

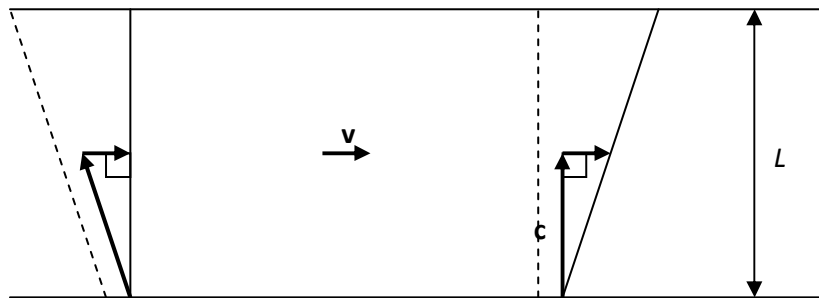
# Time out for Time Dilation and Light Quanta

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## Michelson and Morley (MMX)



A swimmer crossing a river has been used as a model for the effect of an ether wind transverse to the motion of light. The swimmer to the right will cross the river in a time equal to  $L/c$ . The swimmer to the left will need a longer time equal to  $\gamma L/c$  ( $\gamma=(1-\beta^2)^{-1/2}>1$ ). Feedback, in a laser cavity and in an interferometer, defines wave fronts to be parallel to these mirrors. The mirrors must be parallel to each other with extreme precision and their boundary conditions have effects on the waving but not on the ether wind. Therefore,  $c$  is defined (not  $c+v$ ). Light takes the shortest path **in the frame of the ether**. The swimmer would do the same if she were swimming between two boats floating free with the stream. The swimmer to the right is therefore the right one as a model for MMX. Light is best described in the frame of the ether. After transformation to the frame of the ether we find the light behavior according to the dotted lines in the diagram. See Fig 1 in [1].

The decision, which swimmer to use as a model, must be based on common sense since  $v$  is much less than  $c$  and the interferometer is sensitive in one dimension only. However, Stokes used the wrong swimmer when he reduced Michelson's prediction by 50 % based on Pythagoras theorem. This is not observed in MMX. Einstein invented time dilation to explain away this problem. He stated  $\gamma$  to have effects on the scale factors of time and space. Einstein made a new error and hid thereby Stokes' error. By using the swimmer to the right we can see that transverse ether wind is irrelevant, when light is detected coherently. This means detecting the normal to the wave fronts. Time dilation does not exist either. Instead, the illusion of *time* behavior (observed only in atomic clocks) is a *clock* behavior. The ether wind changes light speed and the form of the Coulomb field in *one dimension only*. Since the ether wind has effect in one dimension only, the form of the field is changed and the electron, adapting to this field, is accelerated by  $\pm\beta$  ( $=v/c$ ) in the direction of the ether wind during an orbiting period. In the direction transverse to the ether wind the component in electron speed is proportional to  $1\pm\beta$  for a half period. Therefore, the time for a full period is changed by  $\beta$  in proportion to  $(1-\beta^2)^{-1}$ . See [1].

## Ether Wind and GPS

Time effects observed in the GPS system are explained by the theory of relativity as effects of speed and gravity. These effects are said to change the scale factors of time and space. Instead of these two explanations we can use the ether wind as the *only* cause. The ether wind changes electron behavior. Clock frequency becomes proportional to  $1-\beta^2$ . The potential of gravity can be substituted by a vertical ether wind squared. This vertical ether wind has been assumed to be equal to the horizontal speed of a satellite in a circular orbit at the same altitude as the ether wind. This hypothesis can explain gravity. The vertical effect (on clock speed) is  $1-\beta^2$ , since the field of gravity is inside the plane of electron's orbit. This depends on satellite stabilization and clock orientation. Since the satellite is not stabilized in the direction of motion effect of speed is only  $1-\beta^2/2$ . The value 1/2 is derived by taking an average value of a squared cosine function. These assumptions predict very well the clock behavior observed in the GPS system. See [1].

## Three Directions of Light

The *real* motion of light is a vector sum of ether wind  $\mathbf{v}$  and wave velocity  $\mathbf{c}$ . However, this vector sum has relevance only for not coherent detection of *focused* light. In an interferometer light direction is defined by mirrors in laser cavity and in the interferometer to be orthogonal to these mirrors in the frame of the ether. The irrelevance of transverse ether wind means that relevant description of light in an interferometer is  $\mathbf{c}(1+v_c/c)$ . ( $v_c$  is component in  $\mathbf{v}$  parallel to  $\mathbf{c}$ ). The interferometer has no transverse sensitivity and  $v \ll c$ . We can explain this by stating that boundary conditions defining wave fronts are not changed by small motions of the mirrors inside the mirrors' plane. In the same way transverse ether wind is irrelevant in a telescope. However, a change  $\Delta \mathbf{u}$  of telescope motion produces a change in *apparent* wave front orientation. This means that stellar aberration depends on  $\mathbf{u}$ , but not on  $\mathbf{v}$ . See [1].

## First Order Effects of Ether Wind

**Stellar aberration** is useless in relation to the ether wind, as demonstrated.

**Light bending near the Sun** demonstrates a first order effect of the ether wind. The hypothesis of a falling ether can be applied to our sun. The gradient in this ether wind's component falling in the direction of light causes this effect. The observable result is an effect due to two opposite bendings. See [1].

**Sagnac corrections in the GPS system** demonstrate a first order effect when time stations on our planet are compared. One-way speed is  $c(1 \pm \beta)$  ( $\beta = v/c$  and  $v$  is ether wind due to planetary rotation).

## Second Order Effects of the Ether wind

**Michelson and Morley's experiments** are useless in relation to the ether wind. This follows from the fact that the searched effect is compensated by the same effect,  $1-\beta^2$ , in contraction of the length of *physical objects*. Atoms in a crystal control their separations by means of the effects they produce on the ether. Two *simultaneous* communications in opposite directions in a crystal are affected by the ether wind to the same extent,  $1-\beta^2$ , as two *sequential* communications in opposite directions in the light used by Michelson. This explains Michelson's results and also means that we do not need a contraction of *space* equal to  $1-\beta^2/2$  as Einstein suggested.

**The speed of atomic clocks** is changing due to the ether wind as  $1-\beta^2$ , as earlier demonstrated to be in agreement to GPS observations. See [1].

**The Pioneer anomaly** demonstrates also a second order effect,  $1-\beta^2$ , in two way speed of light. An observed decrease of about  $10^{-9}$  in carrier frequency confirms this. This effect has been regarded as a real retardation. See [1].

**The Lorentz transformations** are derived by declaring  $r^2-c^2t^2=R^2-c^2T^2=0$  and then forgetting the last equality.

### Gravity Anomaly

The gravity anomaly observed in Mohe China 1997 has been described in [1] and [2] and in articles to NPA in 2012 and 2013. Difficulties in explaining the form of the registration has resulted in speculations about new properties in gravity. The registration contains two negative bumps instead of one positive bump, as was expected. However it is the opinion of this author that the observed effect is the expected effect. The observations should be regarded as the *difference* between effect on the gravimeter and the effect on parts of our own planet. The affected parts of our planet are defined by the size of the Moon and the Sun. The phenomenon is therefore a four body problem and not a three body problem. These measurements regard *vertical* direction.

This opinion is also supported by measurements made in Hungaria during an eclipse. These measurements regard *horizontal* motions that have opposite signs before and after the eclipse in relation to the effect during the eclipse. This is also an indication that we have a *four* body problem. The results from Hungaria are reported by Janos Rohan in [3]. The radio tower works as a gravimeter and detects *horizontal* effect. The observed motion in relation to our planet represents the *difference* in shielding effect on tower and on nearby parts of our planet (dependent on dimensions of Sun and Moon). The effect on the radio tower can be regarded as a point value but the effect on our planet is averaged over large parts of our planet. During a long time in the middle of the eclipse the point value is dominating. During short times in the beginning and the end of the eclipse the effect from values averages over larger parts are instead dominating. The sign of the second derivative of the shielding effect defines which shielding effect is dominating. This explanation fits the form of the registration from the radio tower.

The results from Hungaria and from China are somewhat different. Many parameters are different and also not known. One important difference is sensitivity in vertical or horizontal direction. This can explain differences and the same model can be valid in both cases. A very rough estimation of the shielding effect is done in [1]. This estimation is in the same order of magnitude as the observations in Hungaria and China. However, huge uncertainties mean that the numerical values do not mean very much. More important is the fact that the *form* of the registration can be motivated.

### Quanta of Light???

In a bound electron there is a balance between inertia and Coulomb force. A third force, also transverse to motion, can disturb this balance. Light with a frequency as an integer multiple of the electron's orbiting frequency can provide such a disturbance. Therefore, light *waves* can change *potential* energy in a *tightly* bound electron. The hypothesis of quanta of light is therefore not needed for explanation of the photoelectric effect and the Compton effect. The Compton effect can be explained by an electron escaping one atom and then being captured by another atom. See [1].

## Conclusions

Stellar aberration is useless in relation to the ether wind but Sagnac effect and light bending near our sun demonstrate *first order* effects of an ether wind.

MMX is useless in relation to the ether wind, but the behavior of atomic clocks, the Pioneer anomaly and the force of gravity demonstrate second order effects of an ether wind.

The concept ether can explain many phenomena and it was therefore a pity that Einstein was not allowed to correct his great mistake regarding the ether.

We do not need quanta of light to explain blackbody radiation, photoelectric effect and Compton effect.

## References

- [1] John-Erik Persson, "Light Without Energy", available at NPA homepage under my name. See [www.worldnpa.org/site/member/?memberid=22](http://www.worldnpa.org/site/member/?memberid=22) (See abstracts).
- [2] Qian-Shen Wang, "Precise Measurements of Gravity Variations during a Total Solar Eclipse", Physical review D 62 041101-1.
- [3] Janos Rohan, <http://astrojan.zz.mu/laki.htm>