

# Refuting the principle of relativity

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## Abstract

In this paper we shall prove how the Galilean principle of relativity is not true physically and according to that by refusing the Galilean principle of relativity in Special relativity theory SRT, and according to the constancy of the speed of light, then this is leading to SRT to be conformally invariant.

## Theory

Since Galilean transformation was formulated basis on the absolute of space and time and according to the principle of relativity and the speed of light is variable. The analogy of the Galilean transformation and the dispersion relation in optics is given by the dispersion relation derived by Wolfgang [2]

$$((c^2 - v^2)k^2 = 2vk\omega' + \omega'^2$$

Wolfgang connected Galilian coordinates (  $x',t'$  ) and the wave coordinates as

$$x' = x - vt$$

$$t' = t$$

Also Wolfgang considered according to this relation the variability of the speed of light resulted from Galilean transformation

$$c' = c - v$$

According to the Galilean transformations by the principle of relativity, the speed of light is variable and it leads to the variable of the speed of light  $c \pm v$  and if we considered the analogy of the of the dispersion relation according to Wolfgang with the dispersion of the refractive index in optics, we find in the case of the light beam is incident in a medium of refractive index greater than 1 like water, we found the light speed inside the medium is moving in a speed 225,000 kilometers per second, but when it leaves the medium of water to vacuum of refractive index 1 it returns to its speed  $c$  the speed of light in vacuum. From that we found, when the light beam leaves the vacuum of the moving train, it is not moving in a light speed  $c - v$  as adopted by Wolfgang, it must move at speed  $c$  the speed of light in vacuum. And this is refusing the Galilean principle of relativity which is leading to the variability of the speed of light according to  $c \pm v$ . Since the Galilean principle of relativity is applied in the case of light speed and massive particles, and since the constancy of the speed of light violated the Galilean principle of relativity where according to the experimental results and observations  $c \pm v$  is wrong and only illusion, in this case the Galilean principle of relativity is not applied also in the case of massive particles.

## Sagnac effect

Wolfgang [1] derived the Sagnac effect according to the variability of the speed of light according GT in the framework of the ether theory and he got the difference in time as

$$\Delta t = \frac{2vL}{c^2} \frac{1}{1 - \frac{v^2}{c^2}}$$

In my theory [3] since the speed of light is always constant which violated the Galilean transformation and the principle of relativity which leading to  $c \pm v$  which is only wrong and illusion according to the experimental results and observations and by refusing the Galilean principle of relativity in Special relativity theory SRT which is leading to the paradoxes in SRT, The Twin paradox, Ehrenfest paradox, the Ladder paradox, and Bell's spaceship paradox, we get new conformal transformation equations which is in violation with the Galilean

principle of relativity which proven is only wrong and illusion. By refusing the Galilean principle of relativity we found all the paradoxes in SRT are disappeared. Our new transformations equations [3] are defined

$$\begin{aligned}x' &= \gamma^2(x - vt) \\t' &= \gamma^2\left(t - \frac{vx}{c^2}\right) \\y' &= \gamma y \\z' &= \gamma z\end{aligned}$$

Where  $\gamma$  is the Lorentz factor

$$\gamma = \frac{1}{\sqrt{1 - \frac{v^2}{c^2}}}$$

From that we can explain Sagnac effect according to the constancy of the speed of light as

$$\begin{aligned}t'^- &= \gamma^2\left(t - \frac{vx}{c^2}\right) \\t'^+ &= \gamma^2\left(t + \frac{vx}{c^2}\right)\end{aligned}$$

From that we get when  $x=L$

$$\Delta t = \frac{2vL}{c^2} \frac{1}{1 - \frac{v^2}{c^2}}$$

Which is the same result derived by Wolfgang, where

$$\gamma^2 = \frac{1}{1 - \frac{v^2}{c^2}}$$

## References

1. W. Engelhardt, Classical and Relativistic Derivation of the Sagnac Effect, [arXiv:1404.4075](https://arxiv.org/abs/1404.4075) [physics.gen-ph]
2. W. Engelhardt, On the Origin of the Lorentz Transformation, [arXiv:1303.5309](https://arxiv.org/abs/1303.5309) [physics.gen-ph]
3. A. Almosallami, Reinterpretation of Lorentz transformation according to the Copenhagen school and the quantization of gravity, Physics Essays, Volume 29: Pages 387-401, 2016