

## Criticism of the article “Why Pick on Einstein”

Roger J Anderton

[R.J.Anderton@btinternet.com](mailto:R.J.Anderton@btinternet.com)

With the latest discoveries in physics that might overturn Einstein, [1] it is long overdue that the 1980 article “Why pick on Einstein” [2] written by Paul Davies (in 1980 professor of theoretical physics) written in support of Einstein should be criticised.

Paul Davies starts off by explaining that science magazines editors have to deal with a large influx of papers dealing with claims that Einstein is wrong. Since the mainstream likes to present Einstein as being correct, this indicates that a point-of-view held by many people is being blocked, and science editors are unfairly often not presenting a balanced view but instead one biased.

Paul Davies (PD) continues: “All subjects presumably have their fair share of people who refuse to believe the textbooks, but the scale and ferocity of the attack on the theory of relativity indicates a deep-rooted cultural antipathy.”

On the first point – textbook can be wrong, for example the great physicist Richard Feynman in his book “Surely you're Joking Mr Feynman” points that out. (Feynman supported Einstein's relativity as far as I know. But the point is still valid if textbooks can be wrong on some things then maybe they can be wrong about Einstein's relativity.)

On the second point he talks of an “attack on the theory of relativity” --- Unfortunately this is where our problems start as to what is meant by “theory of relativity”. There are several theories of relativity. There is Galileo's theory of relativity, and there are Einstein's special and general theories of relativity. When Paul Davies writes “theory of relativity” he is probably meaning Einstein’s two theories of relativity. When it comes to an attack on relativity, not everyone is laying attack to the same thing. Some people attack all theories of relativity while others might attack just some of them. My position is that Einstein made lots of mistakes and those mistakes must be corrected so that relativity can work properly.

On the third point – that is not “cultural antipathy” instead its about wanting the culture of the physics community to correct its mistakes instead of trying to ignore them.

PD: “Undoubtedly many feel resentful about their cherished intuition being upset.”

What he is trying to hide with this claim is that from the point-of-view of those opposed to Einstein's relativity; Einstein's relativity is nonsense.

PD: “Dealing as it does with fundamental concepts, such as space and time, relativity is bound to produce a hostile and sceptical public reaction.”

Again he uses the word “relativity”, I would prefer it if he used the term “Einstein's relativity” because there are different versions of “relativity” and I am not hostile to all of them. So treating it as claim of hostility against Einstein's relativity; of course I am hostile because from my point-of-view a lot of nonsense is being espoused from the pro-Einstein group.

What surprises me is the use of the term “public” - he is expecting a hostile reaction from the general public not just from a group that pro-Einstein group dismisses as cranks. He is expecting the general public to look at Einstein's relativity as seeming to them to be nonsense.

PD: “There is also an element of simple confusion, that encourages the repeated resurrection of the same old 'paradoxes' and controversies with wearisome persistence.”

From my position that there is a lot of nonsense in the pro-Einstein group, so of course it becomes wearisome that so many of them persist in believing such nonsense and fail to recognise that many of the 'paradoxes' highlight the absurdity of their beliefs.

PD: “So what are the facts? Is the theory of relativity in as good a shape as most physicists claim, or is its widespread acceptance by the physics community due to familiarity than physics?”

The “facts” are something that can get argued over a lot.

From the anti-Einstein relativity position the claim is often that the pro-Einstein group are misrepresenting the 'facts.' The pro-Einstein group claims certain 'facts' in support of their beliefs and when those 'facts' are looked at critically from us anti-Einstein group we find the misrepresentations.

So if Paul Davies tried to be more honest, he should be pointing out that the 'facts' are not agreed upon by the Einstein believers.

He starts to go into details of the 'facts':

PD: “The first point is to distinguish between the special and general theories of relativity.”

At last he seeks to explain what he means by 'relativity' in his earlier comment of “ferocity of the attack on the theory of relativity” - he was not making clear what he meant by “the theory of relativity” - now we have it split into two theories! There are two theories and if we are considering an attack then it's an attack on two different things! The arguments on special relativity are not necessarily the same as the arguments on general relativity. From my point-of-view they are two different collections of mistakes, and the mistakes found in special relativity the pro-Einstein group often tries to divert and defend from the mistakes in general relativity. So, it's a case of the pro-Einstein group wanting to divert the attack from the anti-Einstein group onto two different sets of mistakes.

PD: “Both are theories of space, time and motion, but the general theory, that Einstein published in 1915, includes the effects of gravitation; the special theory of 1905 omits gravity.”

Yes, but starting from the 1905 theory various different add-ons can be introduced to it, and the pro-Einstein group never makes it clear what exactly the official version of that update to general relativity “is”, and so they swamp us with different opinions. It's all part of their tactic of diverting the anti-Einstein group with two different targets and then creating more targets by modifying special relativity.

PD: “The central postulate of relativity, and also the rock on which many a redoubtable dissenter has foundered, is the almost nonsensical-sounding statement that the speed of light is the same however the source of light moves about, and however the observer is moving.”

Again with just the term “relativity”, he does not distinguish between special relativity and general relativity instead just uses the term “relativity.” I would argue that in special relativity then it is as he says that “the speed of light [in vacuum] is the same however the source of light moves about, and however the observer is moving.” I would then argue as some pro-Einstein people argue that it is not the case in general relativity and that light speed (in vacuum) can be variable in general relativity. Also I would argue as to what precisely does it mean in the special relativity context; that it can mean different things. So already he is setting up a big diversion here, just by claiming it the “central postulate of relativity”.

Also he makes the claim that its “almost nonsensical-sounding”, he is almost admitting the problem. I would drop the term “almost” and say it is definitely “nonsensical-sounding”.

It is definitely “nonsensical-sounding” and ideally the pro-Einstein group should go into details and explain at this point as to why they think its not nonsense. But unfortunately, that is where they start to split into numerous different opinions. Some claim it holds in both special and general relativity, while others say it only holds in special relativity; and numerous other different opinions.

Earlier he told us that there was an “element of simple confusion” when dealing with this subject and its really the pro-Einstein group that introduces this “confusion” with their introduction of numerous different opinions as to how general and special relativity connect together.

i.e. the pro-Einstein group don't have a clearly defined agreed on opinion as to what Einstein's relativity “is”, and that's the source of the “confusion”, and an attack by the anti-Einstein group just heads into meeting the pro-Einstein group being unable to present a clearly defined position on the theory (or theories) of relativity. However, the pro-Einstein group do agree on Einstein being correct, just they don't agree on what he is correct about.

Back to the “nonsensical” claim the pro-Einstein group makes. Ideally they should present why it is not “nonsensical”, but they don't! Instead they just start adding extra things which seem “nonsensical”.

I.e. in context of special relativity the constancy of lightspeed is supposed to lead to time dilation; the nonsensical aspect of that is why should constant velocity of observers affect clock rates. In the context of Newtonian physics there is no force operating for constant velocity observers, so should be no affect. This is different to accelerating scenario where there is force. (an issue I will return to.)

PD: “You will always measure the same speed of light – 300 000 km/s [approximately] in a vacuum, usually denoted by  $c$  – irrespective of how fast you are moving.”

Now this is a case of disputing the supposed 'fact' that he is presenting.

I disagree.

Its a case of not precisely understanding what Einstein means in regards to special relativity OR what the pro-Einstein group means by it.

It seems more like – the measuring instruments are adjusted so as to keep speed of light (in vacuum)  $c$  as constant. (see for instance Essen's criticism) [3]

If we do not adjust our instruments then the speed of light (in vacuum) should not be constant.

In the paper Experimental Basis for Special Relativity in the Photon Sector by Daniel Y. Gezari. [4]

He points out that “the speed of light ( $c$ ) has never been measured directly with a moving detector to validate the invariance of  $c$  to motion of the observer, a necessary condition for the Lorentz invariance of  $c$ . The invariance of  $c$  can now only be inferred from indirect experimental evidence. It is also not widely recognized that essentially all of the experimental support for special relativity in the photon sector consists of null results.”

Davies is thus making a claim that has never been directly confirmed.

It is in other words a false claim.

And that is where many pro-Einstein group people start – they start from a false claim about constancy of light that has never been directly confirmed.

If “you” are fooled into believing their false claim, then you are suckered into the supposed consequences of that false claim.

I looked at the maths and the supposed maths that goes with the constancy of lightspeed can be rewritten and interpreted by maths as variable lightspeed (see my article on Andertonian relativity). That of course then gets us back to Newtonian physics and the detour to Einstein's special relativity with its constancy of lightspeed in vacuum is just based on a false claim.

However from his position of believing a false fact, he continues:

“This is one result [constancy of lightspeed in vacuum] of James Clerk Maxwell's theory of electromagnetism; many 19<sup>th</sup> century physicists tried to find a way round the result, but Einstein accepted it at face value.”

On the first point – the maths of Maxwell's theory can be adjusted to variable lightspeed.

On the second point “19<sup>th</sup> century physicist tried to find a way round the result” - yes and the main way was to rewrite the maths of Maxwell's theory with variable lightspeed.

On the third point - “Einstein accepted it [lightspeed in vacuum as constant] at face value.” Yes, it can be difficult to interpret what Einstein thought he meant by this. But taking that as what Einstein did, then its probably the biggest mistake that he ever made.

That is the mistake that Einstein made, and the pro-Einstein group then builds upon that mistake by not going by the true facts of experiments and instead falsely believing that experimental do not show, i.e. their “false fact”.

PD: “I am not going to dwell on the best way of visualising such extraordinary situation, which involves abandoning the usual notions of distance and time interval, but I shall remark on some of

the more obvious immediate consequences of the proposal.”

It is interesting that he presents this “constancy of lightspeed in vacuum” now as a “proposal” Earlier he was presenting it as a “fact” which from my position is a “false fact”. Presenting it as a “proposal” is more in keeping with my point-of-view – given it as a “proposal” then it means messing up measuring instruments “usual notions of distance and time interval.”

PD: “First, if you always measure incoming light as having the same speed, then however hard you try, you will never succeed in outrunning light, that is exceeding the speed of light. That puts paid to hyperdrives and the like – which undoubtedly accounts for some of the anti-relativity fervour.”

Now at present time we have neutrinos that have been measured as faster than  $c$ . A result that has to be confirmed. But what interests me is how would that result if true be interpreted.

According to him its not possible in the context of Einstein's physics. But the pro-Einstein group is divided in how to interpret. What he dismisses as fantasy is being held onto by some in the pro-Einstein group so that they can stick with Einstein.

So we have another example of how the pro-Einstein group is not all of the same opinion.

But when people like Davies in the pro-Einstein group write their opinion of Einstein physics they do not mention that not everyone in their group is of the same opinion. So its another false front they are presenting.

PD: “Secondly, the same pulse of light which comes up behind you at speed  $c$  also, according to some-one else rushing head-on to meet it, passes him at speed  $c$ . This statement makes no sense...”

Exactly, it makes no sense, but he then goes on to add “unless”:

PD: “.... unless one abandons the idea that two observers in different states of motion measure the same distances and time intervals.”

Unfortunately, this “one abandons” does not make sense as well if one looks closely into it. So we have a claim of lightspeed constancy that makes no sense as he admits and then to try to overcome this difficulty “one abandons” something that makes no sense to abandon.

Of course, I try to make sense of what this means as does everyone who reads such a thing.

From my position it is a “proposal” so the measuring instruments are adjusted to conform to that “proposal”; so its still Newtonian physics! Given no messing up measuring instruments then its blatantly Newtonian physics with variable lightspeed (in vacuum). Going with the proposal of having lightspeed (in vacuum) as constant it involves messing up measurements, but its still Newtonian physics! Just that its now Newtonian physics with messed up measurements.

That is what this process which he says “makes no sense..” means!

PD: “It then follows that measuring rods and the rates of clocks are relative to one's state of motion, and the concept of absolute simultaneity is generally meaningless. There is no universal 'present moment.'”

Just consequences of messing up measurements according to working from the context of

Newtonian physics.

PD: “What is the evidence that the speed of light really is independent of source and observer? The traditional answer appeals to the 'Michelson-Morley experiment.'”

John D. Norton [5] a respected historian dealing with the history of Einstein's physics, and although he makes mistakes, he is correct when he notes: “The Michelson-Morley experiment is fully compatible with an emission theory of light that contradicts the light postulate.”

By the emission theory this is meant Newtonian physics. So can interpret the Michelson-Morley by variable light speed consistent with Newtonian physics.

So Paul Davies appeal to Michelson-Morley experiment for his belief in constancy in light speed is incorrect. Many Einstein believers are like him and falsely appeal to that experiment. The truth is the experiment can be interpreted by maths based on light speed constancy or maths based on variable light speed. Hence the experiment does not prove what Paul Davies wants. To be charitable at this point he claims it is evidence for his claim, but it is not direct evidence because it need not be interpreted from his claim, so it is i.e. indirect evidence OR circumstantial evidence-- which is of course not good enough.

PD: “Conducted in the 1890s, this experiment consisted of comparing the times that light pulses travelling in perpendicular directions took to cross the same distance. The result – that there was no difference – is often quoted as evidence that the propagation of light does not depend on the motion of the Earth.”

He now makes the fatal mistake of implicitly stating the experiment to be direct evidence of “propagation of light does not depend on the motion of the Earth” - when it does no such thing. The experiment shows no such thing.

If we go back to Norton [5] he says: “Einstein regarded the Michelson-Morley experiment as evidence for the principle of relativity, whereas later writers almost universally use it as support for the light postulate of special relativity.”

Einstein does not use the experiment to support the light postulate; that is not his theory. Its those who come after him – a certain faction of the Einstein believers (that Davies is among) who falsely use it as support of the light postulate.

Davies makes the fatal error of thinking the experiment shows the light postulate when it doesn't, and so fails to acknowledge that the experiment can be interpreted by maths using variable light speed.

Davies then goes on to give what he claims is other evidence for special relativity.

PD: “More direct evidence comes from the binary pulsar that astronomers discovered in 1974. This object, situated about 16000 light years (1 light year = 9460 000 million km) away from Earth, is probably two extremely dense objects, or neutron stars, orbiting each other. The time for an orbit is only eight hours or so, which means that the stars must be moving at an appreciable fraction of the speed of light. One of the neutron stars is a pulsar – it emits an extremely regular sequence of very rapid radio pulses. Radio astronomers can measure the frequency of the pulses to five parts in

12

10 . The binary pulsar, then has an inbuilt clock of phenomenal precision, and this enables astronomers to follow the motions of the cavorting neutron stars in detail, uncovering subtle

gravitational effects as well as information about special relativity.”

PD: “During its orbit, the pulsar is sometimes coming towards Earth and sometimes away. If the speed of its radio pulses (which is the same as that of light) depended on the pulsar's motion then the pulses emitted during the star's advance would be projected towards Earth substantially faster than those from the receding portion of the orbit. Over a distance of 16000 light-years the discrepancy would cause the former pulses to outrun the latter and arrive at Earth hundreds of years ahead. Instead of seeing the pulsar systematically orbiting about, astronomers would see a scrambled mess of pulses from different sectors of different orbits all jumbled together. Even a very slight dependence of the speed of light on the pulsar's motion would be noticeable. Moreover, as the motion between the Earth and the pulsar is purely relative, this result can also be interpreted as confirming the speed of light is independent of the motion of the receptor.”

Now as we dealt with the Michelson-Morley experiment it can be interpreted by maths using constant light speed OR maths using variable light speed. When we now use this maths and apply it to the other supposed evidence such as this, it is still of the same form: maths of constant light speed can be used OR maths of variable light speed.

So he fails to recognise that he is placing only one interpretation on these things, when there is in fact two.

Anyway, he proceeds to interpret things from special relativity based on light speed as constant:

PD: “Perhaps the most emotive and controversial result of special relativity concerns the effect of 'time dilation' and the experiences of a pair of twins, one of whom departs from Earth in a rocket that can approach the speed of light, to return 50 years later having aged only 1 year. The numbers are arbitrary, because by approaching  $c$  as close as possible the temporal dislocation can be made as large as one pleases. In the quoted example, the itinerant twin actually experiences just one year of time, during the interval in which 50 years have passed on Earth; his sibling has become a pensioner.”

Note this is a thought experiment rocket able to go at near light speed something our practical rockets can't do; so considering an experiment we can't do

PD: “First, what is the experimental evidence for this distortion of time intervals? One test is to fly clocks in rockets. However, rockets are very slow compared with light and though such experiments have confirmed that time really does 'run at a different rate' aboard rocket, the effect is due more to gravity than speed; the results are really a check on the general theory of relativity.”

Note that now talking about practical rockets when earlier considered thought experiment rocket; practical rocket not able to go very fast compared to light but thought experiment rocket being considered as going near lightspeed; so is muddling between what we can do practically with what we imagine but can't do

PD: “Subatomic particles, capable as they are of approaching the speed of light very closely, provide better evidence. In 1977, physicists used a storage ring at CERN (the European centre for nuclear research) to hold particles called muons which were revolving at speeds close to that of light. On average a muon 'sees' its own life as lasting only about two-millionths of a second; this is

the lifetime you would measure for a slow-moving or stationary muon. But when whizzing round the storage ring the muons were seen to live some 29 – 33 times longer. This result confirmed the predictions of special relativity to an accuracy of 1 part in 500. “

PD: “The 'paradox' and muddle with time dilation arise from the observation that when the twin in the rocket is moving at uniform velocity his motion is entirely relative to the Earth. Consequently, he may legitimately regard himself as being at rest and his twin on Earth as in rapid motion. Thus, relative to the rocket, it will be the Earth-bound twin whose time is 'running slow.'”

Earth moves around sun etc. what doing is considering motion of rocket with respect to the earth, and only want to consider that motion, and not the other motions, so if rocket moves off at velocity  $v$  relative to the earth then relative to rocket frame the earth moves with velocity  $v$  in opposite direction; but ignoring other motions of the earth.

PD: “Surely, so the muddled thinking goes, both time scales can't run slow?”

He's being derogatory to call it muddled thinking, because by relativity, if its relative to earth that the rocket time is slower then by rocket frame its the earth frame that's slower – that is what special relativity gives us!! Calling it muddled thinking is trying to imply that possibly it is not so; but it is so; it is what relativity says.

PD: “Does this alternative perspective not mean that, on his return, the twin in the rocket would be the one to have aged more than his Earth-bound sibling?”

That is by special relativity scenario where only considering constant velocity but when consider acceleration gets more complicated

PD: “The answers to these questions are yes and no, respectively. There is really no paradox, despite the fact that this whole issue is perennially reopened by some combative individual or other. Indeed, the late physicist Herbert Dingle enjoyed international notoriety, and acquired a retinue of adherents, largely on the basis of his attack on the orthodox resolution of the 'twins' paradox.”

Dingle holds high honours in the camp of the anti-Einstein relativity and those followers have not gone away; they point out the supposed mainstream do not give a coherent resolution.

PD: “It is true that, while in uniform motion, each twin would see the other's clock running slow relative to his own.”

That is according to special relativity and my position is that they have to mess up their measurements to get that result of each observing the other person's clock as slower.

PD: “However, only uniform motion is relative.”

The usual special relativity scenario considers only this uniform motion without acceleration.

An interesting point to consider is that he claims “only uniform motion is relative” so when we consider motion of all types as in general relativity then that would mean its not relative, and calling that theory - general relativity is a mistake because its then not a relativity theory. Some have pointed out that general relativity has been misnamed.

PD: “To return to Earth, the twin in the rocket has to turn around, and this involves a period of



violent deceleration and acceleration. This is an absolute and not a relative, effect, as testified by the simple observation that eggs on the rocket could be broken during the turn; there is no doubt that it is the rocket, not the Earth, that is accelerating. There is similarly no doubt that it is the rocket twin, not the Earth twin, who ends up younger.”

Now these raises several points – if consider special relativity as only dealing with uniform motion and general relativity dealing with acceleration; then trying to solve the twin paradox in special relativity he invokes a different theory! There are mistakes in special relativity and special relativity tells us both twins observe the other clock as slower in uniform motion scenario. He tries to divert attention from that and consider instead what happens when there is acceleration. He has not solved the problem of what happens in uniform motion scenario. Further it is my position that special relativity scenario is about messing up measurements, so to step up to a different theory (of general relativity) is to try to patch up that mess. Also – uniform motion is relative in special relativity, general relativity attempts to make all motion relative; now he tells us not all motion is relative; that indicates general relativity is not a relativity theory-- not being about relative motion but instead about absolute motion. It is one of the pro-Einstein group positions that there is no absolute motion; no absolute reference frame. He is now muddling that up. For the sake of the twins – the earth is being treated as an absolute frame. And presumably there is then lots of absolute frames (?) where acceleration is not relative. Earth observer is being treated as in a frame that is not accelerating, and its the rocket observer that is accelerating with respect to the Earth. Problem – really should be only one absolute frame. Need to say about rocket accelerated relative to the rest of the universe – Mach principle. He is just getting into all sorts of problems where he is not properly explaining himself.

Its just bluff - he started to make it unnecessarily complicated for the twin paradox; initially the scenario was special relativity with uniform motion then had to make things complicated by going to general relativity; he was not able to solve in special relativity scenario so had to divert to another theory.

PD: “By making thought experiments sufficiently complicated, a wily anti-relativist can frequently bury an error amid a maze of observers, clocks and rockets, whizzing in various directions.”

The cheek its the Einstein believers that can hide things in the crossover between special relativity and general relativity.

PD: “Particularly hard to crack are apparent paradoxes involving rotating observers, or more mechanical contrivances in which electric, magnetic and gravitational fields are invoked.”

The reason why there is a problem with when “electric, magnetic and gravitational fields are invoked.” is because Einstein did not present a proper unified theory combining them. Einstein did write a lot on unified field theory but those efforts are dismissed by most Einstein believers who then do not work from a unified theory and instead hide things in the crossover between special relativity and general relativity.

PD: “Unfortunately, by dwelling at length on the experimental evidence for some of the more direct predictions of the special theory of relativity, one obscures the fact that it is now an integral part of 20<sup>th</sup> century physics.”

If one dwells a lot on the supposed experimental evidence then one can decide it does not support special relativity and it becoming “an integral part of 20<sup>th</sup> century physics.” was a massive mistake.

PD: "It is not necessary to measure the time dilation effect directly to verify that the theory's principles are correct."

From my position I think the principle of relativity is okay, but Einstein messed it up with the lightspeed constancy bit; undo mistakes made with that and its Newtonian physics.

PD: "In a vast number of indirect ways, special relativity is being tested daily, almost as a matter of routine."

And those "indirect" tests are insufficient because the maths based on taking lightspeed as constant can be converted to maths where its not constant, and have that maths still conform to those indirect tests. (as pointed out earlier)

PD: "This is especially true in atomic and nuclear physics, and in experiments with fundamental particles, where speeds close to  $c$  are commonplace."

It seems he is tying these in with indirect tests as well, and my criticism of indirect tests stands.

PD: "If [Einstein?] relativity were wrong, our detailed understanding of much of subatomic physics would collapse."

I don't see a problem with that it would just mean a different understanding would replace it.

PD: "The enormous progress made in understanding the elementary constituents of matter, and the forces and fields that link them, would turn out to be founded upon a false concept."

Exactly that why the anti-Einstein group wants physics put right.

PD: "From quarks to quasars, scientists would no longer be able to understand the basis of their own immense knowledge."

No, they are understanding things wrong at present, to put that right means they would have to then try to understand things in the correct way.

PD: "In general relativity Einstein elaborated his theory of the structure of spacetime to include the effects of gravity, which he envisaged as the physical manifestation of a distortion in the geometry of spacetime – spacetime warps, in science fiction jargon."

Newtonian gravitational force then being represented as spacetime distortion as far as I am concerned.

PD: "It is intriguing, baffling idea that has led directly to the notion of the expanding universe and black holes."

Actually the idea of a star with a gravitational field so strong that light can't escape from it ( which is essentially what is now called black hole) goes back to pre-Einstein with such people as Mitchell. So he is trying a history rewrite; a standard trick by Einstein fans.

PD: "The general theory of relativity provides a wonderland of opportunity to uncover bizarre paradoxes and apparent absurdities."

PD: "Among the most enduring misconceptions are the ideas that general relativity opens the way to antigravity; that distant galaxies recede from Earth faster than light in violation of special relativity; and that it is possible to travel through the interior of a blackhole to reach a remote region of space."

Its interesting that he dismisses these things as misconceptions and that is contrary to how physics has now progressed in its adaptations of general relativity. At present time we have the observation of galaxies accelerating in the expansion of the universe and this can be represented as cosmological constant which introduces a form of antigravity. So his prejudices are not being borne out, and his personal belief in how to interpret Einstein's relativity is not conforming to how it is being modified.

PD: "When it comes to cosmology, the expanding universe exercises a peculiar repugnance for many malcontents."

From my position I have no problem with the big bang and consider it a description that can be treated as an idealised approximation.

PD: "Notwithstanding the rather obvious fact that if it wasn't expanding, gravity would make the universe all fall together, there seems no end to attempted alternative explanations for the cosmological redshift – the systematic reddening of light by distant galaxies which is usually interpreted as indicating their recession."

Yes, but there are of course other processes which can cause reddening. But from my position I am happy enough to treat the big bang as approximation so interpret many redshifts as recession.

PD: "Even granting the expansion, a common mistake is to convert the redshift too literally into a velocity and to claim that, according to Hubble's law, the recessional speed of the galaxy is proportional to its distance from Earth. It is not really meaningful to talk about the velocity of something on the other side of the universe relative to Earth, and the fact that, if one insists on so doing, then galaxies more distant than about 15 billion light-years are apparently receding faster than light, does not violate special relativity."

What he is doing here is trying to find a contrived excuse to save his interpretation of special relativity, he thinks light speed  $c$  cannot be exceeded so the observation of galaxies going faster than  $c$  he does not want to believe and is trying to make a contrived excuse. From my position – expansion of universe in general relativity description is to treat space as expanding so that galaxies move along with this expanding space, from Newtonian description it is to treat the galaxies as moving and the space as not expanding. Both descriptions I treat as valid. So for big bang model if galaxies far enough away they are faster than  $c$ . While for general relativity the space is expanding, and if galaxies far enough away the space expands faster than  $c$ . However, he does not want to accept that.

PD: "That theory [special relativity] does not apply to objects situated a great distance apart in a cosmic gravitational field. Special relativity is a local theory."

With this "Special relativity is a local theory." He is trying to deal with the crossover between special relativity and general relativity where they like to hide things. So special relativity is to be treated as local theory and when special relativity fails to work, that is supposedly outside the local region in which it works and one is supposed to go to general relativity. So when faster than light one is supposed to go to general relativity.

PD: “What is true, however, is that we cannot see any galaxies beyond about 15 billion light-years, even in principle. There is a sort of horizon in space outside which no information, even travelling at the speed of light, has yet reached Earth since the beginning of the universe, 15 billion years ago.”

PD: “The bizarre properties of black holes have greatly endeared these hypothetical objects to the general public. Sadly, a great many of the more speculative ideas of 'black holes' are based on idealised mathematical models that few physicists or astronomers believe correspond to reality.”

There is an interesting parallel – I consider special relativity as an idealised mathematical model that has been misinterpreted by many and the correct interpretation of the relevant maths turns it back to Newtonian physics. So when it comes to many people's interpretation of special relativity it does not correspond to reality.

PD: “One such speculation concerns travel through the interior of a rotating or electrically charged black hole. “

[pass on his talk of – time tunnels etc.]

PD: “General relativity can be fun, but what experimental evidence is there for the ideas of spacetime warps, blackholes and the like? Unlike special relativity, which intrudes into many areas of modern physics, general relativity is not part of mainstream science.”

Strange that he is dismissive of general relativity like this, its not conforming to his personal preference of what he wants to believe so he seeks to dismiss it. Basically he is just cherry-picking Einstein; some of the things he wants to believe from Einstein and other things he doesn't.

PD: “Experimental verification is difficult and expensive, and of interest mainly to astronomers and cosmologists.”

And that is part of “mainstream science” contrary to him trying to say its not.

PD: “Undoubtedly, the widespread acceptance of general relativity by the physics community is due as much to its aesthetic appeal as to its empirical foundation.

When we look at the history – general relativity was supposedly confirmed in 1919 and then this led to adaptation of the physics community interpreting things from special relativity. Now he wants to reverse all that. He has things messed up.

PD: “It is a bold, audacious, yet economical theory demanding a fundamental departure from traditional concepts. The many alternative theories of gravity pale into insignificance beside the intellectual grandeur of general relativity.”

PD: “Yet general relativity does have some impressive predictive successes. In its early days it explained the anomalous motion of the planet Mercury and the bending of starlight by the Sun.”

And Newtonian physics can also deal with these things as I have pointed out in other papers. The bending of starlight in Eddington's 1919 observation was supposed to be in general relativity twice that of Newtonian physics, but suitable adjustment of Newtonian physics maths can give the same

value. [6]

PD: “More recently, the discovery of binary pulsars has enabled one of the theory's most exciting predictions to be tested- namely, the emission of gravitational radiation, gravity's equivalent of light. Slowly but surely, as accuracy and technology improve, experiments are squeezing out theories rival to general relativity.”

PD: “Whatever the sociological reasons for the strange resistance that so many people have to the theory of relativity, ultimately experiment must decide the issue.”

Those experiments are being misinterpreted; such as the Michelson-Morley experiment being misinterpreted.

PD: “And time and again experiment comes down on Einstein's side.”

And since those experiments are being misinterpreted believing they come down on Einstein's side is a mistake.

Not all Einstein believers believe the same things. This person's dismissive attitude to general relativity is not typical of all, so he is just one faction.

Ideally there should be debate to sort out these problems with Einstein's physics, but since there is a faction of Einstein believers that want to misrepresent experiments, cherry-pick on what parts of Einstein they want to believe and present false history it is near impossible to reason with them.

## References

[1] New results show neutrinos still faster than light, 18 November 2011 Lisa Grossman  
<http://www.newscientist.com/article/dn21188-new-results-show-neutrinos-still-faster-than-light.html>

[2] Why pick on Einstein? Paul Davies New Scientist 7 August 1980

Note: I omit his box on Twin Paradoxes, because it does not resolve anything and already dealt with above.

[3] Relativity – joke or swindle, Essen <http://www.ekkehard-friebe.de/Essen-L.htm>

The Special Theory of relativity a critical analysis, Essen

<http://www.fileden.com/files/2008/8/24/2063601/physics/Oxford5-Essen.pdf>

[4] Experimental Basis for Special Relativity in the Photon Sector, Daniel Y. Gezari  
NASA/Goddard Space Flight Center, ExoPlanets and Stellar Astrophysics Laboratory, Code 667,  
Greenbelt, MD 20771 and American Museum of Natural History, Astrophysics Dept., New York,  
NY 10024

[5] Einstein's Investigations of Galilean Covariant Electrodynamics prior to 1905 p 2, John D.  
Norton Department of History and Philosophy of Science University of Pittsburgh [http://philsci-  
archive.pitt.edu/1743/2/Norton.pdf](http://philsci-archive.pitt.edu/1743/2/Norton.pdf)

[6] Note: Further I explain in my articles that Eddington made a mistakes in his maths and by  
Newtonian physics it gives the full light bending effect not the half he claimed.

c.RJAnderton2011