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The Mixed Logic and Views of the Theory of Special Relativity

Newton's Absolute Space and Time vs Minkowski/Einstein SpaceTime 4D Geometric Structure

Abstract

Einstein's paper in 1905 is the result of issues in the understanding of Newton's Law, Maxwell's equations, Galilean Relativity, Inertial Reference Frames, and the dismissal that Space plays in what is observed. There are different examples that physicists use to give clarity to the public on the Theory of Special Relativity (TSR), but those examples never discuss the issue that troubled Einstein. **The most important one**, but least examined by physicists, is that provided by Einstein himself in his 1905 paper *"On the Electrodynamics of Moving Bodies"* where he is troubled specifically by the lack of symmetry between the magnet and the coil setup, what is observed, and the theory to explain it. [1] That example, like Newton's spinning bucket, is also far removed from an ideal case when trying to apply Galilean invariance, Newton's Law, in addition to Maxwell's work on the speed of light to a specific Inertial Reference Frame. To work around this conflict, Einstein's mathematician, Minkowski, suggested modifying his theory by embracing a new concept, the introduction of a four-dimensional mathematical geometric structure called Space-Time. Unfortunately, it was the lack of any deep clarity of what was being observed in the example on the *"Electrodynamics of Moving Bodies"* that never got intensely discussed or analyzed that led physicists down this rabbit hole that runs from the relational reality of relativity.

The Minkowski Einstein Perspective

This proposes simply that Minkowski had turned Einstein's work into an unnecessary, unjustified, manufactured mathematical illusion with the combination of Space and Time that gets translated as a world that is now viewed by physics as a mathematical four-dimensional seemingly oddly 'mechanical,' but still non-physical geometric curvature called Space-Time, claiming this provides the missing source for the force of gravity. Einstein was not on board at the start. [1]

Einstein's focus was on the inability to apply the Galilean invariance in this problem with the *Electrodynamics of Moving Bodies*. The simple notion of either of two reference frames being able to make the same claim because of relativity did not work without having to adjust Maxwell's equations. When that was done, it did not give the desired physics answer. It was decided that only modifying Newton's classical mechanics and allowing for a variation in the mass would permit the laws of physics to be unchanged in a constant velocity Inertial Reference Frame (IRF). The incorrect reading of Maxwell that the speed of light had to always be held to 'c' everywhere by an outside observer meant that time would have to change with the introduction of time dilation. For an observer, in his, and only in his, Inertial Reference Frame, Maxwell gives light speed will be found to be 'c'. There is no license to apply that to other IRF's where a relative speed could be given.

The quick unquestioning acceptance of the TSR's second postulate for the universal fixed constant speed of light brought in time dilation and length contraction as new scientific truths. The explanation for this is presented in examples the public is aware of today, but those are not associated with the lack of symmetries in the *electrodynamics of moving bodies* that inspired Einstein to question the current theory in the first place. They only serve to guide the public down a new exciting and interesting path not supported by science.

The Multiple Perspectives for the Public

One such example is the discussion involving twin A, remaining here on Earth and twin B, going off into Space. This focused on the time dilation with 'B' traveling at a high fraction of the speed of light to introduce the concept of time dilation and length contraction resulting in twin B returning to Earth much younger than twin A. Although there is no evidence of this, it is now accepted that it is a valid viewpoint of reality. It even led to the popular movie fantasy, Interstellar. Although this is taking place in Space, it does not give any evidence of that perspective on the energy of Space and the electric and magnetic fields.

Another example is the experience of observer B, on a moving train seen by observer A, who is perpendicular to 'B's train car at the time of a simultaneous lightning strike at both ends of the train car to try to establish that the constant light speed 'c' will lead to the conclusion that different observers will not agree on when an observation takes place. Simultaneity is canceled. The notion of a universal now is discarded. This example focuses on everything being here on the ground which makes any reference to the two different Inertial Reference Frames being able to make the same claim of the same relative position difficult to make sense. Another modification of this is to have the light going on at each end at the same time, but inside the train car.

This example also was moved to space with one rocket ship having a "light clock" on board that was visible from another IRF. This made it easier to make a convincing argument for time dilation if Einstein's second postulate was followed, one observer in his IRF making a judgement about the movement of light in another IRF, and his also knowing without question that the time for the other IRF was slowing down, although all this is still very different from what was being encountered in the *electrodynamics of moving bodies.*

A further Look at These Various Views of Special Relativity:

- The twins setup gives no connection between the reference frames, but is used to establish that the twin that travels fast, near light speed, and far away, will return much younger than his brother. Any attempt to question this result strictly on relativity as each could make the same claim is dismissed. Even physicists Richard Feynman was declared "just wrong." [1]
    - **The need for twin B to accelerate led to the need to make a drastic change in the argument to arrive at the claim that it is now not about relativity between reference frames. Relativity can no longer be considered the difference between Newton and Einstein. There was a need to establish the presence of a new separate Absolute Space-Time Geometric Structure, and it can no longer be about relativity or considered part of Newton's Absolute Space and Time.**

- The reference frame observers, one on the moving train and the other at the station bring the fixed constant speed of light to the forefront as lightning strikes the train at the same time at both ends to establish the loss of simultaneity. The train is moving at constant speed and the observer at the station is stationary. It would be difficult here to again try to introduce any relativity that each could make the same claim with it all being on land where it is obvious who is and is not moving.
- This train setup is repeated in other examples with the light generated within the train at the same time at both ends. That detail difference is not examined and does not change the result. In both train cases there is no discussion on the light moving from the train to the stationary observer.
- The Inertial Reference Frame (IRF) of the train is moved to space as two rockets move at a constant velocity opposite each other, or either one claiming to be stationary due to relativity. Here one observer can view the light clock inside the other IRF as it passes by. The outside observer finds the **distance that the light appears to have traveled linearly compared to the total vertical distance in the light clock is not the same**. **Since the light speed is fixed, there must be a change in the time in the other ship.** This is rather convincing if one does not question if Maxwell's equations result for light speed apply only to results obtained by an observer in his own IRF, and not applying it to light observed traveling perpendicular to another IRF moving at a constant relative parallel velocity.
- All the above are different from the *electrodynamics of moving bodies* setup that troubled Einstein. It seems physics wanted to avoid giving any public attention to it.

  This setup does not lend itself solely to the idea of two different IRFs dealing with relative velocities. It would be more appropriate if it were viewed as one dynamic system that cannot be divided. In this system it is not just the movement of light but both the electric and magnetic fields moving differently within another addition, Space itself, depending on which body is held motionless.

Physics also adds an additional measured electromotive force when the coil is moving, and the magnet is stationary relative to the outside observer's reference frame. [1]

The Electrodynamics of Moving bodies

The major issue for Einstein and the physics community involved the EMF known as the moving magnet and conductor problem. [2,3] He wrote:

> *It is known that Maxwell's electrodynamics – as usually understood at the present time – when applied to moving bodies, leads to asymmetries which do not appear to be inherent in the phenomena. Take, for example, the reciprocal electrodynamic action of a magnet and a conductor. The observable phenomenon here depends only on the relative motion of the conductor and the magnet, whereas the customary view draws a sharp distinction between the two cases in which either the one or the other of these bodies is in motion. For if the magnet is in motion and the conductor at rest, there arises in the neighborhood of the magnet an electric field with a certain definite energy, producing a current at the places where parts of the conductor are situated. But if the magnet is stationary and the conductor is in motion, no electric field arises in the neighborhood of the magnet. In the conductor, however, we find an electromotive force, to which in itself there is no corresponding energy, but which gives rise – assuming equality of relative motion in the two cases discussed – to electric currents of the same path and intensity as those produced by the electric forces in the former case.*
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> *— A. Einstein, On the electrodynamics of moving bodies (1905)* [2]

"The observable quantity in the experiment, the current, is the same in either case, in accordance with the basic *principle of relativity*, which states: "Only *relative* motion is observable; there is no absolute standard of rest".[1] However, according to Maxwell's equations, the charges in the conductor experience a **magnetic force** in the frame of the magnet and an **electric force** in the frame of the conductor. The same phenomenon would seem to have two different descriptions depending on the frame of reference of the observer." [2]

Magnet and Coil to Space

The magnet and coil experiment setup were viewed by Einstein as two different experiments. [1] This gave in the same current flow results even though the experiments are different. This approach led Einstein to abandon the Galileo transformation for Lorentz, resulting in classical mechanics employing a relative mass. This meant a new relative Space and Time which Minkowski combined to obtain the four-dimensional geometric structure called Space-Time.

What if the setup is viewed as one complete system in space? Moving the magnet and the coil into space where there is now nothing else except the magnet and the coil, in the completely empty vacuum of Space.

> **In this situation it would not be possible to determine by an outside observer whether it is the magnet, the coil, or both that is in a linear motion pass the other registering a change in the field and generating a current. This is more akin to Newton's bucket experiment that could not be done in space, or his two rocks attached with a tensioned cord due to rotation. The magnet and coil, when both are in space, are provided an Absolute Reference Frame in Space and Time for this one complete local system.**

What would be observed and could be measured? What would be the results?

The set up should provide the same current results. But would there be observable measurements in the vacuum of Space that are different from what is observed on Earth? If hooking up measuring equipment in two separate experiments on Earth gives different local readings when in space around the coil and magnet, but otherwise have the same final current results, that would show that **relativity also applies to the observer and the reference frame.** Would there be a half contribution to the current from the magnet and the coil as is claimed? [1]

Physics now claims that it is the Earth that is accelerating up to the falling object, as the object is not really falling. Apparently, the Earth can accelerate up to falling objects around its entire surface all at the same time while changing its spatial coordinates in the SpaceTime Structure because the objects are only falling through the Time coordinate of the Space-Time Structure, not through the space that is being observed. [4]

Summary

It is not always proper for an outside observer to make judgments as if one is observing different reference frames that could be seen as separate and only appear to have a relative relationship because only a difference

in constant velocity vectors is seen. In viewing the setup for the *electrodynamics of moving bodies* or any system that involves electric fields, magnetic fields, and the connecting Space, the proper perspective is to observe it as a system that will have unique properties.

Physics tells us that everything is energy with the illusion of being solid objects. Space is also known to be unseen and undetectable fields of energy. How do these objects that actively display detectable energy fields relate to each other in systems when they are in space?

The trajectory involving electromagnetic fields may best be examined in the vacuum of Space and explained as a complete energy, space, and mass system that does not require or necessarily lend itself to a mathematical SpaceTime structure.

Newton's focus was on information and evidence from those scientists before him, force, acceleration, and proportional distance from the involved masses for understanding gravity. He developed his laws and equations from that perspective, and they provide the means to describe the path of objects through the space and time geometry they define from observing Universe.

Einstein found a manufactured complex geometric structure of space and time to describe how objects move through space relative to each other without knowing how this movement happens**.** It was developed because he believed what came before him was at odds with trying to understand the *electrodynamics of moving bodies*.

> **It was Minkowski who suggested marrying the space path with the accompanying time path to assemble a new emergent system based on his and Einstein's math that easily aligns with the results, allows the claim, and allows physicists the pretend illusion that this new four-dimensional SpaceTime Geometric Structure explains the source of the outcome. It does not. How Universe does it was ignored and is still unknown. It is coyly, but seriously described and believed, that matter tells space where to bend and space tells matter where to move.**
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> **Learning by observation is no longer permitted or a part of physics. Logic, reason, and common sense have been abandoned since we cannot agree on what is relative, what is space, what is time, what is absolute Space and Time, where and how does relativity even exist, and how to understand, comprehend, and deal with inertial and accelerating reference frames.**

References

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