Review of: "Paradigm shift in Special Relativity: From the Michelson-Morley experiment, Lorentz and light speed invariance, to the reciprocal linear Sagnac effect and conservation of simultaneity"

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Review

Gianfranco Spavieri_ and Espen Gaarder Haug: A paradigm shift in Special Relativity: From the Michelson-Morley experiment, Lorentz and light speed invariance, to the reciprocal linear Sagnac effect and conservation of simultaneity.

Prof. G. Spavieri and Prof. E. G. Haug have been fighting long against all odds to expose the irrationality of the special relativity theory and its analogous theories and their weak experimental foundation. They point out in this article that through the long-drawn works of the people outside the orthodox physics community, the paradigm of the subject has now changed, though many people of the orthodox community are not aware of this change. I fully agree with his view.

Maxwell's equations are valid only in free space. Using Maxwell, Thomson (1989) deduced three auxiliary space transforms that transform D' Alembert's equation of scalar and vector potentials for a system of charges steadily moving in the free space to Poisson-invariant format. He thus was able to solve electrodynamic potential problems in a static way.

Lorentz (1904) using those three space transforms of Thomson and following Thomson's way derived his auxiliary time transform as a function of space that can transform radiation equations of point charges steadily moving in free space to Maxwell-invariant format. Those four transforms can deduce rightly the electromagnetic quantities including radiation phenomena relating to the charges and currents steadily moving in free space.

Physicists are unaware that those three auxiliary space transforms of Thomson along with Lorentz's time transform are conjointly called Lorentz transforms (LTs).

Thus Thomson and Lorentz should be conjointly credited with solving electrodynamic problems classically in static format by using those four auxiliary transforms. These transforms are applicable in the domain of electrodynamics as tactical auxiliary equations only in the free space.

However, it was well known to the physicists at that time that all electrodynamic phenomena on the surface of the Earth were independent of the translation of this planet. This means that the surface of the translating Earth acts exactly as free

space.

As the Earth is translating into free space with an appreciable velocity, Maxwell's equations should not be exactly valid on the surface of this planet. But those equations as per experiments were incredibly valid on the surface of the translating Earth! The physicists were puzzled.

[The solution to this problem was simple. We experience electromagnetic fields, electric charges, and light with our sense organs. Therefore, these are real physical entities (objects). All objects are subject to gravitation. They are carried with the Earth at the near vicinity of its surface and they experience Coriolis force when they are part of the Earth system and move with respect to that system. *All electromagnetic entities should similarly do.* This simple consideration will at once explain the puzzling observations of the physicists. But unfortunately, the physicists overlooked this simple natural solution.]

To dissolve this problem, Einstein (1905) a genius of the past century assumes that Maxwell's equations are invariant and real to all observers in steady motion which acts as the foundation of Special Relativity Theory (SRT). This assumption dissolves the problem at once.

Lorentz transforms are derived with a procedure where the real Maxwell Equation and auxiliary Maxwell equation are in the same invariant format. Therefore Albert Einstein's assumption implies that auxiliary LTs are real (that further implies that real-time is a function of space) not only in electrodynamics in free space but also in every domain of physics everywhere. By dint of Auxiliary LTs, we can calculate the electrodynamic quantities of the systems of charges and currents steadily moving in free space, real LTs should explain why those calculations are equally valid on the surface of the translating Earth.

Thus SRT holds that moving bodies really contract, and time in a moving system really dilates, and so on and so forth. The foundation of a phantom world was built. The latest addition to this spooky physics is the fake detection of gravitational waves!

But as expected, Real Lorentz Transforms of SRT completely failed in the Sagnac experiment (1913). The light speed in the rotating disk was found to undergo c+v and c-v effects which is denied in SRT. Clever relativists temporarily saved the SRT stamping the Sagnac effect as a non-inertial effect. Such a differentiation was only artificial. Many physicists rightly believed that there should be a linear Sagnac effect too with the same result as that of the circular Sagnac effect [and that was subsequently proved by Wang et al (2003) to be true].

Failure of SRT in the Sagnac effect gave some freedom to the physicists to construct other appropriate phantom transforms that can explain the Sagnac effects along with electrodynamic results of the steadily moving systems of charges and currents.

In such a scenario Tangherlini (1958) put forward a new set of transforms (TTs) where he accepted the space transforms of Thomson but not the time transform of Lorentz. He chose the time transform independent of the system coordinate, a gamma-backed truncated Lorentz time independent of position in such a fashion that Maxwell's equation remains

approximately (not exactly) invariant in all inertial systems steadily moving with small relative velocities. Just like Albert Einstein, Tangherlini thought that his transforms were real, not a trick to solve problems. This too was enough to create another phantom world though not so symmetric as that of Albert Einstein. These transforms are not reciprocal and therefore, there is no invariance of Maxwell's equations in the auxiliary state.

Therefore the genera of the equation of Tangherlini is related to the crude relativity family instead of the unique refined symmetric relativity of Albert Einstein.

(i) As Tangherlini accepted Thomson's space transforms, he could solve correctly the potential problems of a steadily moving system of charges and currents just like SRT in all velocities high and low and somehow the null result of the M-M experiment ; (ii) as his transforms are so chosen that the Maxwell equations are approximately invariant in all inertial frames in small velocities, problems dealing with light propagation should give crude approximate results from these transforms in small velocities, for high velocities these transforms will fail whereas LTs will succeed in all velocities with accurate values; (iii) as these transforms do not make Maxwell's Equations invariant in all inertial systems, (a) direction-related alteration of light speed should be observed in his inertial systems as in classical physics though not in the same measure and (b) there should be a preferential frame where the speed of light is c ; and (iv) as the transforms are real, any theory that justifies these transforms must create other fallacies relevant to the fallacies of SRT.

Therefore TTs (and other relevant transforms) can explain the electrodynamic effects of the moving charges and currents correctly in all velocities of the systems, but the light propagation properties approximately along with the Sagnac effect at the small velocity of the system. At high velocities of the systems, the transforms are useless for studying light propagation. In contrast, LTs are useful to study all electrodynamic phenomena at all velocities; but that will fail to explain the linear Sagnac effect.

Followers of Tangherlini are said to maintain that TTs are equivalent to LTs because both foresee the same observable T. As per our study that cannot be so.

Spavieri and Haug (2023) with their laborious exemplary work have proved this previously.

They have contrived a reciprocal Sagnac Effect experiment where they have shown with meticulous calculations that the round trip time interval of light propagation calculated from LTs and TTs are different. In their article, Spavieri and Haugh reject the relative time with relative simultaneity of SRT, and the 'equivalent' relative time with absolute simultaneity of the followers of Tangherlini in favor of Newtonian time.

If we watch the plethora of nonmainstream writings in the nonmainstream physics journals we can have no other conclusion than that of Spaviei and Haugh.

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