

Peer Review

Review of: "On the Sagnac Effect and the Consistency of Relativity Theory"

Stefano Quattrini¹

1. Physics, University of Ancona, Italy

It is well known that the Sagnac effect is not necessarily induced by rotation, contrary to the initial claim in the abstract. It was originally conceived in rotational motion and used in laser gyroscope interferometers to measure rotation, but its governing mechanism is not necessarily rotation, but a displacement of the absorber during the travel time of simultaneously emitted EM waves in a closed loop. The relativistic proof presented by Langevin is with rotating coordinates and cannot be supported by Special Relativity, but is supported by General Relativity, whose derivations are correct. The argument against the anisotropy of the speed of light for the moving observer is not appropriate. On one side, two clocks synchronized at rest with the device will measure, once in motion, a non-symmetrical SOL. That anisotropy is an integral part of the effect, often attributed to the "Relativity of simultaneity" (ROS). As a matter of fact, ROS is meant to be an outcome of two inertial frames, the cumulative effect of pairs of clocks' offsets which makes the overall effect in the closed loop emerge just from using one inertial frame, which is the one of the axis of rotation of the device. So basically, the argument against Selleri is not appropriately addressed.

Declarations

Potential competing interests: No potential competing interests to declare.