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The Relativity Transformation issue

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As dealt with in previous articles I have looked at the standard derivation of the Galilean transformation and the Lorentz transformation and found that the maths has been done wrong. I then looked at the possibilities of how that maths could have been corrected, now I present how that transformation should have been derived.

The essential equation is:

$x - ct = 0$

light with speed c traverses distance ct in time interval t

let us suppose $x' = x - vt$ so $x' = (c-v)t$

this is a distance $(c-v)t$ traversed in time interval t

So unprimed observer observes distance ct traversed in time interval t

and primed observer observes distance $(c-v)t$ traversed in time interval t.

What's the problem?—there isn't one

$x - ct = 0$

and

$x' - (c-v)t = 0$

unprimed observer observes light speed c

primed observer observes light speed c.

reason why primed observer observes light speed c:

we have $x' - (c-v)t = 0$

subst x’ = (c-v)t

(c-v)t – (c-v)t = 0

ct – vt –ct +vt =0

just remove vt-vt =0

then ct-ct =0

let one ct equal x

x-ct=0 same as unprimed observer, hence primed observer observes same speed for light as unprimed observer namely c.

That is basically it, summary is:

unprimed frame

x- ct = 0

primed frame

x’- (c-v)t = 0

transformation is: x’= x-vt, t = t’

That then is the correction to the maths of Special Relativity (SR), and we are still dealing within the context of Newtonian physics.

(We could tidy the notation if we wanted to by having time interval represented by delta t, consider the issue of positive velocity v and so forth. But what is presented here is the basics of light travelling in the x direction.)

Of course we have dealt only here with spatial and time interval measurements, and not dealt with mass.

The next issue then is General Relativity (GR) and I have shown in one of my articles that do the maths correctly within the context of Newtonian Physics (NP), then NP gives the same answer for light bending as GR. The main difference being that GR does the maths within the context of non-Euclidean geometry, while NP does it within the context of Euclidean geometry. Both mathematical schemes are valid when done correctly.

Historical summary then:

Einstein was working from existing maths for his famous 1905 paper on SR, that maths was faulty within the context of NP, Einstein then made more maths mistakes and created maths that looked different to NP, and thought he had a new theory SR. However, correct the maths and it all returns back to NP.

Einstein then continued with his faulty maths and made more mistakes and created what he thought was a new theory called GR. The maths within the context of NP for light bending was done incorrectly, and the maths mistakes made within the context of GR were somehow fudged to come out as agreeing with astronomical observations made under very dubious circumstances by Eddington in 1919.

Einstein then became famous in 1919 with his theory of GR apparently confirmed by experiment. The theory GR was not readily accepted by the Science community because of its supposedly revolutionary ideas. But surprisingly Einstein's SR was more readily accepted. The Physics community then was tying itself to the mistakes that Einstein made in 1905 and the mistakes he was working from.

Going over the issues again:

from $x = ct$

let us say $x' = x-vt$

since $x = ct$, $x' = (c-v)t$

then $x' -(c-v)t = 0$

the error has been to think $x'-ct' =0$

but the distance is $(c-v)t$ traversed in time interval t not distance ct'

primed observer is not observing distance that light traverses, is instead observing distance $(c-v)t$ which is composed of light travelling distance ct and object travelling in opposite direction a distance vt giving distance sum as $ct-vt$.

Then all of this is further confused by relativistic velocity addition which really only says each observer observes light speed as c, does not say anything about adding sum of distances composed from light travelling ct and an object travelling vt in opposite direction.

$x-ct = 0$

$x'-(c-v)t = 0$

These are the two equations involved, when it comes to experiment these are the equations being involved. Some people are under the mistaken impression that it is:

$x-ct=0$
$x'-ct'=0$

then they play around and get this mistaken time dilation, arising from using c when they should have been using (c-v).

Conclusion

As shown by this article and previous, correct the mistakes and physics returns to Newtonian Physics.

Newtonian physics pre-Einstein was a continuing research program, after correcting for Einstein that is essentially where the Physics Community should be once again.