

Lightspeed constancy not well defined in Einstein's relativity

Roger J Anderton

R.J.Anderton@btinternet.com

When relativists talk of "lightspeed constancy" presumably they mean in the context of special relativity dealing with inertial observers and light moving in a vacuum; but giving them all those conditions, it is not a well-defined concept.

Wikipedia tells us that : Peter Bergmann did not agree with Einstein about effectively - what was meant by the speed of light constancy but left the dispute out of his 1942 to get Einstein's endorsement. Then after Einstein died, Bergman said something different to Einstein in his 1968 book.

See more details from quote [1]:

"Einstein was not explicit about whether the speed of light would change in a gravity field, or whether just the direction of the vector would change; this can be clarified from the text implicitly, however. A calculation of alpha (α) follows equation 107 and makes an unambiguous use of variable scalar light velocity (L) both as the argument of a partial differential function (proving a variable) and as the denominator in a fraction (proving not a vector) both in the same integrated quantity. Division of a scalar by a vector is not defined, so there is no other way to interpret the velocity of light in this usage except as a variable scalar speed.

"In this calculation $L = c/c_0$ where c_0 is light speed in flat space.

"Peter Bergmann did not agree with Einstein but left the dispute out of his earlier book in 1942 to get Einstein's endorsement. After Einstein died Bergmann wrote a new book in 1968 claiming that vector light velocity could change direction but not speed. This has become a prevailing opinion in science, but not in agreement with Einstein's unambiguous math. Bergman did acknowledge that the apparent speed of light would change in a gravity field and go to zero at an event horizon as viewed by a distant observer."

This makes a farce of what is supposed to be meant by “lightspeed constancy”, if relativists are going to agree with Einstein’s use of the concept and then try to sneak in later that it means something else, it makes the concept ill-defined. If the concept was well-defined when Einstein was alive (and it wasn’t) after he died the likes of Bergmann destroy that.

There are other things I could argue about here such as “prevailing opinion in science, but not in agreement with Einstein’s unambiguous math.” – that cries out a terrible mess is being made. But I will pass.

Then the speed of light as constant was defined as constant in 1983, so before 1983 it wasn’t defined constant; that entails another change in meaning.

As per wiki [2]:

“In 1983 the 17th CGPM found that wavelengths from frequency measurements and a given value for the speed of light are more reproducible than the previous standard. They kept the 1967 definition of second, so the caesium hyperfine frequency would now determine both the second and the metre. To do this, they redefined the metre as: "The metre is the length of the path travelled by light in vacuum during a time interval of $1/299792458$ of a second."^[88] As a result of this definition, the value of the speed of light in vacuum is exactly 299792458 m/s^{[151][152]} and has become a defined constant in the SI system of units.^[13]”

Whatever is supposed to be meant by “lightspeed constancy” is just not well-defined, that makes special relativity not a well-defined theory, and not being well-defined cannot be properly tested.

I now go by what I think is a better translation of Einstein by A F Kracklauer and in that what is supposedly meant is two-way lightspeed constancy in which case that fits within Newtonian physics context, and all the talk of special relativity being different to Newton is just one big massive mistake. [3]

References

[1] https://en.wikipedia.org/wiki/Variable_speed_of_light 20 Jul 2019

[2] https://en.wikipedia.org/wiki/Speed_of_light 20 Jul 2019

[3] See: Einstein mistranslated at: <https://www.youtube.com/watch?v=YKD9kXrjQ00>

c.RJAnderton27Jul2019