and measuring wrt what he deems a moving point
3. person deeming himself as moving and measuring wrt stationary point in a different frame
4. person deeming himself as moving wrt another frame, and measuring wrt a co-moving point

(wrt means: with respect to)

It just leaves the reader able to interpret what is being said in such texts in numerous different ways, because of the ambiguity in the way it was said.

While for the scenario of given 2 people not in same inertial frame, the possibilities are:

1. 1st person measures relative to non-moving point and so does 2nd person

2. 1st person measures relative to moving point, 2nd person measures relative to non-moving point
3. 1st person measures relative to non-moving point, 2nd person measures relative to moving point
4. both measure relative to moving point

I think it is a problem with "human condition" to try to fill in the blanks of what is omitted when something is said. But Einstein left a lot of blanks/omissions in what he was saying, and now his believers fill those blanks "in" by lots of different ways.

When dealing with SR there are things to be neglected such as: the effect of gravity, but there are other things than just gravity and what all the number of effects that are to be neglected is left ambiguous.

The relativists just contradict each other and make false claims on numerous issues. I think their method is to state an ambiguity like "lightspeed constancy" not state clearly what that is supposed to mean and then they all start believing different things.

When they say "lightspeed constancy" presumably that is supposed to mean: that if unprimed observer measures c and primed observer measures c' then $c=c'$. BUT that is totally ambiguous, because not saying relative to what are these observers making their measurement; are they making measurement relative to moving point or non-moving point. By Newton that would be two different things. But they have made it ambiguous as to what they are doing; whether they are sticking with Newton or going for something else. Then having made their ambiguous statements, they can invent nonsense and contradict one another. Relativity texts must be much more clearly written, which they seem to want to avoid like the plague. [7]

References

[1] Joe Wolfe <https://www.physics.unsw.edu.au/staff/joe-wolfe>

[2] The weirdness - and the logic - of the principle of invariance of the speed of light
http://newt.phys.unsw.edu.au/einsteinlight/jw/module3_weird_logic.htm#weird

[3] For the changing mind of Einstein on the issue of aether you might care to look at:

Einstein (1905): "The introduction of a "luminiferous ether" will prove to be superfluous inasmuch as the view here to be developed will not require an "absolutely stationary space" provided with special properties, nor assign a velocity-vector to a point of the empty space in which electromagnetic processes take place." ON THE ELECTRODYNAMICS OF MOVING BODIES By A. EINSTEIN, June 30, 1905

http://hermes.ffn.ub.es/luisnavarro/nuevo_maletin/Einstein_1905_relativity.pdf

Einstein (1920): "Recapitulating, we may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an ether. According to the general theory of relativity space without ether is unthinkable; for in such space there not only would be no propagation of light, but also no possibility of existence for standards of space and time (measuring-rods and clocks), nor therefore any space-time intervals in the physical sense. But this ether may not be thought of as endowed with the quality characteristic of ponderable media, as consisting of parts which may be tracked through time. The idea of motion may not be applied to it."

Ether and the Theory of Relativity by Albert Einstein (an address on 5 May 1920 at the University of Leiden) http://www-groups.dcs.st-and.ac.uk/history/Extras/Einstein_ether.html

[4] Private communication. Based on conversations that have been tidied up to try to make them easier to follow, thus not verbatim. A lot of this article based on similar point-of-view as what Ricker says, but tidied up.

[5] Karl Popper: Philosophy of Science, Internet Encyclopedia of Philosophy
<http://www.iep.utm.edu/pop-sci/>

[6] Why No Einstein's laws? Part V Einstein's Second postulate Of Light Constancy Is False By Harry H. Ricker III, <http://www.gsjournal.net/Science-Journals/Research%20Papers-Relativity%20Theory/Download/864>

[7] "avoid like the plague" means: Evade or elude at any cost.

Note on Poincare theory: going by wiki says- "Einstein relied on the principle of relativity to derive the Lorentz transformations and used a similar clock synchronisation procedure (Einstein synchronisation) to the one that Poincaré (1900) had described..." - So it is "similar" but not the same!—according to wiki https://en.wikipedia.org/wiki/Henri_Poincar%C3%A9 at 21 March 2018. Although at: http://www.newworldencyclopedia.org/entry/Henri_Poincar%C3%A9 21 March 2018 says "same" instead of "similar": "Although Einstein relied on the principle of relativity and used the same clock synchronization procedure that Poincaré (1900) had described, his paper was remarkable in that it had no references at all." – So, even on these issues the SR literature is confused.

c.RJAnderton21March2018