Seminar preparation assignment 3
Theory and Methodology of Science
AK2034

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Exercise 1a What was the experiment meant to find out?

Solution. Check whether light is propagating trough a stationary medium or not.

Exercise 1b Describe the experimental setup. In what way could this setup provide a test of the investigated hypothesis?

Solution. They basically measured the difference in traveling time between traveling directions. This was achieved by letting the light from one source be split in a half-transparent mirror to go different directions and then measure the inference on the way back to see the small possible time difference between the two directions. This must of course be calibrated properly.

Exercise 1c What measures were taken to reduce uncertainty and errors in the experiment?

Solution. Repeating the measurements in different settings like at different times of the day as well as different times of the year to avoid having a experimental result solely based on the coincident of alignment of the Earth.

Exercise 1d What was the outcome of the experiment?

Solution. No time difference between the two light beams traveling in the different directions.

Exercise 1e What could be inferred about the hypothesis from the results of the experiment?

Solution. The light speed was invariant of rotation and thereby invariant of the velocity of the reference frame. This results in that light doesn't travel in a stationery medium.

Exercise 1f How where the results interpreted?

Solution. Either there is no such thing as ether or the experiment failed to catch the effect by having a null result from some effect canceling out the difference in time in this particular setup.