

Lorentz Area State Space (LASS) [+ Pointless Peat-Bogs]

Terry Bollinger
2023-02-28.17:48 EST Tue
[Message Excerpt]

Hi Parth,
...

> ... if [changing minds is] presented as "here's an alternative way to think about it" rather than "relativity in its current form is trash" ... it can go far ... towards demonstrating ... different ideas of how ... the universe exists.

Good advice, thanks. I need to pay more attention to this since I tend to let apt imagery and alluring alliteration get the better of me when I should be clinical and analytical. For example, the following might, perhaps, be construed as a pointed critique of published literature if one is a bit touchy about the value of one's entire lifetime of published works:

> "... the same pointless peat-bog of experimentally unencumbered paper production [due to the] relation-incinerating impacts of Planck overshoot thinking." :)

-- From 'Why the Planck Scale is Irrelevant,' 2023-02-26,
<https://sarxiv.org/apa.2023-02-26.0018.pdf>

I'm working on it. It's just that my Inner Annoyance bubbles out sometimes ... }8^)>

> "... the Lorentz distortion is specified entirely by R ..." So, how could we extend this to trips involving accelerations?

Lorentz areas are shared relations between potentially very distant objects. Thus when Lorentz areas are large, it takes a long time to change them no matter what any entity does, e.g., galaxies on the far side of the universe tend to stay on the far side of the universe no matter how hard we try to change them by, say, accelerating rapidly.

In contrast, acceleration *instantly* distorts the shape of all the Lorentz areas observed. That's because acceleration immediately alters how quickly an entity accumulates forward and backward photons, changing the time flow rates observed by the accelerated entity.

I'd say more, but something is wrong with this. I've been misusing the R distortion as defined for a *small* internal synchronous object passing through a much larger synchronous observer space, e.g., a lead nucleus passing through the LHC.

A ship between stars is *not* the same because neither of the stars resides within its synchronous domain, that is, within the ship's experimentally meaningful definition of xyz space synchronous with its clocks. There's some terminology or concept still missing.

However, the main point remains valid: R distortions are set locally, always by accelerations. For that reason, they are “instantaneous” outcomes of acceleration. The issue to recall is that they don’t change outside reality any more than reprogramming a computer to use different xyzt coordinates changes how the universe outside the computer works.

The impacts on the accelerated entity, however, are genuine indeed. What a newly accelerated spaceship sees as a speedup of time in the forward direction becomes entirely real when it arrives at its target. The external universe, however, considers that change to be a slowdown of time on the ship.

Lorentz areas define the separations of the individual causal states of the universe. Still, these separations don’t map well into xyz separated states, at least not unless you go back to the initial inertial state of the entire universe. Trying to force the array of causal states into xyz space leads to block universes that, in the end, don’t explain anything but make the problem more accessible (and less correct) for xyz minds to visualize.

In any case, I’m inclined to say that my previous $L_a + L_b = L_c$ breakdown is meaningful *only* for describing this cryptic (to our minds) **Lorentz area state space** in which the entire universe exists as a single entity (no worldlines). Accelerating the ship creates R speedup and $1/R$ slowdown distortions of the Lorentz areas and in front of it, but I don’t think calling the *total* Lorentz area distance by either of those labels makes any sense. Something more subtle is happening, involving whatever differential equations are needed to describe Lorentz area (versus distance) dynamics.

Hmm...

Cheers,
Terry

Erratum [2023-03-01.08:50 EST Wed]: In the first line of the final paragraph above, the correct equation for partitioning the Lorentz area L_c into smaller Lorentz areas is:

$$\sqrt{L_a} + \sqrt{L_b} = \sqrt{L_c}$$

For example, if two stars are 4 lightyears apart and a spaceship is midway between them, the Lorentz separation between them is 16 ly-yr, while each star-to-ship separation is 4 ly-yr. The unit that corresponds best to our usual perception of distance is the square root of one lightyear times one year, $\sqrt{\text{ly} \cdot \text{yr}}$, which unlike ly remains invariant in all frames.

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PDF: <https://sarxiv.org/apa.2023-02-28.1748.pdf>