# Michelson-Morley's tests - a scandal!

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This article analyses the predictions by Michelson and by Potier for the tests called MMX.

**Background**

Michelson-Morley's tests (MMX) are based on the wave model for light and the assumption of an existing ether. When the ambition was increased to detect ether winds as small as $v=10^{-6}$ times $c$ (due to our planet's rotation) the tests were done with cooled down optical resonators. The resonators are mounted in a right angle to each other. Therefore, when rotating the equipment into a specific direction, the horizontal ether wind is longitudinal in one arm and transverse in the other direction. The 2 resonators were integrated into 2 separated lasers producing 2 different frequencies, that could be compared in a phase detector, so, the frequency difference could be monitored. No change in this frequency was detected, when the equipment was rotated. This fact has been regarded as a support for the concept Lorentz invariance.

**The prediction**

In the longitudinal arm light moves with the speed $c$, **in relation to the ether**. This means that we get the speed $c+-v$ in relation to the equipment. The 2-way speed of light is therefore $c(1-B^2)$ with B=$v/c$. In the transverse arm light moves with the speed $c$, **in relation to the ether**. This means that we get the speed sqrt($c^2+v^2$) in relation to the equipment. Obs. sign! So, we get **no** effect of the ether wind in the transverse arm. This is in agreement to Michelson's first prediction, but in conflict with Poitier's 'correction'. Potier made the mistake of assuming **c+v** to be controlled by mirrors. Michelson's earlier assumption said that mirrors are relevant in relation to **c** only. The mirrors are transparent in relation to the ether wind. So, linear addition in one arm demands quadratic addition in the other arm.

The atoms in a crystal control their separations by the effects that they produce in the ether. If we assume these effects to propagate with the speed $c$ in relation to the ether, it becomes logical to assume, that the ether wind can contract physical bodies in the same way as the reduction in the 2-way speed of light. This contraction is 2 times the FitzGerald contraction, and indicates an explanation to the MMX results in agreement to the Galilean transform, without the need for an introduction of the concept dilation of time. So, we get a real, but **compensated**, effect in the longitudinal arm. MMX is explained and the effect is hidden by the elastic definition of the unit of length.

**Conclusions**

Without dilation of time, we must explain how atomic clocks behave in the GPS system. This is not difficult, since bound electrons move forth and back in relation to the ether wind. These electrons are therefore accelerated and decelerated during each orbit. A second order dependency in frequency on the ether wind is therefore possible. So, we can expect clock frequency to be proportional to $1-B^2$.

So, we find that a tragic paper by Potier in 1882 has caused a lot of confusion for a long period of time. Michelson's great work was abused and produced the twin paradox. This indicates that our knowledge of light is incomplete and that we should use the concept ray, defined by **c** in **coherent** systems. Potier's mistake, by not strict following the wave model, has supported the Lorentz transform.

**Dilation of atomic clocks**

Assuming a clock frequency proportional to $1-B^2$ means that we can estimate the behavior of GPS clocks. Instead of SRT we use the ether wind of 3.89 km/s tangential to orbit in a GPS satellite. Instead of GRT we use an ether wind in radial direction (equal to the tangential) of 7.91 km/s, near Earth. Earth rotation is about 0.3 km/s. These 3 speeds reduce clocks with 14.4, 60 and 0.1 microseconds per day. Therefore, we get due to radial ether wind 60-14.4=45.6, and from tangential 0.1-14.4/2=-7.1 (the factor ½ is caused by the fact that clocks are not stabilized in direction of motion). The total effect is therefore 45.6-7.1=38.5 microseconds per day. This is in agreement to GPS results.

We have assumed a radial ether wind. So, we can also explain gravity by this radial ether wind. This ether wind can also be united with the GPS data, due to spherical symmetry in satellite localizations. This ether wind causes a 2-way light speed in radial direction, about the magnitude that Einstein predicted for 1-way light speed in all directions due to gravity. This effect is also usable to explain the Pioneer anomaly.

**Wave or particle?**

One way of looking at Potier's mistake is to regard the fact that moving mirrors inside their own planes cannot change wave behavior related to the ether. Potier's mistake with a particle like thinking about light (in one arm) seems to be helpful in the reintroduction of a particle model for light. This introduction was later supported by the photoelectric effect, where **arriving** light particles were said to force electrons to be **leaving**. A better explanation is to assume light **waves** to make interference with bound electrons orbiting in the plane of the wave fronts. This is in agreement to the fact that exited electrons move mostly in a right angle to incoming light. So, bad understanding of waves and ether has fooled us to use particles to represent light, since particles are easier to understand.

**Discussion**

Potier introduced his idea in 1882, and Michelson resisted against majority until 1887 when he gave up - unfortunately - since a great confusion was started when Einstein was a child. Potier deviated from a strict wave model for light in one arm. With Michelson's interpretation of MMX we should be able to use the Galilean transform, without the twin paradox. Einstein increased the confusion with more mistakes, but, when he tried to correct at least one error, he was not allowed to reintroduce the ether.

Elastic space is an effect of misunderstood contraction of matter. Elastic time is an effect of misunderstood behavior if clocks.

It is about time to discuss if we really need time dilation.

**References**

Blog http://www.naturalphilosophy.org/site/johnerikpersson/

Article http://www.naturalphilosophy.org//pdf//abstracts/abstracts_paperlink_7478.pdf