

Peer Review

Review of: "A Common Origin for the Sagnac Effect and Einstein's Train-Embankment Thought Experiment"

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I do not have the mathematical expertise to assess the technical derivations in this paper, so my comments focus exclusively on its potential philosophical and pedagogical dimensions. It is up to the author to decide whether, given the intended scope of the paper, these dimensions should be further developed or not.

The paper's main contribution is to present the Sagnac effect and Einstein's Train-Embankment Thought Experiment ("E-TETE") as two instances of a common underlying mechanism, framed through the Achilles-tortoise paradox. This conceptual unification is potentially valuable for teaching, as it links an empirical setup with a canonical thought experiment ("TE"). The choice of the analogy may help make the relativity of simultaneity more accessible to students and non-specialists, though this pedagogical benefit remains implicit.

From a philosophical perspective, the work could be strengthened in at least two ways:

- **Clarify the epistemological implications** – Does linking E-TETE to an actual experiment have implications for the nature of TEs? In particular, do the analogies identified support the empiricist view that TEs are continuous with real experiments (as, for example, defended by Sorensen 1992: 216ff), or is the connection intended to remain purely illustrative? Stating this explicitly would help situate the paper in ongoing debates about the epistemology of TEs.
- **Specify the purpose of the analogy** – Are the connections developed in this paper meant primarily as a pedagogical device to aid understanding, or as an explanatory strategy aimed at achieving conceptual unification?

References

Sorensen, Roy. 1992. *Thought Experiments*. Oxford: Oxford University Press.

Declarations

Potential competing interests: No potential competing interests to declare.