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Spatial Velocimeter Relative to Gravity

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Abstract -- This paper consists on a description of an experiment with a special interferometer to measure the speed of a vehicle, with the device inside, relative to the earth's gravitational field.

We want to prove that the two basic postulates of relativity theory are wrong:

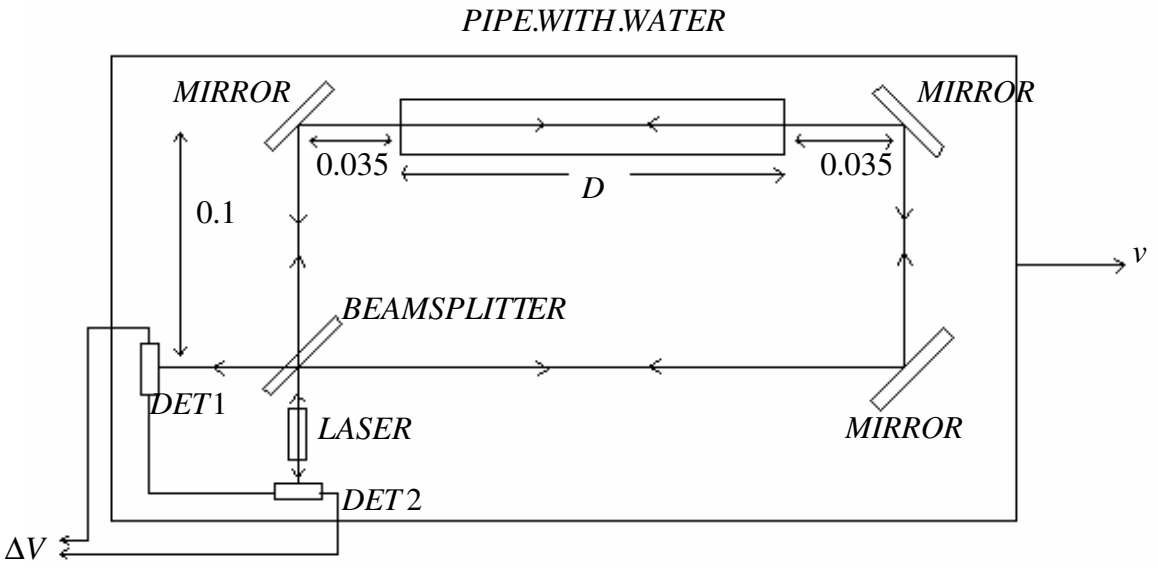
1st postulate – "we can't distinguish the state of uniform movement from rest in a closed laboratory with any kind of experiment performed inside."

But there are no laboratories closed to gravity. If the ether is the earth's gravitational field, it's possible to measure speed relative to it. This hypothesis is consistent with the results of the Michelson's experiment.

2nd postulate -- " the speed of light is constant and doesn't depend on the movement of the emitter or the receptor ".

As proven by the phenomenon of astronomic aberration, light has relative speed. Our experiment proves that light speed is additive, as are all others. Relativistic addition is the particular case that we take into account.

Experiment description



The device has a laser diode ($\lambda = 6.5 \times 10^{-7} m$, $P = 3.5 mW$), a 50% - 50% beam splitter, three mirrors, a pipe filled of water with two glass windows and two light detectors DET. The laser beam is divided at the splitter and travels in two directions in the mirror's circuit. Then they are joined and go to the detectors.

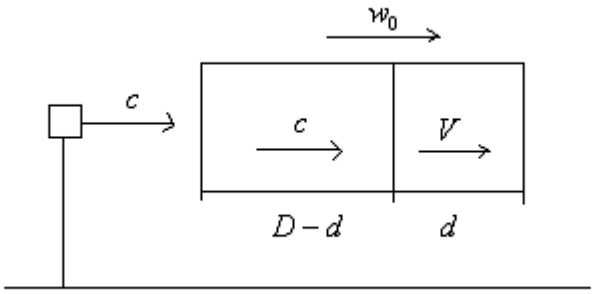
At DET1' the beams are in phase opposition and at DET2 they have the same phase. As the detectors have opposite polarity, the useful signal sum, and those due to vibrations, cancel.

The entire device is protected from visible light and infrareds by a metallic box.

Derivation of the formula for a moving optical medium

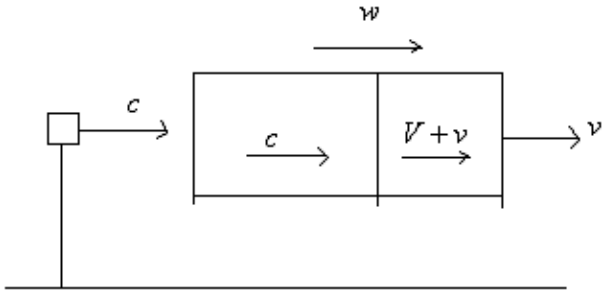
We admit the hypothesis that an optical medium has along the propagation direction, one part with vacuum (earth's gravitational field) and one part with a field that carries the totality of the wave that propagates there with a speed *V*:

Rest optical medium:



$$\frac{D}{w_0} = \frac{D-d}{c} + \frac{d}{V} \qquad (1)$$

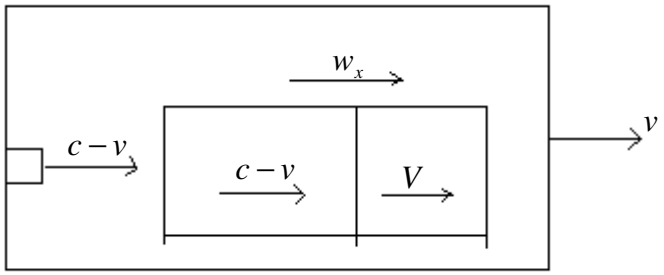
Moving optical medium relatively to the reference:



$$\frac{D}{w} = \frac{D-d}{c} + \frac{d}{V+v} \qquad (2)$$

According to Lorentz's equations: $w = c^2 \frac{w_0 + v}{c^2 + v w_0}$ (3)

Our device:



$$\frac{D}{w_x} = \frac{D-d}{c-v} + \frac{d}{V} \qquad (4)$$

Substituting *d, V* and *w* in the equations (1), (2), (3) e (4) we get the general formula of the intrinsic propagation speed in a medium with the speed relative to the gravitational reference field:

$$w_x \approx \frac{w_0}{c}(c \pm v)$$

Times of the light rays:

$$w_{0AR} = c \quad ; \quad w_{0AG} = 2.25 \times 10^8 \, m/s$$

$$\begin{cases} t_1 = \dfrac{0.2}{c} + \dfrac{0.07}{c-v} + \dfrac{0.07}{c+v} + \dfrac{D}{c+v} + \dfrac{D.c}{w_{0AG}(c-v)} \\ t_2 = \dfrac{0.2}{c} + \dfrac{0.07}{c+v} + \dfrac{0.07}{c-v} + \dfrac{D}{c-v} + \dfrac{D.c}{w_{0AG}(c+v)} \end{cases} \quad \text{and} \quad t = t_1 - t_2$$

$$t = \frac{2D(c-w_0)}{w_0 c^2} v \quad ; \quad D = 0.33m \quad ; \quad t = 2.44 \times 10^{-18} v$$

Space phase shift:

$\Delta t = 2.44 \times 10^{-18} \Delta v$ and $\Delta x = c \Delta t \quad \Leftrightarrow \quad \Delta x = 7.3 \times 10^{-10} \Delta v$

Voltage variation on the detector:

$$\Delta V = V \frac{\Delta x}{\lambda / 2} \qquad \text{with} \qquad \lambda = 6.5 \times 10^{-7}\, m \qquad \Leftrightarrow$$

$$\Leftrightarrow \qquad \Delta V = V \times 2.24 \times 10^{-3} \Delta v$$

In our device $V = 46mV$, so for a $\Delta v = 500km/h = 139m/s$:

$$\underline{\Delta V = 14mV}$$

A commercial plane travels at the normal speed of 900 km/h. Rotating the device 90 degrees in the plane, we achieve an almost instantaneous speed variation of 900 km/h.

The device already exists and works correctly. If you are interested in sponsoring an experiment flight, please email the author of this paper.