

GR 7: Classical Theory of General Relativity 2

Time: Wednesday 10:30–11:30

Location: H-HS IX

Invited Talk

GR 7.1 Wed 10:30 H-HS IX

The Sagnac effect in General Relativity — ●JÖRG FRAUEN-
DIENER — Department of Mathematics and Statistics, University of
Otago, Dunedin, New Zealand

The Sagnac effect can be described as the difference in travel time between two photons traveling along the same path in opposite directions. In this talk we explore the consequences of this characterisation in the context of General Relativity. We derive a general expression for this time difference in an arbitrary space-time for arbitrary paths. In general, this formula is not very useful since it involves solving a differential equation along the path. However, we also present special cases where a closed form expression for the time difference can be given. We discuss the effect in a small neighbourhood of an arbitrarily moving observer in their arbitrarily rotating reference frame. We also discuss the special case of stationary space-times and point out the relationship between the Sagnac effect and Fizeau's 'aether-drag'

experiment.

GR 7.2 Wed 11:15 H-HS IX

The Ether (Äther) Discussion in Relativity — ●ALBRECHT
GIESE — Taxusweg 15, 22605 Hamburg

The ether question was once decided in favor of Einstein's position, following the 'Zeitgeist' of that epoch. Was it a good decision?

Lorentz debated this question with Einstein, and he presented Einstein counterarguments (1917), which Einstein did not refute. - We will present the arguments of this discussion and in addition aspects of nowadays physics about it. Furtheron we will briefly explain the impacts of Lorentz's alternative view on the understanding of physics in general and on relativity (SRT and GRT) in particular.

Und wir hoffen auf eine lebhaftige Diskussion zu diesem Thema.

Literatur: Ludwik Kostro, Einstein and the Ether, Apeiron 2000