NOT SO FAST, DR. EINSTEIN, by Glenn A. Baxter, P.E.*

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REFERENCES:

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February 1963 Scientific American article "The Clock Paradox" by J. Bronowski

RELATIVITY FOR THE LAYMAN by James A. Coleman, Signet, New York, 1958

WAS EINSTEIN WRONG? A QUANTUM THREAT TO RELATIVITY - Scientific American, March, 2009

Complete article: www.k1man.com/b and www.k1man.com.c

ABSTRACT:

The Special Theory of Relativity is disproved here using simple high school algebra. The theory of relativity is LACED throughout and therefore clouds modern scientific thinking. As with Aristotle's theory about everything being made of earth, air, fire, and water, or that a heavier canon ball will fall to earth faster than a lighter wooden ball, said theories standing for over 2000 years, Dr. Einstein's Special Relativity is also wrong and has stood intact for over 100 years.

CONTENT:

Albert Einstein's name and his likeness are the most recognizable "trade marks" on earth today, which surpass other most popular recognizable things such as "the Beatles" or "Coca Cola." "The Beatles" is synonymous with "music" and "Coca Cola" is synonymous with "drink." "Einstein" is synonymous with "genius." Stop a stranger on the street and ask "Who was the smartest man who ever lived?" The reply will be "Einstein." "Why?" you ask. "Because of his theory of relativity" will come the reply.

The theory of relativity is LACED throughout modern scientific thinking. See, for example, the article about time in the June, 2010 issue of Scientific American or 2004 Physics Nobel Laureate Frank Wilczek's book The Lightness of Being, published in 2008. (See www.frankwilczek.com) As with Aristotle's theory about everything being made of earth, air, fire, and water or that a heavier canon ball will fall to earth faster than a lighter wooden ball, said theories standing for over 2000 years, Dr. Einstein's Special Relativity is also wrong and has stood intact for over 100 years.

Dr. Einstein argued that light in the Michelson-Morley experiment (focusing on that leg which travels at a right angle to the direction of relative motion) appears to an observer standing "still" to travel further than it appears to a second observer moving relative to the first. The speed of light c would be c equals distance observed by either observer to be travelled divided by the time for travel measured by either observer. Dr. Einstein then wrongly postulated that the speed of light, measured by any observer, is always constant. Since the two observers see different apparent distances, then, if the speed of light is constant, time measured by each observer must therefore "flow" at different rates.

From here, Dr. Einstein (derives other equations and) concludes, for example, that this relative motion "causes" mass to increase as well as being equivalent to energy as indicated by his most famous equation $E = MC^2$.

Engineer Glenn Baxter shows (with straightforward high school algebra) in his article, Not So Fast, Dr. Einstein, that Dr. Einstein's assumption about the constant light speed and his ensuing mathematics lead to the contradiction of time both slowing down and speeding up simultaneously, which, of course, is not possible. Further, when particles were collided with each other at the CERN laboratory near Geneva through the 1990s, a typical collision of electrons and positrons produced 10 pions, a proton, and an antiproton, with what coming out weighing thirty thousand times more than what went in. Thus there are reasons for mass to increase other that Dr. Einstein's Special Relativity uniform motion.

In his article, Mr. Baxter corrects these monumental errors by Dr. Einstein and then goes on to correctly derive $E = MC^2$, which is a special case of electron – positron annihilation creating photons (light). Mr. Baxter shows that the relation between mass and energy is much more complicated than Dr. Einstein's simple mathematical inherent energy of mass, as suggested by $E = MC^2$. Physics Nobel Laureate, Dr. Frank Wilczek, even (frequently) raises this equation to the misleadingly lofty and universal status of "Einstein's Second Law." Mr. Baxter then derives the equations which address the central idea of General Relativity, which is the effects of gravity on mass-less photons or light.

NOT SO FAST, DR. EINSTEIN – PART IA

By

Glenn A. Baxter, P.E.*

(See also the February 1963 Scientific American article "The Clock Paradox" by J. Bronowski)

Dr. Einstein looked at various experiments with light and then postulated that its speed is constant relative to any observer(1), but since measurement of light speed is direction sensitive, a measurement in a particular direction can actually give a larger value for the speed of light and a smaller speed in the reverse direction(A). As Dr. Einstein looked at only one of these larger measurements, as represented in the Lorentz transformations, and given his postulate that the speed of light is always constant relative to any observer, his logical explanation of the apparent discrepancy was that time must have slowed

down for the object that is in motion. From this incomplete analysis, he developed all of the mostly incorrect elements of the Special Theory of Relativity(4).

Dr. Einstein was ingenious in examining the various ramifications of relative motion, just as Darwin was ingenious in examining the ramifications of natural selection, but when examining relative motion we must be much more formal and rigorous in nailing down motion directions and what is moving where and relative to what.

Part of the confusion stems from the manner in which light (which has no mass and yet has both particle like and wave like characteristics) moves from one place to another. A baseball thrown forward by a boy or girl on a flat railroad car travelling, say, ten miles per hour due North, will travel ten miles per hour faster in the due North direction than another baseball thrown with the same intensity in the same direction by a friend standing on the ground by the tracks. The two speeds are additive.

If, instead, the youngsters are pulsing a flashlight beam (at night, of course!) instead of throwing a baseball, the simultaneous light pulses, Dr. Einstein argued, of both flashlights will arrive at a forward overpass at exactly the same time. He argued that the speeds are not additive. The pulse from the rail car will be Doppler effect "blue shifted" (higher frequency and thus higher energy) compared with the pulse originating on the ground. The baseball carries its higher energy in its higher speed, and the light carries its higher energy in its higher frequency, consistent with Dr. Planck's famous relation saying that Energy = (frequency)(Planck's constant). More later about this Doppler shift which turns out to be composed of two components related to both increasingly shorter distances travelled by the light as the train moves along, and a MEASURED increase in light velocity relative to the overpass. (This paragraph was modified on 19 May 2010).

Let us perform a thought experiment and synchronize two clocks, one on the train measuring time t and one on the train platform measuring time t'. I am sitting on the train platform, and my time is "prime time." Let t be the elapsed time for a flashlight pulse on the rail car to reach the front of the car. Suppose the train is traveling at speed v instead of 10 miles/hour. $v = s/t'$ where s is the distance travelled over the ground and t' is the elapsed time. Solving for s by cross multiplication gives $s = vt'$. Suppose I am sitting on the train station platform, and we will call this being "at rest."
The flashlight is at the exact middle of the car which is, say, 2 times d long. For the person on the car the speed of light is $c = d/t$. For me at the train station the train appears to be running away from the light and the speed of that light seems to be faster or d plus the distance the car has moved during time t', all divided by t', the elapsed time it took for the light to reach the front of the car, or $c' = (d + vt')/t'$. For me on the train platform, the light pulse certainly appears to have travelled further in the same amount of time and is therefore faster. Dr. Einstein makes a huge leap at this point. Since he postulated that the speed of light is always CONSTANT relative to ANY observer, his "logical" explanation for the above apparently different results for the measurement of the speed of light is that time on the train must have "slowed down" compared with time for me on the train platform(2).

But, as stated above, measurement of the speed of light is direction sensitive. If, instead, the light is flashed toward the back of the car, then the car appears to be catching up to the light, and the speed of light is again measured on the car as $c = d/t$, but on the platform I measure the speed of light as $c' = (d – vt')/t'$, and solving as below in (2) now gives $t = t'/ (1 – vt'/d)$ or $t > t'$, and now time appears to have "speeded up" on the train. Obviously time and a clock cannot simultaneously both speed up and slow down. Indeed, in this case, if v or the train reaches the speed of light, then $vt' = d$ and therefore t =

t'/0, and time would be flowing infinitely faster rather than at half speed as shown in (2) below on the very same train.

Dr. Einstein measured the speed of light on the train from one side of the train to the other (as described in the February 1963 Scientific American article "The Clock Paradox" by J. Bronowski) compared with the speed of the same light pulse as measured by me on the train platform. This sets up a right triangle where the Pythagorean Theorem and simple algebra (3) now calculate time "slowing down" to the tune of:

$$t = t'\sqrt{1 - v^2/c^2}$$

This is the exact relationship that Dr. Einstein arrived at and used as his corner stone for the Special Theory of Relativity as presented in his famous 1905 paper(4). His slowing of time gives yet a different direction sensitive magnitude of time slowing indicated in the above relationship:

$$t = t'/(1 + vt'/d)$$

If the train or if v reaches the speed of light in Dr. Einstein's formula, then time on the moving train slows to zero and thus stops altogether, leading to his "logical" conclusion that therefore nothing can reach, much less exceed, the speed of light. This cosmic speed limit proposed by Dr. Einstein for everything being that of the speed of light is, therefore, also brought into question by this writer. So far, we have seen three different formulas for three different light directions which have time or the clock on the train running half as fast, then infinitely faster, and finally stopped or flowing at a rate of zero. There are an infinite number of other directions other that 0, 90 (used by Dr. Einstein), and 180 degrees already used where the "slowing down" of time has a range of zero to half as fast to infinitely faster. All three formulas already seen and all measurements in the infinitely other directions are all incorrect since they all have the same clock on the train simultaneously slowing down or speeding up at different rates.

From the platform I could have measured the speed of light making a round trip, both forward and backwards from the middle, and the results would then be identical with the measurement made on the train(5). Round trip calculations with Dr. Einstein's formula(3) still comes up with time appearing to slow down since light does not change direction with respect to motion of the rail car travelling at 90 degrees to the direction of the light pulses.

Contrary to Dr. Einstein, clocks do not speed up or slow down due to relative motion of the clocks. In his famous 1905 paper(4), Dr. Einstein incorrectly stated:

> "…..Thence we conclude that a balance clock at the equator must go more slowly, by a very small amount, than a precisely similar clock at one of the poles under otherwise identical conditions."

So, the clock on the train appears to slow down or speed up depending on which method of calculation is used as directed by the direction of the light being measured when relative motion is involved. The Pythagorean method of Dr. Einstein through his "off the shelf" application of the Lorentz transformations, as discussed in the 1963 Bronowski Scientific American article(6) , with its squares, as used by Dr. Einstein, locked him in to time only slowing down and thus neglecting all the legitimate

other measurements where time appears slow down at different rates or even speed up. The fact is that time neither slows down or speeds up, and therefore Dr. Einstein based much in his famous theories (that supposedly revolutionized classical physics) on a fairly simple yet major error in his original 1905 paper(4). Dr. Einstein's critical error was groping at the already existing Lorentz transformations in his analysis of light at only 90 degrees and then rushing ahead too quickly with his theories. Just as Aristotle had us all believing for two thousand years that all matter consisted of earth, air, fire and water, and that a heavy shot put would fall faster than a lighter golf ball, both Dr. Einstein and Aristotle were human and both were capable of making some fundamental errors.

Galileo had the presence of mind to climb the Leaning Tower of Pisa and drop the two different balls to see what would really happen, and Lavoisier was quite a bit more sophisticated when working in his chemistry laboratory to debunk the earth, air, fire and water model of all things. What if the tower at Pisa had been built "properly" and did not lean? Would Galileo have made his famous discovery? One tiny mistake of a leaning tower compensated for a huge mistake made by Aristotle. Here, a tiny mistake by Dr. Einstein may have caused huge mistakes by scientists who are too busy to check out the mundane fundamentals underpinning the theories of relativistic motion.

In summary, the speed of light is, indeed, constant, but will APPEAR to speed up, or slow down, or stay the same, depending on how the measurement is made between two moving platforms. Time is also constant in the abstract sense of being something that "flows" forward and is a quantity used as a parameter to describe physical events such as motion, where motion or velocity is defined as distance divided by time. But time can only be compared to other time such as "how long" it takes the earth to make a single rotation. Time is not a fundamental entity in nature, as suggested by Dr. Einstein, that slows down or speeds up, but is rather a derived quantity that can be used to compare things that happen in the universe. As such, if time did not exist, the universe would have to stop in the sense that if the universe were nothing more than an endless vacuum, there would be no entity or entities to exhibit the "thing" that time is.

Consider this: If the universe was an empty vacuum and time therefore did not exist, would the Pythagorean Theorem exist? Yes it would! Things like the laws physics cannot be eliminated with the same ease with which something like time can be eliminated. Thus the Pythagorean Theorem and all the laws of physics are arguably and through definition in the "spiritual" domain while time is in the physical domain. Dr. Einstein seems to have put time in the wrong domain.

(1) For example, light from a binary star system when each star is equal distance from us, with one star moving away from us and the other moving toward us, is postulated to arrive at exactly same time.(A)

(A) This sentence was modified on 11 July 2010 and again on 26 September 2010.

(2) If t' is time for me on the platform and t is time as measured on the train, then $c' = (d + vt')/t'$, and $c = d/t$ so that if $c' = c$, namely if the speed of light is constant (and always MEASURED constant – IT IS NOT) relative to any observer, then $(d + vt')/t' = d/t$ or by cross multiplication $t(d + vt') = dt'$ so that $t = dt'/(d + vt')$ and therefore $t = t'/(1 + vt'/d)$ or $t < t'$, so that time appears to have slowed down on the train (or the clock on the train must have slowed down

compared with my clock on the platform). If v reaches the speed if light, then vt' = d and therefore t = t'/2 or time would be flowing half as fast on the moving train.

(3) Construct a right triangle ABC with the right angle at B. C is toward the front of the train car and B is at the side of the car nearest the train platform. A is directly opposite B on the other side of the train car. Light on the car is flashed from A to B . t is the time it takes the light to travel from A to B. Let the distance AB be d = ct where c is the speed of light. BC is the distance travelled by the train car as perceived by me = vt'. The distance traveled by the light as perceived by me is the hypotenuse AC of this right triangle = d' = ct'. Using the Pythagorean Theorem for a right triangle, AB squared plus BC squared = AC squared or ct squared + vt' squared = ct' squared. Solving this using high school algebra gives:

$$t = t'\sqrt{1 - v^2/c^2}$$

(4) ON THE ELECTRODYNAMICS OF MOVING BODIES by A. Einstein, "Zur Elektrodynamik Bewegter Korper," Annalen der Physic, 17, 1905.

(5) v = s/t', and by cross multiplication, s = vt'. The fundamental issue is that the apparent distances travelled by the light are different on the train and as perceived on the train platform. On the train car the round trip distance is d + d + d + d = 4d. As measured on the train platform, the distances are d + vt' + d – vt' + d – vt' + d + vt' = 4d. Thus, since the distances are the same, then t = t' and time neither slows down or speeds up.

(6) February 1963 Scientific American article "The Clock Paradox" by J. Bronowski

(7) RELATIVITY FOR THE LAYMAN by James A. Coleman, Signet, New York, 1958

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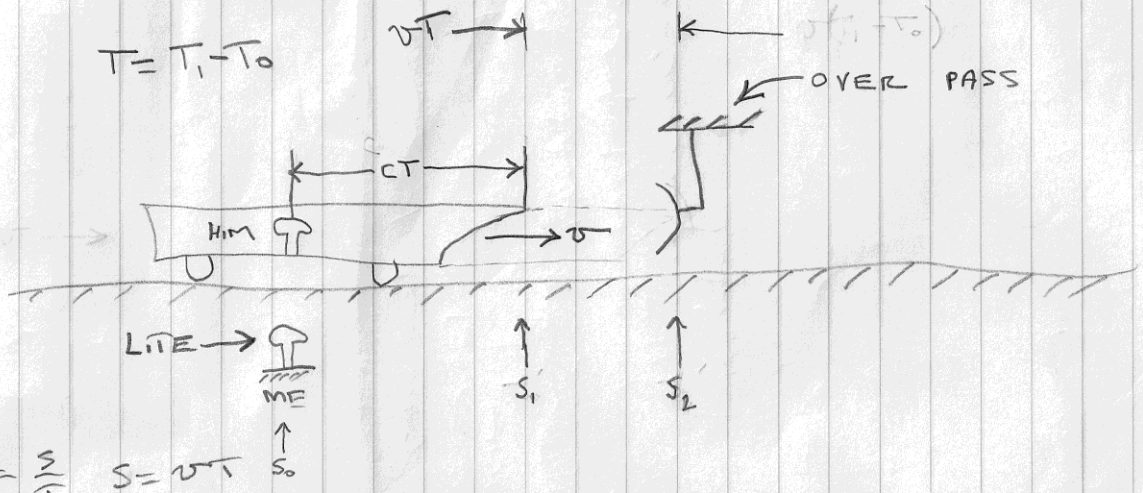
fig 1



$v = \frac{s}{t}$ $s = vT$

My Time is prime time. When my lite reaches S_1, his lite reaches S_2. He measures $c = \frac{cT}{T} = c$. I measure his lite $c' = \frac{cT' + vT'}{T'} = c + v$. I also measure two blue shifts.

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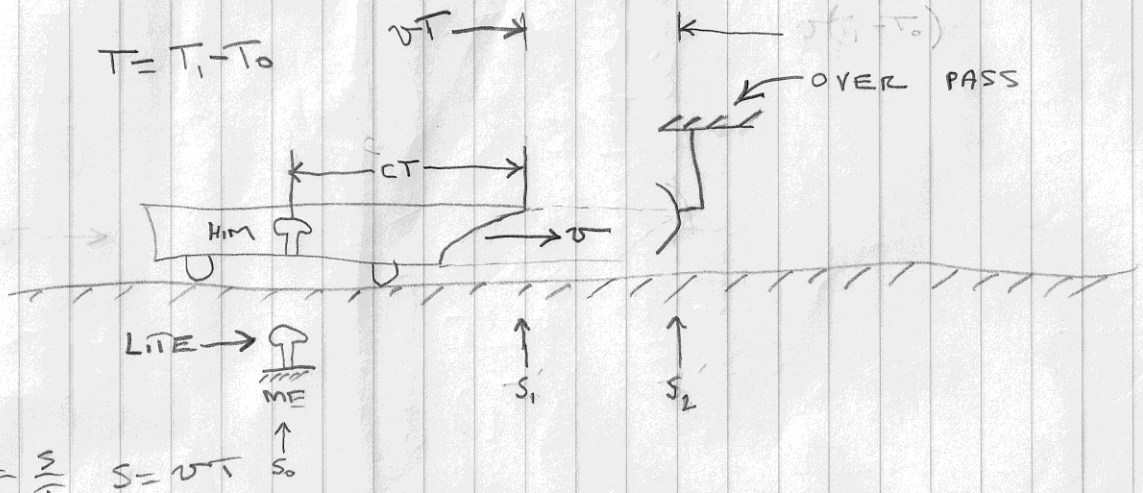
fig 1



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NOT SO FAST, DR. EINSTEIN – PART II

By

Glenn A. Baxter, P.E.*

Described in this writer's 10 December 2008 paper entitled "NOT SO FAST, DR. EINSTEIN," now designated as "NOT SO FAST, DR. EINSTEIN – PART I," was the conclusion by Dr. Einstein that relative motion "causes" time to slow down (dependent on the remarkable property of light having constant speed) which was not consistent with time simultaneously "speeding up" in that moving rail car thought experiment. Dr. Einstein's formula for this:

$$T = T'\sqrt{1 - v^2/c^2}$$

Where t is time passing on the rail car, t' is time passing on the train platform, v is velocity of the train, and c is the speed of light

turns out to be a special case of relative motion where light is travelling from the far side of the rail car toward the near side of the rail car and also toward me (my time is "prime" time) sitting on the train platform on the near side with the train travelling perpendicular to the light and also going from left to right. To make the transformation between the Cartesian coordinate system on the "moving" rail car and the Cartesian coordinate system on the "stationary" train platform, a right angle "special case time transformation triangle" was used:

Special Case Time Transformation Triangle

Since velocity is distance/time and therefore distance = velocity times time, ct on the" special case time transformation triangle" represents the distance that light has travelled across the rail car in time t in the rail car coordinate system, vt' represents the distance travelled by the train in my train platform Cartesian coordinate system, and ct' is the resultant and apparently longer distance "actually" travelled

in my train platform Cartesian coordinate system. Dr. Einstein incorrectly assumed that the speed of light c of ct is equal to the speed of light c of ct', since the actual speed of light is constant. The speed of light IS constant, but in this coordinate transformation, the speed of light c of ct IS NOT equal to the speed of light c of ct'. Since the distance ct' in the platform coordinate system is clearly greater than the distance ct in the rail car coordinate system, Dr. Einstein assumed that in view of his postulate that the speed of light is always constant, the discrepancy is explained by concluding that time must have slowed down on the moving train. Wrong! Light travels the longer distance ct' in the SAME amount of time because light only APPEARS to me on the train platform to be faster. IT ISN'T FASTER. Relative motion only causes it to appear to me on the train platform to be faster.

However, using Dr. Einstein's incorrect reasoning that c of ct and of ct' are both the same and that therefore it must be that t slows down when relative motion is involved, we solve the special case time transformation triangle with the Pythagorean theorem as follows:

$$c^2T'^2 + v^2T'^2 = c^2T'^2$$

$$c^2T^2 = c^2T'^2 - v^2T'^2$$

$$T^2 = T'^2 - \frac{v^2T'^2}{c^2}$$

$$T^2 = T'^2\left(1 - v^2/c^2\right)$$

$$T = T'\sqrt{1 - v^2/c^2}$$

This is Dr. Einstein's famous equation predicting that relative motion causes time to slow down. As seen in Part I, changing the direction of ct will cause time to simultaneously slow down at different rates and even speed up at different rates which is, of course, impossible.

Continuing with Dr. Einstein's fundamental error described above, let's derive his most important other relativity formulas such as:

$$m' = \frac{m_o}{\sqrt{1 - v^2/c^2}}$$

Where m_o is "rest" mass and m' is the apparently "increased" mass caused by relative motion

which predicts that relative motion causes mass m in the "moving" coordinate system to increase, and:

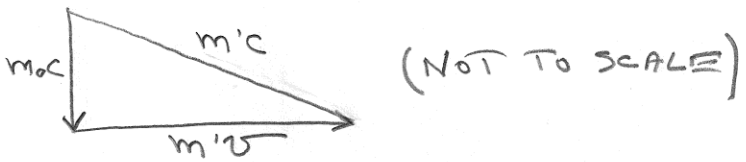
$$E = mc^2$$

which calculates an exact interchangeable relationship between mass and energy. The first formula:

$$m' = \frac{m_o}{\sqrt{1 - v^2/c^2}}$$

is described by Dr. Richard P. Feynman (1965 Nobel Prize in physics) in his famous 1961 – 1962 Cal Tech physics lectures (8): "...For those who want to learn just enough so they can solve problems, (this formula) is all there is to the theory of relativity – it just changes Newton's laws by introducing a correction factor to mass.....":

This time we use a "special case momentum transfer triangle":

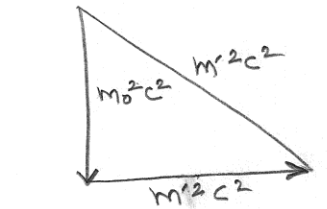


Special Case Momentum Transfer Triangle

Using the same train thought experiment, we now look at momentum which is defined as mass times velocity. We know that massless light photon particles impart velocity and thus momentum to electrons when "crashing" into them. After the "crash," light correspondingly loses the momentum energy thus transferred as measured by Dr. DeBroglie to be longer wavelength where light energy is E = hc/lambda = hf, where f is the particular light frequency and lambda is the particular light wavelength.

On the "special case momentum transfer triangle," m_o is a hypothetical "rest" mass particle travelling from the far side to the near side of the rail car at a hypothetical speed of light just as the light flash was travelling before on the "special case time transformation triangle." m'v is the momentum imparted to the particle by the train's velocity and m'c is the resultant momentum, both being in the train platform coordinate system.

Again, using Dr. Einstein's incorrect reasoning that c in m'c and c of m_oc are both the same and that therefore it must be that m changes when relative motion is involved, we solve this "special case momentum transformation triangle" with the Pythagorean theorem as follows:



$$m_o^2c^2 + m'^2v^2 = m'^2c^2$$

$$m_oc^2 = m'^2c^2 - m'^2v^2$$

$$m_o^2 = m'^2 - \frac{m'^2v^2}{c^2}$$

$$m_o^2 = m'^2\left(1 - v^2/c^2\right)$$

$$m_o = m'\sqrt{1 - v^2/c^2}$$

$$m' = \frac{m_o}{\sqrt{1 - v^2/c^2}}$$

This is the famous and fundamental " Dr. Einstein" relativity formula, and, to repeat for important emphasis, is what Dr. Feynman described in his 1961 – 1962 lectures as "....For those who want to learn just enough so they can solve problems, (this) is all there is to the theory of relativity – it just changes Newton's laws by introducing a correction factor to mass.....":

Just as with the light flash on the train, we could have changed the direction of the particle and therefore come up with different "changes" to mass as "caused" by relative motion. Thus, we see that we have massive problems continuing with special relativity theory.

Dr. Einstein continued further with

$$m' = \frac{m_0}{\sqrt{1 - v^2/c^2}}$$

$$m_0 = m'\sqrt{1 - v^2/c^2} = m'\left(1 - v^2/c^2\right)^{-1/2}$$

Expanding this with the binomial theorem gives

$$m_0 = m'\left(1 + \frac{1}{2} v^2/c^2 + \frac{3}{8} v^4/c^4 + \dots\right)$$

This series rapidly converges when v is small so that the terms after the second or third are negligible so that

$$m_0 \cong m' + \frac{1}{2} m' v^2 \left(\frac{1}{c^2}\right)$$

Multiplying both sides by c squared gives:

$$m_0 c^2 = m' c^2 + \frac{1}{2} m' v^2 + \dots$$

Dr. Einstein interpreted the first term to the right of the equal sign to be part of the total energy of a mass or intrinsic "rest mass" and the next term to be ordinary kinetic energy. Thus is derived from an incorrect use of the constant speed of light in the momentum transfer triangle is Dr. Einstein's most famous equation:

$$E = mc^2$$

We do know that all particles have anti particles which turn into pure DeBroglie electromagnetic energy when particles and aniti particles come together. Thus, although

$$E = mc^2$$

or some such conversion between mass and energy or between momentum and E = hf electromagnetic energy is certainly desirable,

$$E = mc^2$$

appears to be incorrect and also much too simplistic to adequately describe what is really going on here.

Enter quantum mechanics weirdness. A massless light photon imparts mv momentum to an electron which does have mass and also acts like a mass when it is apparently attracted by gravity. On the "special case momentum transfer triangle," it was totally bogus to assume that m', with mass, could even travel at the speed of light. By making that assumption, Dr. Einstein was prematurely equating massless photon properties with a mass capable of photon (and thus electromagnetic) properties. We have thus used classical ideas and bogus assumptions to derive:

$$m' = \frac{m_0}{\sqrt{1 - v^2/c^2}}$$

which actually appears to be a quantum mechanical idea. Sort of like proving Santa Claus by noticing empty stockings the night before and full ones on Christmas morning. Perhaps such bogus classical reasoning is perfectly allowable in the weird world of quantum mechanics. Students occasionally do use the wrong methods and make obvious mistakes and still arrive at the correct answer And how does light manage to travel like a wave at constant speed through empty space? The nature of light and all electromagnetic phenomena seems to be at the very center of quantum mechanics weirdness, and perhaps by clearing up so much misunderstanding about special relativity, greater progress can be made in 21st century physics.

(8) THE FEYNMAN LECTURES ON PHYSICS (the definitive edition), Feynman – Leighton – Sands, Addison Wesley, San Francisco, 2006, Chapters 15, 16, and 17.

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NOT SO FAST, DR. EINSTEIN – PART III

By

Glenn A. Baxter, P.E.*

Dr. Louis Victor DeBroglie (1929 Nobel prize in physics) predicted that particles with momentum (m = mass times velocity), such as electrons, should exhibit wavelike characteristics according to:

$$\lambda = \frac{h}{p}$$

Dr. Einstein postulated that all photon "particles" exhibit energy according to Dr. Planck's formula:

$$E = hf = \frac{hc}{\lambda}$$

and that mass can change into energy according to:

$$E = mc^2$$

In Part II we saw that we derived:

$$E = mc^2$$

by using a "Special Case Momentum Transfer Triangle" and then neglecting relative velocity v.

SIMPLIFIED MASS - ENERGY TRANSFORMATION MODEL

Taking a non relativistic approach, assume, for example, that an electron "crashes" into a positron (causing mutual annihilation) to form intensive electromagnetic radiation (Gamma rays), depicted below as two theoretical photon "particles."

$$e^- + e^+ \longrightarrow 2 \text{ PHOTONS}$$

$$\frac{1}{2}mv^2 + \frac{1}{2}mv^2 \longrightarrow mv^2$$

Assume that the electron and positron each have negligible "spin" energy and thus purely kinetic energy according to:

$$\frac{1}{2}mv^2$$

and as the electron and positron are accelerated together by the Coulomb plus and minus electrostatic forces, each particle approaches the speed of light. When they meet and neutralize each other, they also simultaneously change from mass to pure electromagnetic energy, or photons, with zero mass and also with the speed of light:

$$\frac{1}{2}mc^2 + \frac{1}{2}mc^2 \longrightarrow mc^2 = E$$

Dr. Einstein would have predicted (2)mc squared to account for both the mass of the electron and the mass of the positron. So, using:

$$E = mc^2 \quad \text{AND} \quad E = hf = \frac{hc}{\lambda}$$

and momentum p = mv or, at the instant of contact or mutual annihilation:

$$p = mc$$

$$\text{So} \quad E = \frac{hc}{\lambda} = mc^2 = pc$$

$$\text{OR} \quad \frac{hc}{\lambda} = pc \quad \text{OR} \quad \frac{hc}{pc} = \lambda$$

$$\text{So} \quad \lambda = \frac{h}{p} \quad (\text{DR. DeBROGLIE'S FORMULA})$$

So, to get from the

$$E = \frac{1}{2}mv^2$$

and

$$p = mv$$

particle world to the

$$E = \frac{hc}{\lambda}$$

wave world, we did, after all, need:

$$E = mc^2$$

which turns out to be "correct," or half correct, but which has nothing to do whatsoever, really, with relative motion or relativity, as postulated by Dr. Einstein.

So, contrary to electron and positron masses increasing to infinity when approaching the speed of light, as predicted by Dr. Einstein:

$$m' = \frac{m_0}{\sqrt{1 - v^2/c^2}}$$

the masses DECREASE to zero – not even close! Dr. Einstein says infinity and the correct answer is zero!

The question now is how many particles with their corresponding anti particles can be obtained from a mass and what, if anything, is left over?

NOT SO FAST, DR. EINSTEIN – PART IV

By

Glenn A. Baxter, P.E.*

SPEED OF LIGHT MEASUREMENTS

In his original 1905 Special Relativity paper(4), Dr. Einstein states on page 2:

".....Light is always propagated in empty space with a definite velocity c (186,000 miles per second) which is independent of motion of the emitting body....." In other words, this is his postulate that says the speed of light is always constant. Dr. Brian Green, a physicist at Columbia, reports in his book "The Elegant Universe"(10) on page 32 that:

".....In 1913 the Dutch physicist Willem de Sitter suggested that fast moving binary stars (two stars that orbit one another) could be used to measure the effect of a moving source on the speed of light. Various experiments of this sort over the past eight decades have verified that the speed of light from a moving star is the same as that from a stationary star....." Indeed, partly in reliance on this reporting by Dr. Green, this writer stated in Part I of this paper that:

"..... A baseball thrown forward by a boy or girl on a flat railroad car travelling, say, ten miles per hour due North, will travel ten miles per hour faster in the due North direction than another baseball thrown with the same intensity in the same direction by a friend standing on the ground by the tracks. The two speeds are additive.

If, instead, the youngsters are pulsing a flashlight beam (at night, of course!) instead of throwing a baseball, the simultaneous light pulses of both flashlights will arrive at a forward overpass at exactly the same time. The speeds are not additive. The pulse from the rail car will be Doppler effect "blue shifted" (higher frequency and thus higher energy) compared with the pulse originating on the ground. The baseball carries its higher energy in its higher speed, and the light carries its higher energy in its higher frequency, consistent with Dr. Planck's famous relation saying that Energy = (frequency)(Planck's constant)....."

The above conclusions about the speed of light are not consistent with recent thought experiments conducted by this writer.

SPEED OF LIGHT THOUGHT EXPERIMENTS

Dr. James Clerk Maxwell (1831 – 1879), Scottish Professor of Physics at Cambridge, showed mathematically that electromagnetic waves (presumably including radio waves, light waves, X rays, and

Gamma rays) all travel at the speed of light c or:

$$c = \frac{1}{\sqrt{\mu_0 \varepsilon_0}}$$

WHERE μ_0 = PERMEABILITY CONSTANT

AND ε_0 = PERMITTIVITY CONSTANT

Armand Hippolyte Louis Fizeau (1819 – 1896), the French physicist, actually measured (and thus confirmed) Maxwell's predicted speed of light with a physical cog wheel device which is illustrated by Dr. George Gamov in his book "One Two Three Infinity" (9):

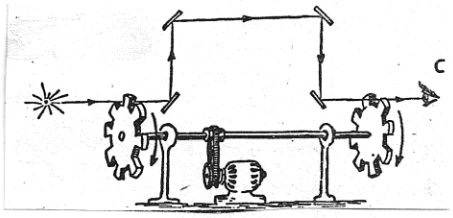


Figure 1

Quoting Dr. Gamov on Page 81: "....Two cogwheels set on a common axis in such a way that if you look at the wheels parallel to the axis you can see the cogs of the first wheel covering the intervals between the cogs of the second one. Thus a thin beam of light sent parallel to the axis cannot pass through, no matter how the axis is turned. Suppose now that the system of these two cogwheels is set into rapid rotation. Since the light passing between two cogs of the first wheel must take some time before it reaches the second wheel, it will be able to pass through if during that time the cogwheel system turned by half the distance between two cogs. The situation here is rather similar to that of a car moving at a proper speed along an avenue with a synchronized system of stop lights. If the wheels are rotating twice as fast, the second cog will come into place by the time the light gets there, and its progress will be again stopped. But at a still higher rotation speed the light will be able to go through again since the cog will have passed the path of the light, and the following opening will be within the path of light just at the proper time to let the light through. Thus, noticing the rotation speeds corresponding to successive appearances and disappearances of light one is able to estimate the speed of light while traveling between the two wheels. To help the experiment, and to reduce the necessary speed of rotation, one can force the light to cover a larger distance while going from the first cogwheel to the second; this can be done with mirrors as indicated (in the figure). In this experiment Fizeau found that he was first able to see light through openings in the wheel nearest him when the apparatus was rotating at 1000 revolutions per second.

This proved that at that speed cogs had traveled half the distance between them in the length of time necessary for the light to travel the distance from one wheel to the other. Since each wheel had 50 cogs all of identical size, this distance was obviously 1/100 the circumference of the wheel, and the time of travel the same fraction of the time it took the wheel to make a complete revolution. Relating these calculations to the distance through which light passed from one wheel to the other, Fizeau arrived at a speed of light of 186,000 miles per second, which was about the same as the result as obtained by

Roemer in his observations of the satellites of Jupiter....." and the speed of electromagnetic waves as calculated by Maxwell.

The Fizeau apparatus, together with the moving rail cars already discussed in this paper, can be used in several "thought experiments" to test the correctness or errors in Dr. Einstein's hypothesis that the speed of light is really constant.

First, consider being in a space ship in the middle of space with nothing else existing in the universe whatsoever. Is your spaceship moving or is it stationary? You check the space ship's log and find no record of acceleration, so you conclude that you are stationary. Now, you IMAGINE an imaginary point 12 billion light years away apparently moving directly toward you at a speed of 100,000 miles per second. Are you moving toward the point or is the point moving toward you? How can you tell which is which? You cannot.

Now imagine that the point is instead a flashlight pointed directly at you. If the flashlight is stationary, the light is coming at you at the speed of 186,000 miles per second while you are moving toward the light beam so as to meet the light beam part way (near the middle) in 12 billion years minus (100/186) X 12 = 12 minus 6.45 = 5.55 billion years.

So, you can say that the speed of light is a constant 186,000 miles per second and you are meeting it about half way, or, in the alternative, you can say that the light is travelling faster, at the rate of 286,000 miles per second. It is impossible to tell which is which. Let's continue these "thought experiments":

Let's imagine your space ship is really a "space car" 12 billion light years long. Regardless of whether you imagine an external point that is stationary or moving relative to your space craft, a light flash from the back of the "space car" will take 12 billion years to reach the front of the "space car."

Now imagine the external point is a distance ahead of the "space car" and moving toward the car or else the car is moving toward the point at the velocity v such that the point and the front of the car meet at the exact instant that the flash from the back of the "space car" gets to the front of the" space car."

Again, either the light travels at 186,000 miles per second to the front of the car while the front of the car reaches the point or the same thing happens while the point reaches the car. It is impossible to tell which is which. In one case the light is traveling at 186,000 miles per second and in the other case we measure the light as traveling faster. It is still impossible to tell which is which.

Now we try using the Fizeau apparatus mounted on a rail car:

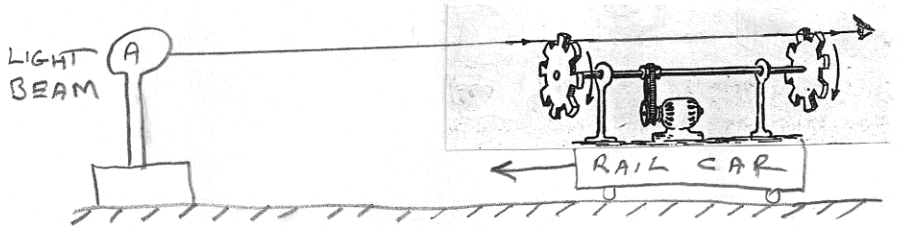


Figure 2

Light is flashed from the "fixed" point A from left to right while the rail car approaches the light beam from right to left. The Fizeau apparatus will clearly measure the light travelling between the cog wheels as being faster than 186,000 miles per second as the rail car is meeting the light flash part way. The light can be said to be travelling at 186,000 miles per second with the Fizeau apparatus simply measuring a higher speed.

Now let's assume the car to be "fixed" and the source of the light to be moving from left to right:

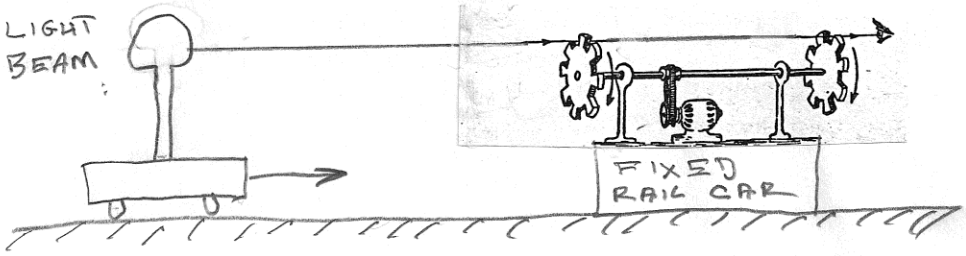


Figure 3

Figure 2 is really equivalent to Figure 3, but it in Figure 3 it can be said that light is travelling faster than 186,000 miles per second on the one hand and on the other hand light is travelling 186,000 miles per second in figure 2 and the car is meeting the light beam part way. It is impossible to tell which is which.

Next is the issue of a light on a moving rail car moving forward racing against a light flashed from the ground toward a forward overpass. You can consider this or consider the equivalent situation of the rail car being stationary with the overpass moving toward the car while the person previously on the ground is also moving such that there remains no relative motion between that person and the overpass. Both light flashes in this thought experiment will not arrive at the overpass at exactly the same instant as previously stated in Part I of this paper. The speed of light in this "thought experiment" turns out NOT to be constant.

Finally is the issue if binary stars sending light toward us far away. One star is moving toward us and the other star at exactly the same distance is moving away from us:

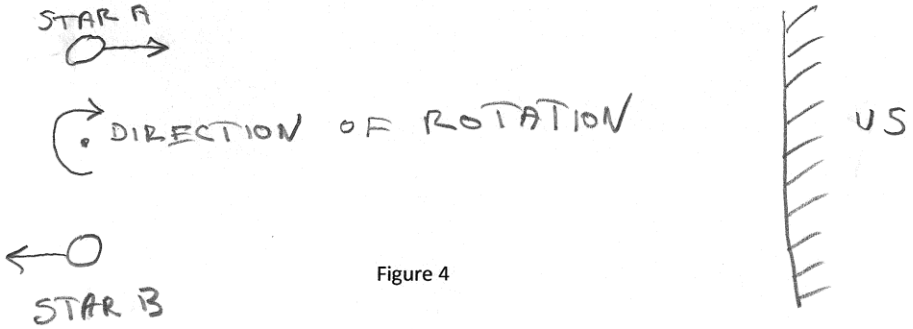


Figure 4

NOT SO FAST, DR. EINSTEIN – PART V

By

Glenn A. Baxter, P.E.*

(See also the February 1963 Scientific American article "The Clock Paradox" by J. Bronowski)

SPEED OF LIGHT THOUGHT EXPERIMENTS WITH BINARY STARS

Dr. Einstein states in his 1916 book, The Special Theory of Relativity, that Dutch astronomer De Sitter was able to show that light from two (binary) stars circling each other, one while one is towards us and the other is heading away from us, would arrive at exactly the same instant.

Consider Figure 1-a where points A and C represent a double star system and the stars are rotating around "fixed" point B in a clockwise direction. Points D and F represent another double star system which rotate in a clockwise direction around "fixed" point E. Does light from A and C actually arrive at the vertical line through point E at exactly the same time? At the instant shown in Figure 1, the light source at C is moving toward the vertical line through E and the light source at point A is moving away. For the moment, let's consider a simplified version of this thought experiment in Figure 2 with all four stars moving tangent to their circular orbits in straight lines and the stars thus not rotating at the instant that the light from the sources A and C are "flashed."

Now consider Figure 2-a where a light is "flashed" from point C toward point D. Points B, G, and E are considered to be "fixed" as indicated on the diagram. Light source C is moving from left to right with velocity v. Relative to "us" at point G, does the light move "faster" than the speed if light c? Does it move at speed c + v? Since all uniform motion is relative to other uniform motion, we can instead consider points C and D to be "fixed" and points B, E, and G to be moving from right to left at speed v. Thus, a vertical line through E will meet light from C "part way" at point H at time = t(1). In this case, the speed of light appears to not have changed at all but to still be c. However, the RELATIVE VELOCITY between the light from source C and the vertical line through E appears to have increased to c + v.

If, however, we go back to considering B, G, and E to be "fixed," then to "us" at point G, the SPEED OF LIGHT appears to have increased to c + v. When arriving at the vertical line through E, the light will be Doppler "blue shifted," or with more energy (at a higher frequency in accordance with Planck's E = hf, where h is Planck's constant and f is frequency). The increased speed of light allows the flash to arrive sooner, at T(1) than a flash from "fixed" point B would arrive at "fixed" E at T(2).

Also, point D appears to be "running away," from the light flash from point C, at speed v, and the light finally "catches up" to D at point I at time = T(2). There is no relative motion between points C and D, and the light arriving at D is not Doppler shifted at all.

The light, due to motion v of point C, was thus given some “extra energy,” which was both represented by the Doppler blue shift (or increase in frequency) and extra speed v. The extra speed gets the light to point H “sooner,” at T(1)

If point D were instead ”fixed,” until the light at arrived at time = T(1), and then suddenly “jumped up” to speed v, the light due to the extra v would arrive “sooner” at D, or at time = T(1),but the “extra” relative energy (or blue shift) would now be gone because of D’s speed which was suddenly increased by v.

Think of a car moving at 20 miles per hour headed due east. A second car is sitting still on the same road 20 miles due east of the first car. In one hour there will be a huge “crash” when car 1 collides with car 2. If, just before the “crash,” car 2 accelerates up to 20 miles per hour due east, there will be no “crash” because there will the be no velocity difference, exactly analogous to the situation with the light flash above.

Now consider light flashed from point A (which is moving from right to left at speed v) toward point F, (also moving from right to left at speed v). Is the light, relative to “us” at point G going slower? Again, we can consider A to be “fixed” and the vertical line through point E to be “running away” from the light flash. Here the light speed appears to be unchanged but THE RELATIVE VELOCITY between point A and the vertical line through point E seems to be increased by v. However, if we consider points B, G, and E to be “fixed,” then the speed of light appears to be decreased to c – v.

Going back to Figure 1, where the stars are rotating, there would be a problem with our above analysis where we considered C and A to be “fixed” and the vertical line through E to be moving, since relative to C the vertical line through would have to move to the left but relative to A it would simultaneously have to move to the right as indicated in Figures 1-b and 1-c. This is, of course, impossible.

Thus we cannot consider the speed light to be constant with other things either catching up with it of running away from it to change the relative velocity. Instead, we must consider the relative speed of light compared to some common point to be actually speeding up or slowing down. Light relative to its source in uniform motion, however, is constant.

NOT *SO FAST, DR. EINSTEIN - PART VI*

By

Glenn A. Baxter, P.E.

Certified Mail to Scientific American - 7008 1300 0000 2089 5780

GENERAL RELATIVITY

Dr. Einstein's Special Theory of Relativity has been disproved, mathematically, in Parts I - IV of this paper. The findings therein show that relative uniform motion DOES NOT cause time to slow down, mass to increase, or measuring rods to change length. Also, the speed of light, correctly predicted mathematically in 1873 by James Clerk Maxwell, IS NOT measured the same by all observers who are in relative motion. Dr. Einstein's erroneous analysis happens, by error, to put forward, for wrong reasons, in 1905 (See Analen der Physik, 17, 1905, Page 32, "A Stubbornly Persistent Illusion" edited by Dr. Stephen Hawking, Running Press, Philadelphia – London) , the correct the idea that:

$$E = mc^2$$

This formula, which just happens to be right, has been taken, to date, as "gospel" by most scientists today. It provides a vital bridge between classical mechanics and later developed quantum mechanics ideas which center on the very interesting and strange behavior of electromagnetic photons (energy particles/packets of energy) that also act like radiation waves.

Electrons, positrons, protons, and neutrons, all have mass and all obey Newton's mass and gravity relationships:

$$F = ma = K\frac{m_1 m_2}{r^2} \cong mg$$

Photons do not have the mass needed to be used in the above formulas, but yet they do exhibit momentum (P = mass times velocity), as demonstrated by Arthur Compton (Nobel Prize in Physics 1927), and are affected by gravity, as obseved in 1919 by the deflection of starlight moving past the surface of the sun, visible only during a total eclipse. According to Newton's relationship:

$$F = \frac{K m_1 m_2}{r^2}$$

this would not seem possible if you consider M(2) to be the mass of the sun and M(1) to be the mass of a photon (which is zero). In other words, how can gravity affect a photon, without mass, when Newton's formula:

$$F = \frac{K m_1 m_2}{r^2}$$

suggests that gravity can only affect entities that do have mass? This is why we need to use the important bridge between the mass and energy worlds:

$$E = mc^2$$

Dr. Einstein tried to calculate the effect of gravity on light photons in 1911 (See Analen der Physik, 35, 1911, Page 35, "A Stubbornly Persistent Illusion" edited by Dr. Stephen Hawking, Running Press, Philadelphia – London) by first postulating that gravity is identical to acceleration and then applying his incorrect theory of Special Relativity and the correct relationship:

$$E = mc^2$$

His ideas therein translate to figure 1 below where if you were in a box, you could not tell whether the box was sitting on the surface of the earth in its gravitational field or in the middle of deep space with a rocket motor underneath the box accelerating the box upward at the same rate that an apple on the earth surface would accelerate downward due to gravity. This equivalence is not exactly true because gravity at the bottom of the box on the earth's surface would be stronger than gravity at the top of the box in accordance with Newton's relationship:

$$F = \frac{K m_1 m_2}{r^2}$$

With the rocket motor under you in deep space, the accelerations down of something dropped inside the box would be the same at the top of the box as it would be at the bottom of the box. Consider figure 1:

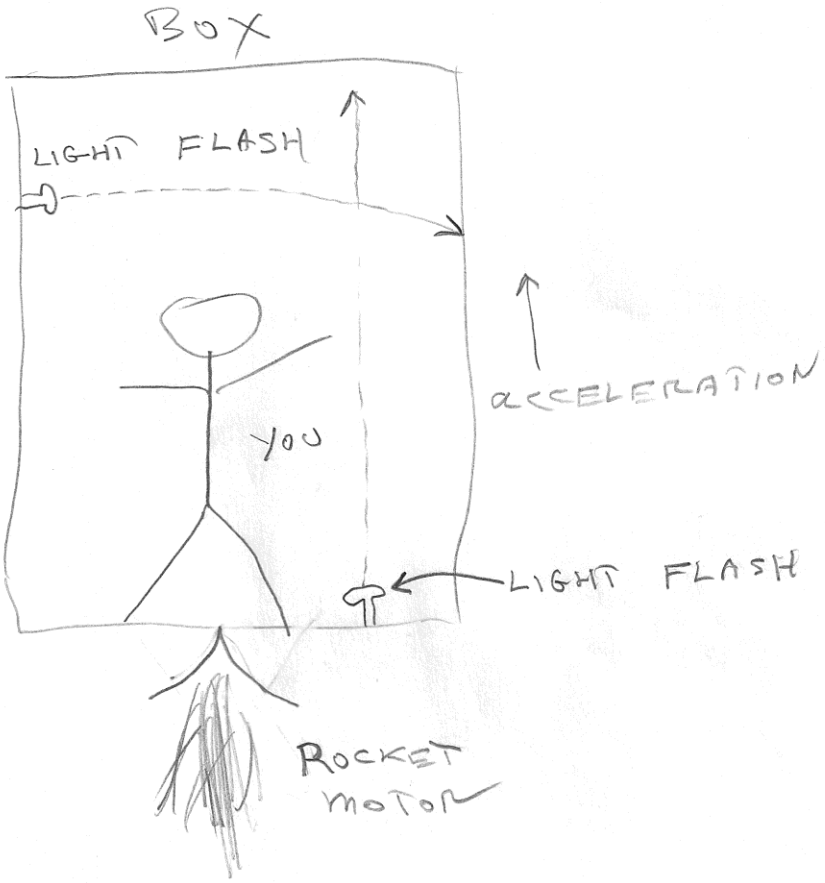


FIGURE 1

A light photon flashed from left to right across the box will curve downward because the box is accelerating upward while the photon is not imparted with any further" pushing." We know from the 1919 star deflection measurements that the light flash would do the same thing if the box were sitting on the surface of the earth as gravity appears to "pull" on the photon. In the first box experiencing acceleration, the photon would seem to curve the same while going from left to right where in the box on the earth surface, the pull of gravity would be greater as the photon gets closer to the earth. Thus the effects in the two boxes are not exactly identical as postulated by Dr. Einstein.

If you flash a photon upward in the box in deep space with the rocket motor, the top of the box will " pull away" from the photon as compared with a box in deep space with the rocket motor turned off. There will be a similar but not exactly the same effect on the upward moving photon in the box sitting on the earth's surface. Again, the "pull" on the photon in the box sitting on the surface of the earth will be less at the top of the box than at the bottom, where the effect as the photon in the box in deep space with the rocket motor operating would be the same at both the bottom of the box and the top of the box.

Thus, using an incorrect postulate (the EXACT equivalence of gravity and acceleration) , incorrect Special Relativity analysis, and:

$$E = mc^2$$

Dr. Einstein calculated the deflection of a photon flying close to the surface of the sun as creating an angle of .83 seconds of a degree. This just happens to be close to the 1919 solar eclipse observations, which gives the false impression that Dr. Einstein's wide ranging Special and General Relativity theories are 100% correct.

Dr. Einstein's 1911 paper also calculates that a clock in a gravitational field will slow down as compared with a clock not in a gravitational field. Going back to figure 1, the box will pull away due to acceleration from a light flash from the bottom of the box, thus exhibiting a red shift (lower frequency) when observing that photon at the top of the box. Dr. Einstein calculated, in his 1911 General Relativity paper, a red shift (or frequency change) of a photon in a gravitational field to be:

$$\frac{f_o - f}{f_o} = -\frac{\Phi}{c^2} = \frac{Km}{cr^2}$$

(See also Page 231, "A Stubbornly Persistent Illusion" edited by Dr. Stephen Hawking, Running Press, Philadelphia – London)

The gravitational field does, indeed, cause a red shift to the photon in a gravitational field quite similar to the red shift (Doppler) caused by acceleration, but the calculations need to be done correctly and without using mostly incorrect Special and General Relativity theory.

Finally, Dr. Einstein postulated in 1911 that since gravity does not seem have any way to "pull" on a massless photon, then, instead, the presence of any mass must somehow distort or "bend" or "curve" empty space and that a photon simply follows a straight line through this curved space similar to what you would do if you drove west in a straight line on the surface of the curved earth. In that case, of course, you would actually be travelling in a curve as you trek around the globe. Thus Dr. Einstein postulated a very different and exotic fabric of "space time" when he included Special Relativity time slowing, due to relative motion, as he postulated it ticking away at different rates.

This view of gravity as mass distorting empty space seemed to better explain the movements of Mercury, the planet nearest to our massive sun, by using his calculated formula:

The angle described by the radius sun-planet between one perihelion and the next should exceed that corresponding to one complete revolution by an amount given by:

$$\frac{24\pi^3 a^2}{T c^2 (1-e^2)}$$

(See Page 227, "A Stubbornly Persistent Illusion" edited by Dr. Stephen Hawking, Running Press, Philadelphia – London) The first problem with this particular General Relativity formula is that the units on the left side of the equation do not match the units on the right side of the equation.

This equation is a bit far fetched since the sun is far from being a homogeneous mass, but is instead a huge animal with all kinds of internal rotating metal liquids, magnetic fields, and electric currents, so Mercury's slight deviation from Newton's:

$$F = \frac{K m_1 m_2}{r^2}$$

could also be explained in a number of other ways that we can never really know about since we cannot dissect the sun very well from here on earth. Again, Dr. Einstein's slightly closer description of Mercury's motion gives the false impression that his Special and General theories of Relativity are 100% correct.

That was in 1911. In 1921, Dr. Einstein got a very well deserved Nobel Prize in Physics, not for the crazy "space time" model and other ideas put forward in Special and General Relativity, but rather for his 1905 paper (See Analen der Physik, 17, 1917, or Page 307, "A Stubbornly Persistent Illusion" edited

by Dr. Stephen Hawking, Running Press, Philadelphia – London) about the photo electric effect and his other later and quite significant contributions to quantum physics which we can now use to explain what is really going on with photons of light and gravity.

2010 ANALYSIS – 99 YEARS LATER WITH 20 - 20 HIND SIGHT

Take Newton's relationship for gravity and consider M(1) to be the zero mass of a photon.

$$F = \frac{K m_1 m_2}{r^2}$$

To keep anything, including a massless photon in a circular "orbit," there must be an acceleration toward the circle's center of:

$$a = \frac{v^2}{r}$$

But for a photon, v = c and since:

$$E = mc^2, \quad m_1 = \frac{E}{c^2} \quad \text{SO,}$$

$$F = \frac{K m_1 m_2}{r^2} = K \frac{E}{c^2} \frac{m_2}{r^2} = ma = \frac{E}{c^2} \frac{c^2}{r}$$

or,

$$\frac{K m_2}{r^2} = \frac{c^2}{r} \quad \text{OR} \quad m_2 = \frac{c^2}{r} \frac{r^2}{K} = \frac{c^2 r}{K}$$

Thus M(2) is the "test" mass necessary to keep a photon in circular "orbit." Since:

$$\frac{c^2}{r}$$

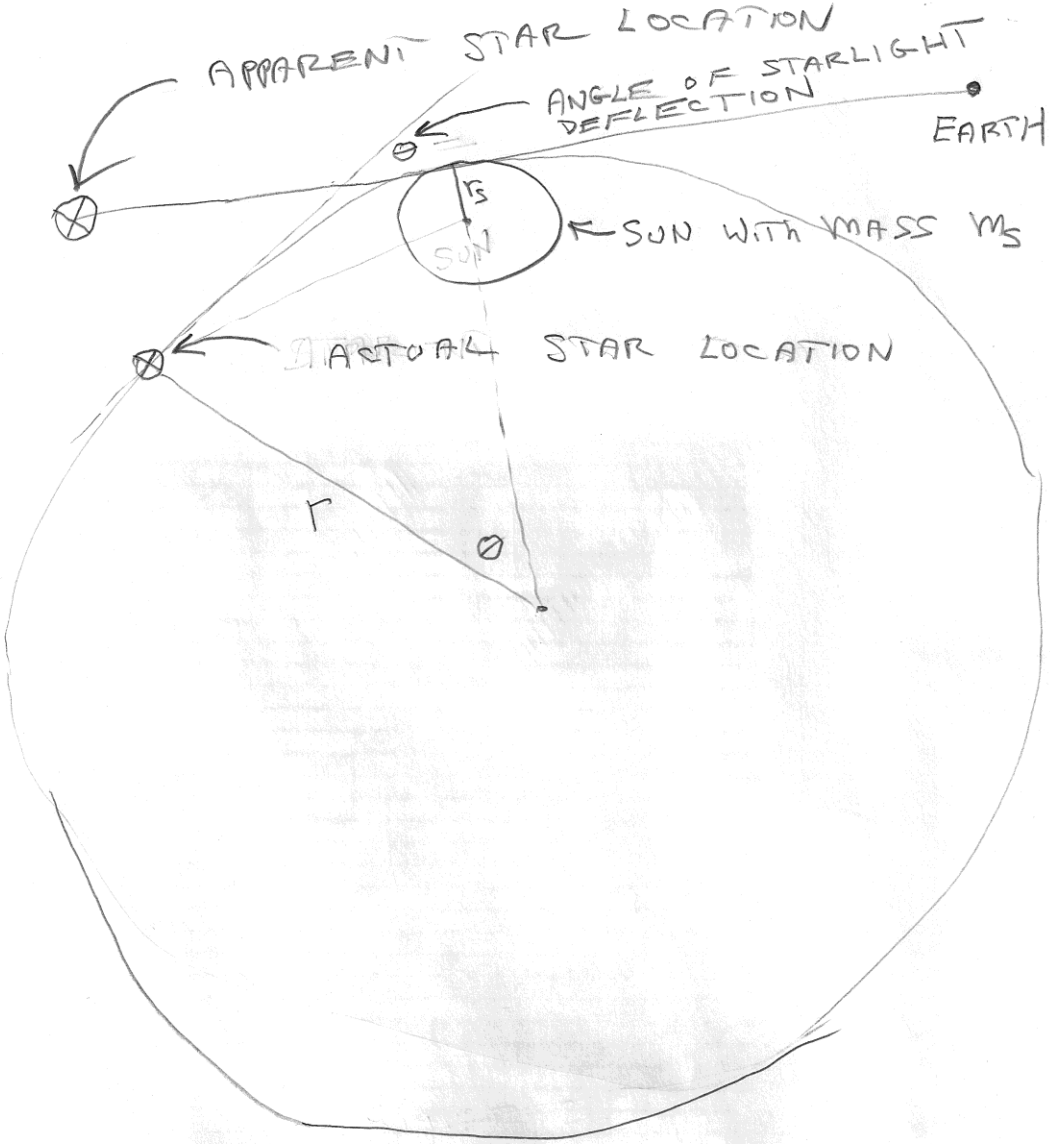
is the is the acceleration caused by "test mass" M(2) on a photon in circular "orbit,"

$$\frac{c^2}{r} \quad \frac{m_s}{m_2}$$

is the proportionally less actual acceleration on a photon caused by the sun so that:

$$\frac{m_s}{m_2} = \frac{r_s}{r} \quad \text{OR} \quad r = r_s \frac{m_2}{m_s}$$

Thus a photon from the distant star will follow a circular orbit with radius r caused by interaction with gravity from the sun. Dr. Einstein offered in 1911 to explain this photon movement in terms which said that the sun somehow " curved space" as shown by this same circle with radius r in figure 2 and that the photon simply followed a straight line in this curved space similar to you following a straight line driving due east on the surface of the earth which Is, in fact, a globe. This does not appear to be a good model of what is really happening and is, in fact, quite misleading. These myths, so created by Dr. Einstein, of time flowing at different rates and space curving, all caused by uniform relative motion, accelerated motion, and the presence of mass, in his Special and General theories of relativity, are apparently mathematically invalid.



IN SUMMARY, FIGURE 2.

$$m_2 = \frac{c^2 r}{K} \quad \text{and} \quad r = r_s \frac{m_2}{m_s}$$

The calculations for angle of deflection θ are carried out in Appendix 1

NOT SO FAST, DR. EINSTEIN – PART VII

By

Glenn A. Baxter, P.E.*

(See also the February 1963 Scientific American article "The Clock Paradox" by J. Bronowski)

CONSERVATION OF ENERGY AND RELATIVE ENERGY

Imagine a perfectly smooth earth with nothing on the surface except a car on the equator traveling due west at a speed of 10 miles per hour. We now add energy to the car by raising the speed to 70 miles per hour. One way of retrieving the extra kinetic energy added to the car would be to step on the brakes, slowing back to 10 miles per hour and changing the added energy to heat in the brake drums.

We now add a second car leading the first car, also going 10 miles per hour. There is no relative energy between the two cars; one cannot crash into the other and thus release "stored up" kinetic energy.

Again, we add energy to the lagging car by raising the speed to 70 miles per hour. Now, there will be a huge "rear ender" as the two cars crash with a relative speed of 70 minus 10 = 60 miles per hour.

Now imagine a railroad flat car heading toward an overpass at a speed of 60 miles per hour. Someone on the flat car flashes a light toward the over pass. At the same time, someone standing on the ground also flashes a light toward the overpass. Because of conservation of energy, a photon from the flat car must have greater energy than a photon flashed by the other person standing on the ground. But the photons have no mass. We do know that a person on the overpass will notice a Doppler blue shift for photons from the flat car. Since energy of the photons are E = hf, or Planck's constant times frequency, the increased energy of a photon from the flat car will be accounted for by the blue shift or higher frequency as measured on the overpass and caused by the reltive speed v, 60 miles per hour, of the rail car:

$$E = hf + h(v/\lambda)$$

where the relative velocity of the flat car causes an addition to photon frequency of:

$$\Delta(f) = (v/\lambda)$$

where lambda equals wave length.

We see, therefore, that the conservation of energy actually mandates that the relative velocity of photons from the flat car are greater than c, the speed of light by the amount of relative velocity of the flat car which is v or 60 miles per hour.

NOT SO FAST, DR. EINSTEIN – PART VIII

By

Glenn A. Baxter, P.E.*

(To see the entire paper, Parts I through VII, go to www.k1man.com/b Part VIII starts at www.k1man.com/c)

EXPERIMENTAL DISPROOF OF SPECIAL RELATIVITY -

RELATIVISTIC DOPPLER EFFECT CORRECTED

If a light source is moving towards an observer in uniform motion, the standard physics textbook formula for the Doppler shift (see The Feynman Lectures On Physics, Vol., 1 Chapter 34, Page 7) is:

W = Wo $(\sqrt{1 - v^2/c^2}\ )/(1 - v/c)$ eq. (1)

The correct (Baxter Relativity) formula (11) for this situation is:

W = Wo$(1 + v/c)/(1 - v/c)$ eq. (2)

Thus, when $\frac{v}{c} = 0.1,$

the incorrect conversion factor from Dr. Feynman's relativistic Doppler formula is a frequency blue shift of 1.105541597 rather than the correct Baxter relativistic formula giving a blue shift factor of 1.222222222. Not a big difference here, but Dr. Feynman was sucked in (like everyone else) to relative light speed being constant and thus leading to Dr. Einstein's completely falsely based theory of Relativity. The ramifications of this are huge, since Dr. Einstein's relativity theories are laced throughout most of current physics thinking.

EXPERIMENTAL DISPROOF OF SPECIAL RELATIVITY:

Eq. (1) above represents Dr. Einstein's formula for the Doppler shift, including his relativistic time dilation, between an electromagnetic source (a light source or a radio transmitter) and an observer (or a radio receiver. $(\sqrt{1 - v^2/c^2}\ )$ represents the Einstein relativistic time dilation portion and $(1 - v/c)$

represents the classic Doppler shift portion. Eq. (2) above represents the corrected Baxter relativistic Doppler formula which replaces the Einstein time dilation portion with 1 +v/c which represents, instead, the increased relative velocity of light rather than a slowing of time "caused" by relative motion.

In this experiment we use two earth satellites travelling in opposite directions. One satellite has a 30 MHz. transmitter and the other has a receiver. A typical amateur radio transceiver can transmit and receive to an accuracy of 10 cycles per second compared to the 30,000,000 cycles per second of this experiment. We use earth satellites to eliminate any effect that atmosphere or gravity might have on the speed of light.

Both satellites travel at a speed, for example, of 25,000 miles per hour. Plugging 50,000 miles per hour into Dr. Einstein's Eq. (1) above yields a "blue shift" frequency of 30,002,240.24 cycles per second. Plugging 50,000 miles per hour into Eq. (2) above yields a "blue shift" frequency of 30,004,480.62 cycles per second, a full 2,240.38 cycles per second higher, a huge difference, which is easily measureable on any amateur radio high frequency transceiver. Thus we have a very simple and quite elegant disproof of Dr. Einstein's Special Theory of Relativity.

(11) W = Wo /$(1 - \frac{v}{c})$ is the classic Doppler "blue" shift (see The Feynman Lectures On Physics, Vol., 1 Chapter 34, Page 7). Rather than Dr. Einstein's time dilation factor, we, instead use the Baxter speed of light change factor of $\frac{c+v}{c}$ so the total formula becomes W = $\frac{Wo}{1-v/c}$ + Wo $(c+v)/c$ which leads directly to W = Wo $(1+\frac{v}{c})/(1-\frac{v}{c})$ QED It is quite interesting that the Einstein $(\sqrt{1-v^2/c^2}$) factor causes a slight red shift in opposition to the classic $(1-\frac{v}{c})$ Doppler blue shift in this situation as the source is moving towards the observer, these opposite effects themselves, being counter intuitive.

NOT SO FAST, DR. EINSTEIN – PART IX (Revision 100831A)

By

Glenn A. Baxter, P.E.*

(To see the entire paper, Parts I through VII, go to www.k1man.com/b Part VIII starts at www.k1man.com/c)

A CLEAR EXPLANATION OF THE BAXTER RELATIVISTIC DOPPLER EFFECT

Imagine a light or radio source at point A in deep space and an observer or receiver some distance away at point B. There is a relative velocity between the two, say 50,000 miles per hour, as discussed in Part VIII. We choose deep space to allow us to neglect all other outside influences. We can consider B as still or fixed with A moving towards B, or we can consider A as still or fixed with B moving toward A. We postulate that these two situations are equivalent.

Further, consider a 30 MHz. radio signal being radiated from A which is moving toward B (at the relative speed of 50,000 miles per hour). The signal is a simple continuous radio wave (CW, still used by radio amateurs using Morse code for communications purposes). Consider the peak voltage of a single cycle emitted as an instantaneous pulse being emitted from point A at time To. When the very next instantaneous pulse during the next cycle is emitted, point A is a bit closer to point B, and since the speed of light is finite, there is less distance to travel, and therefore, will arrive in less time than the previous pulse sent just before time To. The effect is the classic Doppler effect at the receiving end (B) where the pulses are closer together in both space and time and the frequency reading on the radio receiver at point B is higher than 30 MHz., according to the classic formula W = $\frac{Wo}{1-v/c}$. Now, instead of saying that time at point A "slows down" according to Dr. Einstein's W = Wo $(\sqrt{1-v^2/c^2}$), "caused" by relative motion, let us consider point A as being still, or fixed, and point B moving toward point A. Since the speed of light is finite, point B will meet the pulse from point A emitted at time To part way. Right? The relative speed of light is therefore c plus 50,000 miles per hour. Right? This is not rocket science, to use a play on words. You can still say the speed of light has not changed; nobody bothered the light in this situation at all. But B has met the radio pulse part way, and so the relative speed of light between A and B is greater than the speed of light. This is at the heart of Baxter Relativity as opposed to Dr. Einstein's relativity which insists that the relative speed between points A and B remain the same, and that, instead, time at point A must therefore "slows down."

Thus we reject Dr. Einstein's erroneous postulate of the speed of light always being constant for any observer, and we modify the relativistic Doppler formula from W = Wo $(\sqrt{1-v^2/c^2}$)/$(1-v/c)$ to W = Wo$(1+v/c)/(1-v/c)$. See this entire paper at www.k1man.com/b

So, the correct Baxter Relativistic Doppler formula has two things causing the frequency reading at point B to rise, the first is that the distance travelled by the radio or light signal is getting progressively smaller, and second, point B is "catching up" with the signal emitted from point A (or meeting it part way), effectively equivalent to the speed of light being higher rather than Dr. Einstein's slowing down of time.

Now go back and read this entire paper again. www.k1man.com/b and www.k1man.com/c From his erroneous postulate of the speed of light being constant for all observers, Dr. Einstein builds his entire theory of relativity. Dr. Einstein's theory of relativity is laced throughout modern physics thinking and this needs to be corrected before wed can make further meaningful progress.

PRACTICAL BAXTER RELATIVISTIC DOPPLER EXPERIMENTAL PROOF

The index of refraction is defined as the ratio of the speed of light in a vacuum to its speed in another medium such as air. The index of refraction of air at one atmosphere is 1.0002926. Thus the speed of light that we have rounded in Part VIII of this paper to 186,000 miles per second for $\frac{v}{c}$ calculation purposes, would be reduced from 186,000 to 186,000/1.002926 miles per second. Now we calculate the Baxter Relativistic Doppler effect for two ordinary aircraft approaching each other, each with an air speed of 250 miles per hour. Plugging this relative air speed of 500 miles per hour into W = Wo$(1 + v/c)/(1 - v/c)$ now changes a 30 MHz. radio signal transmitted from one of the aircraft and received by the other to 30,000,042.9 cycles per second, still easily measured by any modern amateur radio transceiver. The radio frequency dial would actually read 30.000.04.

NOT SO FAST, DR. EINSTEIN – PART X

By

Glenn A. Baxter, P.E.*

(To see the entire paper, Parts I through VII, go to www.k1man.com/b Part VIII starts at www.k1man.com/c)

TERMINAL VELOCITY OF LIGHT IN AIR

In Part VIII, we postulated that in deep space, light from a source at point A moving toward a "fixed" point B was equivalent to the light source A being "fixed" with point B moving toward point A. In the latter situation, we saw that point B moving toward point A would meet the light pulse "part way" and this the relative speed of light between the two points was greater than the speed of light, all this happening in the vacuum of deep space.

In air, things will be different. Light is slowed down by any transparent medium in the amount equal to 1/(index of refraction), as pointed out in Part IX of this paper. Light is "trying," but it just can't go the full speed of light (of a vacuum) as it is somehow slowed down by the medium. Now somewhat analogous to sound, the medium sets a terminal velocity for the light, and NOW the velocity of the source relative to the medium (in this case air) will not increase the relative velocity since the situation

here is clearly different than the source at point A being fixed relative to the air with point B doing the moving relative to the air. Now, the experiment in Part IX must me looked at differently.

The two aircract in Paty IX now have separate influences if point A is the source since light from aircraft A will reach the speed of light in air and NOT the speed of light in air plus the speed of the aircraft relative ti the air. Aircraft B, however, will still meet the light pulse "part way" as before. The Baxter Relativistic Doppler formula for this situation now becomes:

$$W = Wo\left(\frac{1}{1-\frac{v}{c}}\right) - Wo + Wo(1+\frac{v}{c})/(1-\frac{v}{c}) \qquad \text{eq. (3)}$$

With the first term calculating the classic Doppler caused by the source aircraft A going 250 miles per hour relative to the air plus the full Baxter Relativistic Doppler effect of the receiving aircraft B which is still meeting the light pulse from aircraft A "part way." Now plugging 250 miles per hour into each of the terms of eq. (3) yields a receiving frequency of 30,000,033.63 MHz., still easily readable on a modern amateur radio transceiver. The radio dial would read 30.000.03.

BINARY STARS

Dr. Einstein said in his 1916 book, The Special Theory of Relativity, chapter 7, that "…By means of similar considerations based on observations of double stars, the Dutch astronomer De Sitter was able to show that the velocity of propagation of light cannot depend on the motion of the body emitting the light...." Dr. Einstein's broad generalization from this was wrong. The relative velocity of light in the vacuum of space IS affected by relative motion of the emitter. In earth's atmosphere, however, light velocity at its terminal velocity in air is not affected by the relative velocity of the emitter, thus leading Dr. De Sitter and Dr. Einstein's wrong conclusions and upon which Dr. based all of his theories of relativity.

In fairness, Dr. Einstein simply did not have the data, technology, or time to "fool around" any further. He made some bold postulates so things could move forward as they certainly did. But now we must recognize his errors, fix them, and then move forward again. Dr. Einstein made monumental contributions to physics in many ways other than relativity theory. His well deserved 1921 Nobel prize was for the photoelectric effect, not his constant speed of light based theories of relativity.

Dr. Richard Feynman agrees with me (in his famous 1961 - 1963 Cal Tech student lectures, Volume I, Chapter 1, Page 2, he says: "…..The energy which is liberated is the energy of the atomic bomb. This energy is usually called 'nuclear' energy, but it is really 'electrical' energy released when electrical forces have overcome the attractive nuclear forces…..") about the source of energy from an atomic bomb coming from electrostatic energy stored and not $E = MC^2$. Yes, many photons are created during an atomic explosion by electron – positron annihilation according to $E = MC^2$, but the actual source of energy is positive chunks of split atoms flying apart due to Coulomb electrostatic forces and not a simple and direct t $E = MC^2$ conversion. Plus there is God knows what else is going on there, but not as simple as $E = MC^2$ as everyone assumed in 1945 in light of the Hiroshima explosion. Dr. Einstein's

incorrectly relativity based development of t $E = MC^2$ just happened to be correct, but this is only a special case of electron – positron annihilation and not a general case for all matter of a simple $E = MC^2$ mass – energy conversion.

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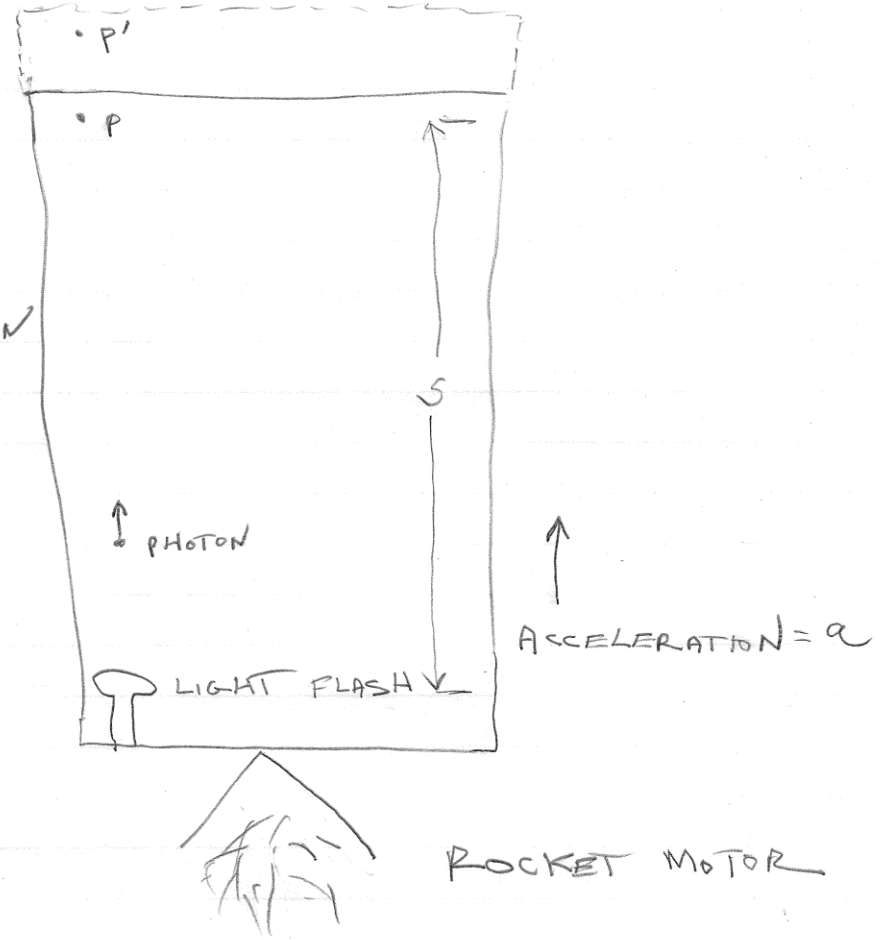
PART XI

Not So Fast, Dr. Einstein

CLOCKS IN ACCELERATION OR IN A GRAVITY FIE



During uniform motion of the rocket, a photon goes $c = \frac{S}{T_1}$ $a = \frac{ft.}{sec^2}$ $V = v_0 + aT$ but inside the spacecraft, $v_0 = 0$ ∴ The equivalent speed of light inside the spacecraft is $c - V = c - aT$ ∴ The photon arriving at P is red "Doppler shifted" $w = w_0\left(1 - \frac{aT}{c}\right)$ eq. 4

Since We will postulate that acceleration and gravity are "equivalent" Then gravity will also cause a photon to blue shift according to eq. 4 Actually there is no Doppler component of shifting at all since the Doppler term in eq. (2) has v in the denominator $=0$ so that $W=W_0(1+v/c)/(1-v/c)$ in eq. (2), in that case the space craft would actually accelerating in the opposite direction and thus causing a blue shift. No, a clock does not slow down anywhere on the space craft or anywhere in a gravity field.

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$v = \frac{d}{t}$ In reference frames in uniform relative motion to each other, an observer in one reference frame "sees" a different distance traveled than an observer "sees" in the other reference frame. $v = \frac{d}{t}$, using light as a measuring device, There are two different available assumptions:

1) Dr. Einstein's assumption that light speed, as observed by either observer, is constant. Since $v = \frac{d}{t}$, this assumption leads to Dr. Einstein's "logical" calculation that, therefore, time on one of the reference frames

must therefore slow down, Not
So Fast, Dr Einstein (part 1A) Shows
shows the obvious
Contraction that time also
and simultaneously speeds up.
Nevertheless Dr. Einstein
plows ahead and uses his
"time slowing down equation"
namely $T = T' \sqrt{1 - v^2/c^2}$
to adjust Maxwell's equations
so that there is symetry, or
invariance of the equations
between the two reference
frames moving in uniform
motion relative to each other
Dr. Einstein continues to

ignore the duration constant nature of light in the analysis in his 1905 paper, and, of course, the invariance appears to be conserved.

2) Mr. Baatz's correct analysis that light speed, as measured by the laws of physics is not constant and that instead Time is constant, or rather the same as measured in both reference frames, also (and correctly) adjusts Maxwell's equations to be invariant, See Appendix 2. Thus, we do not have Dr. Einstein's inconsistent Analysis.

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NOT SO FAST, DR. EINSTEIN by GLENN A. BAXTER, P.E.

(Complete paper at www.k1man.com/b and www.k1man.com/c)

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