

Einstein's ether theory

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Einstein changed his mind about aether/ether and seems to have had an ether theory in his later years. But the mainstream doesn't seem to have wanted to adopt it. (n.b. "ether" and "aether" are alternative spellings.)

Dealing with posting to forum at "The Naked Scientists" [1] dealing with question: " Is Einstein's general relativity misunderstood?" – which seems to hold similar views to my own from a person posting under the alias "Farsight." My comments interspersed below highlighted with arrow ->

Farsight poses question: Is Einstein's general relativity misunderstood?

« on: 10/01/2010 15:52:18 »

I've been doing a fair amount of research of original material, and the picture of general relativity that I get seems to be very different to what I was taught. For example, people tend to say the speed of light is constant, and Einstein said it. But it isn't true. Yes, he started with this as a postulate in 1905, but in 1911 he wrote On the Influence of Gravitation on the Propagation of Light, where we can see his ideas evolving as he talks about $c = c_0 (1 + \Phi/c^2)$.

- ➔ That equation is wrong should be $c = c_0 (1 + \Phi/c_0^2)$. See my paper: Error in Einstein's 1911 paper missed for over a hundred years <https://www.gsjournal.net/Science-Journals/Communications-Relativity%20Theory/Download/6740>
- ➔ Putting that issue aside and carrying on.

Then in 1916 in section 22 of Relativity: The Special and General Theory he talks further:

"In the second place our result shows that, according to the general theory of relativity, the law of the constancy of the velocity of light in vacuo, which constitutes one of the two fundamental assumptions in the special theory of relativity and to which we have already frequently referred, cannot claim any unlimited validity. A curvature of rays of light can only take place when the velocity of propagation of light varies with position. Now we might think that as a consequence of this, the special theory of relativity and with it the whole theory of relativity would be laid in the dust. But in reality this is not the case. We can only conclude that the special theory of relativity cannot claim an unlimited domain of validity; its results hold only so long as we are able to disregard the influences of gravitational fields on the phenomena (e.g. of light)".

IMHO* people tend to see the word velocity in the 1920 translation without seeing the context.

- * IMHO means -> in my humble opinion
- Probably also an issue that German word being used could be translated into English as either "velocity" or "speed"; in the 1905 paper "On Electrodynamics of moving bodies" -> probably also the case here if checked the original German (?) The word "speed" I think would have been better, and has obscured things.

Many skip over his reference to "one of the two fundamental assumptions", and don't see that he's talking about a serious issue with the SR postulate of the constant speed of light. Many do not realise that Einstein didn't speak English in 1916, and what he actually said was die Ausbreitungsgeschwindigkeit des Lichtes mit dem Orte variiert. This translates into the speed of light varies with the locality.

- Exactly, as I have noted -> Einstein been mistranslated from German into English. See for instance: <https://www.youtube.com/watch?v=2QrCJg23vAE>
- Google translate gives -> Ausbreitungsgeschwindigkeit des Lichtes mit dem Orte variiert -> as -> The speed of propagation of light varies with the location

He was saying the speed varies with position, hence the reference to that postulate. And what he also said, is that this causes the light to follow a curvilinear path like a car veers when the near-side wheels encounter mud at the side of the road.

- I think picture which was here has now gone from the website.

People often react badly this.

- Means -> people often react badly to this.
- I think means -> people react badly to being told Einstein's relativity been misunderstood -> People undergo a lot of time and effort to learn Einstein's relativity at University and to be told what they have been taught is wrong is deeply upsetting, and then they react badly.

Einstein talking about the variable speed of light does not fit with the relativity they've been taught. They don't appreciate that relativity today is somehow different to Einstein's relativity.

- Yes, because there has been some sort of revisionism to Einstein's relativity that the Establishment don't explicitly admit to. There was what they call "Renaissance of relativity" see: <https://www.mpg.de/9696776/renaissance-of-relativity-theory> when a greater number of people started working on relativity in the mid-1950s -> that's when the revisionism seems to have taken place -> there was a revisionism and it has not been explicitly stated as what "they" did; so revisionism by stealth. Farsight notes something like this anon.

People think Einstein told us about curved spacetime, but when you read The Foundation of the General Theory of Relativity, incredibly, it's just not there. Yes, he talks about geometry and curvature and space-time, but he's giving the equations of motion, through space. He doesn't talk about "motion through spacetime" like people do these days. Surely everybody knows you can't move through spacetime, it's just the mathematical space where we plot our lines.

→ This is more example of the revisionism made to Einstein's relativity -> of what is taught now about Einstein's relativity is different to what Einstein was saying.

There's other things that people aren't taught. Such as how Einstein was still derided by many theoreticians even in 1923. You can see a reference to this on page 53 of Graham Farmelo's Dirac biography *The Strangest Man*:

"At that time, Cunningham and Eddington were streets ahead of the majority of their Cambridge colleagues, who dismissed Einstein's work, ignored it, or denied its significance".

Many people don't know that despite the media accolades and public adulation, Einstein drifted out of the mainstream from 1927 when he fell out with Bohr and others over quantum mechanics. They don't know that General Relativity was a "cottage industry" until the sixties, when the Golden Age changed it significantly:

→ Yes also called "Renaissance of relativity"

"The Golden Age of General Relativity is the period roughly from 1960 to 1975 during which the study of general relativity, which had previously been regarded as something of a curiosity, entered the mainstream of theoretical physics. During this period, many of the concepts and terms which continue to inspire the imagination of gravitation researchers (and members of the general public) were introduced, including black holes and 'gravitational singularity'. At the same time, in closely related development, the study of physical cosmology entered the mainstream and the Big Bang became well established... A number of simultaneous paradigm shifts characterize the Golden Age of general relativity. First and foremost, the Big Bang became the canonical cosmological model. Other paradigm shifts included a growing appreciation of the: Role of curvature in general relativity..."

Nor do most people know that in 1949 Einstein and Godel worked out that time is cofounded with motion through space, not with space. It's there in *A World without Time: The Forgotten Legacy of Godel and Einstein* by Palle Yourgrau. But perhaps the single* most important thing most people don't know, is that whilst aether is a taboo word which is most definitely out of the mainstream, Einstein's gave his Leyden address in 1920.

→ * Says "signal" seems to be typo mistake and should have meant "single", so amended to "single."

And the title is *Ether and the theory of relativity*. There's Einstein, talking about space and calling it an aether:

"Mach's idea finds its full development in the ether of the general theory of relativity. According to this theory the metrical qualities of the continuum of space-time differ in the environment of different points of space-time, and are partly conditioned by the matter existing outside of the territory under consideration. This space-time variability of the reciprocal relations of the standards of space and time, or, perhaps, the recognition of the fact that 'empty space' in its physical relation is neither homogeneous nor isotropic, compelling us to describe its state by ten functions (the gravitation potentials $g_{\mu\nu}$), has, I think, finally disposed of the view that space is physically empty".

All in all it adds up to some huge differences, and some surprises. It seems that relativity has always been the Cinderella of modern physics, and despite his vast reputation, Einstein was hardly in the mainstream at all. Moreover his understanding of gravity doesn't seem to be mainstream any more. What's especially surprising is how similar it is to the way Newton described it in *Opticks*:

Doth not this aethereal medium in passing out of water, glass, crystal, and other compact and dense bodies in empty spaces, grow denser and denser by degrees, and by that means refract the rays of light not in a point, but by bending them gradually in curve lines? ...Is not this medium much rarer within the dense bodies of the Sun, stars, planets and comets, than in the empty celestial space between them? And in passing from them to great distances, doth it not grow denser and denser perpetually, and thereby cause the gravity of those great bodies towards one another, and of their parts towards the bodies; every body endeavouring to go from the denser parts of the medium towards the rarer?" queries 20 & 21

The language is different, but the underlying concept is the same. The energy tied up as the matter of a planet "conditions" the surrounding space to create a non-constant $g_{\mu\nu}$ along with a gradient in c which causes curvilinear motion. To many people this is unacceptable, because it isn't what they've been taught. It doesn't matter that it comes from Einstein and Newton and is supported by experimental evidence, they refuse to believe it.

Show them two astronauts carrying parallel-mirror light clocks at different locations, and they will refuse to admit what the different readings on those light clock is telling them. They'll talk about coordinate speed and time dilation and spacetime curvature, anything to avoid what's in plain view: in a place where the gravitational potential is lower, the light goes slower.

Why is it that people seem unable to see what Einstein actually said, or the evidence that supports it?

That is the end of Farsight's initial posting. Next there is an attack by someone under the alias of "physBang":

PhysBang replies

« Reply #1 on: 10/01/2010 16:48:45 »

→ PhysBang launches into an ad hominem attack on Farsight. Omitting the quoting of Farsight, Physbang says:

Have you actually studied relativistic physics at the university level? Have you studied relativistic physics at the post-graduate level? Where and how were you "taught"?

→ Ad hominem attack suggesting that Farsight is not clever enough and educated enough on relativity to be able to deal with it. Next after quoting Farsight, says:

I had thought that after being banned from yet another message board, you had finally given up on this misunderstanding of yours.

→ Wow Farsight been banned on other occasions.

You have previously claimed that you cannot do the detailed mathematics of general relativity and this is holding you back from actually following what this passage from Einstein actually means.

→ What the mathematics means and what Einstein means by his words are two separate things that need to be combined into a coherent whole.

Anyone who keeps reading beyond the passage you have cherry-picked here soon learns, if they can follow the mathematics in which the physics is written, that Einstein does not mean anything like what he said in 1911. He certainly does not mean anything like your mud and wheels example.

- ➔ So, PhysBang seems to want to go by the mathematics and dismiss what Einstein says as cheery-picking, continues:

People react badly to your continued cherry-picking of two passages from Einstein, your choice to ignore any of the actual physics of Einstein, and your refusal to answer questions. This is what provokes a reaction to what you write.

- ➔ I think really the reaction is those people being over-sensitive and having their understanding of relativity questioned upsets them.
- ➔ As to Farsight saying: "People think Einstein told us about curved spacetime, but when you read The Foundation of the General Theory of Relativity, incredibly, it's just not there. Yes, he talks about geometry and curvature and space-time, but he's giving the equations of motion, through space." -> PhysBang disagrees

No, he is not. You have admitted that you cannot do the mathematics of differential geometry. I suggest you take the time to learn this mathematics so that you can understand just how wrong you are here.

- ➔ In my view its those doing the math and then misinterpreting to something that Einstein is not really saying!
- ➔ As for Farsight saying: "He doesn't talk about "motion through spacetime" like people do these days." PhysBang disagrees that is what people do.

People do not do this. Please provide a specific reference from a credible source if you think otherwise.

- ➔ Then refers to Farsight talking about the "Ether and the theory of relativity" lecture by Einstein.

As the author of the page that you link to provide this quotation writes, "This address has been frequently misunderstood as positing that a return of the ether theory."

- ➔ Well the lecture published at: https://mathshistory.st-andrews.ac.uk/Extras/Einstein_ether/ doesn't say that. I think refers to -> https://zionism-israel.com/Albert_Einstein/Albert_Einstein_Ether_Relativity.htm something written by Ami Isseroff where he seems to be expressing his opinion on top of what Einstein is saying! The problem then becomes how much of Ami to quote to avoid being accused of cherry-picking; because after quoting Einstein, Ami says "We may understand from that whatever we wish, as the physical implications were never worked out." -> I find that shocking to be told that can "understand from whatever we wish.." -> because that is an admission of ambiguity in what Einstein is saying; so that Einstein can be interpreted in different ways! Not something that want in the formulation of a theory that it is -> ambiguous on many key issues! Anyway, what Ami more fully says than just -> "This address has been frequently misunderstood as positing that a return of the ether theory." He goes onto say "Like Einstein's god,

which was like nobody else's god, Einstein's ether was like no ether of 19th century physics" -> which means Einstein's ether is still a type of ether even if it is different to other peoples' ether proposals! To avoid being accused of cherry-picking the rest Ami says is "as we can see from his concluding paragraph:" -> and he then quotes Einstein saying "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..." Etc. So, really Ami is saying -> Einstein's ether is different to other peoples' ethers and so wants to dismiss it as really being an "ether", but far as I am concerned -> Einstein's ether is an ether even though it might be different to other peoples' ether proposals. What we have here is a bit of wordplay by Ami, who wants to conclude there is no ether despite Einstein saying there is an ether!

→ PhysBang then continues with ad hominem

That you entirely miss the point of the lecture is not something you should be proud of. Again, you should learn the actual mathematics so that you can understand what $g_{\mu\nu}$ really means.

→ Far as I am concerned the math means there is an Einstein's ether which is different to other peoples' ether proposals.

→ PhysBang then goes on to quote Farsight who is quoting Newton from Newton's book on Opticks.

One can always cherry-pick quotations from history that seem to look like modern physics.

→ That is quite an amazing dismissal technique. PhysBang likes perceiving things as "cherry-picking" so that he can dismiss those things. He continues:

However, there is no relationship between the physics of the Opticks and the physics of GR.

→ GR being general relativity. That is quite a big claim, and he is offering nothing to support such a claim!

Additionally, the quotation that you have chosen comes from Newton's remarks on alchemy.

→ What?? PhysBang is dismissing Newton's book on Opticks as Newton's writings on alchemy, and once again he is offering nothing to support such a claim.

If you unquestioningly support what Newton writes here, you seem to unquestioningly support all of Newton's alchemy.

→ So, now making non seq.

Additionally, you can show no experimental evidence that demonstrates that there is a medium at work in generating the results of GR.

→ What is being pointed out however is that the math of GR (general relativity) should be interpreted as Einstein's ether. So, PhysBang is completely misrepresenting what is being said.

If you can, please demonstrate with actual numbers and calculations. Since you admittedly cannot do the mathematics of GR, I cannot understand how you can believe your claims here.

→ Similarly, can't believe PhysBang's unfounded claims, so what.

- ➔ Finally responds to Farsight saying “ Why is it that people seem unable to see what Einstein actually said, or the evidence that supports it?”

Because they do not want to spend the time to learn the mathematics and physics involved. Thus they ignore the details of what Einstein produced and instead cherry pick out quotations that support their preconceptions.

- ➔ Far as I am concerned PhysBang is the one doing all the misrepresenting and making unfounded claims, and wants to distort what Einstein is saying so can have it fit with his preconceptions.

Farsight then replies:

« Reply #2 on: 11/01/2010 13:08:40 »

Physbang, you aren't countering the reportage I've given here. Instead you're attempting to deny it by dismissing what Einstein and Newton actually said as "cherry picking" and "alchemy". You're trying to support your own preconceptions, and without scientific evidence and carefully-constructed logical argument, your response is inadequate.

- ➔ Exactly, PhysBang is distorting things!

Claiming that my mathematics or education is lacking or that I've been repeatedly banned doesn't make up for sincere discussion of this important matter. It's quite clear what Einstein said, and my astronauts example is fully supported by the GPS clock adjustment and the Shapiro time delay. The evidence is there, so please be aware that I started this thread as a spin-off to something that cropped up on a thread concerning gravity and work:

<http://www.thenakedscientists.com/forum/index.php?topic=27444.msg294032#msg294032>.

- ➔ Unfortunately, another very long conversation thread, so would be a big diversion to enter that.

All: see <http://arxiv.org/abs/physics/0204044> for Einstein's Gravitational Field by Peter M Brown. It's a very interesting paper, well worth reading:

Abstract: There exists some confusion, as evidenced in the literature, regarding the nature of the gravitational field in Einstein's General Theory of Relativity. It is argued here that this confusion is a result of a change in interpretation of the gravitational field. Einstein identified the existence of gravity with the inertial motion of accelerating bodies (i.e. bodies in free-fall) whereas contemporary physicists identify the existence of gravity with space-time curvature (i.e. tidal forces). The interpretation of gravity as a curvature in space-time is an interpretation Einstein did not agree with.

- ➔ So Brown doesn't like how the interpretation of Einstein's relativity seems to have changed.

Peter M Brown posts here as Pmb,

- ➔ The alias being used on this Physics message forum.

and knows his stuff. He and I don't always agree on the finer points, but we converse in a pleasant manner, and let's face it, if everybody agreed on everything, there wouldn't be much to talk about!

- ➔ So Farsight and Brown don't fully agree; there are numerous different opinions.

PhysBang replies:

« Reply #3 on: 11/01/2010 13:22:38 »

Quote from: Farsight on 11/01/2010 13:08:40

- ➔ PhysBang responds to Farsight saying “Claiming that my mathematics or education is lacking or that I've been repeatedly banned doesn't make up for sincere discussion of this important matter.”

These claims are evidence that you are not interested in discussion and that you are perhaps incapable of such discussion.

- ➔ Physbang is getting nasty with ad hominem, now implies Farsight too stupid to be able to talk to. Its one of the typical defence tactics of a relativist defending their personal beliefs about relativity to accuse the other person with a different opinion as being stupid.

You continually misrepresent Einstein and when called on this, you become belligerent. It will happen here.

- ➔ Far as I am concerned PhysBang is the one misrepresenting relativity, and now getting nasty.

People have asked you before to do a direct demonstration that will show that you are correct: if you could perhaps run through the advance of the perihelion of Mercury or through the calculation of the rotation of any galaxy currently being used to detect dark matter, then you could easily show that your position is correct. You cannot do these direct demonstrations, unfortunately for your position.

- ➔ Again PhysBang wants to misrepresent what is being said; what is being said is that these calculations should be understood by what Einstein says about them as being proper representation of the Einstein's theory.

Please show us the calculations involved in the GPS clock adjustment and Shapiro time delay and show us where they come up in your astronaut example. Please use specific values and calculations in your example.

- ➔ As for the paper Einstein's Gravitational Field by Peter M Brown. He responds

But there is probably something very wrong with this paper and the position of the author because the author has no published work in the field, despite the age of the paper. Can you find any evidence that is accepted by any group of peers in physics or in the philosophy of science?

- ➔ Another trick of the relativity defender is to dismiss papers that are not peer reviewed; and the peer review system is prejudiced/biased; so they lock themselves into their close mind set.

Like always, you will fail to directly answer these questions because to take these questions seriously would reveal the horrible flaws in your position and the evidence for it.

- ➔ PhysBang then gets a suspension by the moderator in the next posting.

JimBob Global Moderator

« Reply #4 on: 11/01/2010 16:11:03 »

PhysBang, since you refuse to read your email or answer it, I must do this in public.

Personal attacks will not be allowed - period. PhysBang may not post for two weeks and another breach will result in a permanent ban. You did not heed the email sent and have refused to curb your ad-hominem post. You then may not have the privilege* of posting to this site. If at the end of the two weeks you continue to make ad-hominem responses, the ban will be permanent.

→ *typo error corrected

Farsight replies:

« Reply #5 on: 11/01/2010 17:28:31 »

For the record, I'm very interested in discussion, and whilst the odd cross word sometimes escapes my lips, I'm not belligerent. I decline to give a mathematical demonstration of say the perihelion advance of Mercury because it's a diversion from the matter at hand. For GPS the relevant information is that the satellites employ atomic clocks, which count microwave pulses. Microwaves are electromagnetic radiation, essentially light. A quick check on GPS and general relativity then tells us "general relativity predicts that the atomic clocks at GPS orbital altitudes will tick more rapidly, by about 45.9 μ s per day, because they have a higher gravitational potential than atomic clocks on Earth's surface". This will be reliable, and is clear scientific evidence that is fully in accord with Einstein's words and pmb's paper. Dismissing such evidence by claiming it isn't peer-reviewed sounds unreasonable, and besides, a quick search on arxiv on variable-speed of light yields a wealth of papers. I note one by Alexander Unzicker entitled The VSL Discussion: What Does Variable Speed of Light Mean and Should we be Allowed to Think About It?

Conclusion

PhysBang does reply after his 2 week suspension, but is even worse in my opinion. Einstein in 1905 rejects the aether/ether but later comes back to an aether/ether theory, but the mainstream does not seem to like that and teach there is no ether/aether as per Einstein 1905 and ignore/dismiss Einstein's change of mind. And if you try to raise the issue of Einstein's ether theory – you are likely to get abuse in the same way Farsight received from people who have a close mind to the ether concept.

References

[1] <https://www.thenakedscientists.com/forum/index.php?topic=28055.0>

<https://www.thenakedscientists.com/forum/index.php?topic=28055.20>

<https://www.thenakedscientists.com/forum/index.php?topic=28055.40>

my comments: c.RJAnderton28 July 2021