

Illusions and Reality in Physics

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This article reveals a very important mistake regarding the predictions for the well known experiments done by Michelson and Morley. This error was caused by lack of knowledge regarding the motion and structure of light and caused great problems in physics and resulted in a very absurd conception of the time concept, and caused the confusion between the concepts wave or particle.

Another mistake is the notion that the product hf represent light quanta, instead of charge quanta.

These mistakes have also implications for our perception of phenomena like gravity, black-body radiation photoelectric effect and more. The necessity of an ether is also demonstrated and it is suggested that the ideas behind pushing gravity can be united with this ether model. This means that we get a cause of gravity and not only descriptions of its effects.

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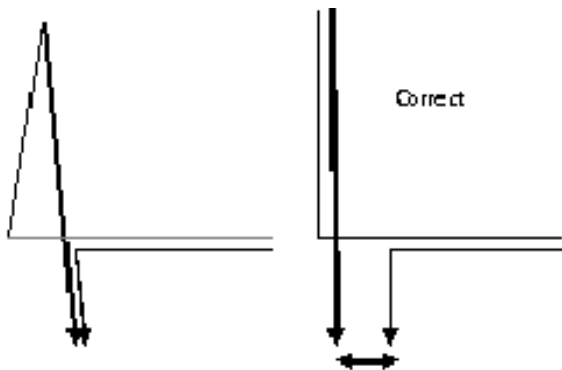


Fig 1 Interpretations of Michelson and Morley's tests

1. The illusion of dilation of time

Michelson and Morley's tests (MMX) did not give a zero result, but no result at all, to empirical science. However, the interpretation of MMX appears to have given a negative contribution to theoretical physics. The reason was the change in 1882 from Michelson's to Potier's prediction. The prediction was reduced by half and Poincaré's motivation was an effect in the transverse arm that was half the effect in the longitudinal arm. Therefore, Lorentz could use the missing part to motivate dilation of time in his Lorentz transform.

Michelson's original prediction assumed the mirrors in the equipment to define the wave vector to be orthogonal to these mirrors. Light takes the fastest way between mirrors, and fastest way is the shortest way, when transformed to the frame of the ether. Light moves in relation to the ether, and depends on the mirrors' orientations, but not on their translations inside their own planes. Therefore, Michelson found no effect of the ether wind in the transverse arm in MMX. However, Potier had a different opinion. He assumed the vector sum of ether wind and wave vector to be orthogonal to mirrors. He therefore got an effect in the

transverse arm of the equipment to be half the effect in the longitudinal arm.

However, it is the opinion of this author, that it is the first prediction by Michelson, that is the correct one. This conclusion follows from the fact that boundary conditions, implied by mirrors, have relevance for the wave motion, but not for the ether wind. In other words: Mirrors affect light, but not ether. Michelson realized this, but the wrong majority won the debate. See Fig 1. The marked distance is only some micrometers, and not significant in relation to MMX.

To correct for Potier's mistake we must give up dilation of time, and use a contraction of matter that is 2 times the contraction in Lorentz ether theory. This increased contraction is equal to the reduction in 2-way speed of light, also due to the ether wind. This means that the effect in the longitudinal arm is compensated. This contraction is also very reasonable, since atoms in a crystal inform each other regarding their separations by means of a 2-way transfer of information based on the ether.

No effect in the transverse arm, and compensated effect in the longitudinal arm, means that MMX cannot detect an ether wind. Another reason to this fact is that available effect is not one part in hundred millions, due to planetary motion, but ten thousand times smaller, due to planetary rotation.

The real motion of a beam is described by a vector sum, but the apparent ray direction, inside the beam, is the direction of the normal to the wave fronts. This follows from the fact that coherent detection, based on phase, means that transverse ether wind becomes irrelevant. So, we must describe the ray as a wave vector together with the longitudinal component in the ether wind only. We need 2 models for light propagation. A telescope, like a cavity, is a coherent system, so we must use the ray concept, when discussing stellar and pulsar aberrations. Both types of aberrations can therefore not depend on transverse ether

wind. Therefore, stellar and pulsar aberrations only can reveal the state of motion of the observer. A gradient in longitudinal ether wind (instead of transverse ether wind) can bend a wave front.

Electrons in atomic clocks move forth and back, in relation to the ether wind and are therefore accelerated, and decelerated, in the direction of the ether wind. The speed component transverse to the ether wind is therefore changing between $a(1+v/c)$ and $a(1-v/c)$. The electron in front of the atom has lower kinetic energy than the electron behind the atom. This produces a second order effect on clock frequency, of the same type as the effect we have earlier seen for 2-way light speed and contraction of matter. However, in atomic clocks, this effect is not compensated. This means that atomic clocks can do something that MMX, stellar aberration and pulsar aberration cannot do, namely detect the ether wind.

So, the mistake that was helpful to motivate dilation of time was done when Einstein was only 3 years old, and we cannot blame him for that. However, when he changed Lorentz contraction of matter to contraction of space he increased the confusion. So, we got a conflict between Lorentz' and Einstein's theories, that both were wrong. Because of this conflict it was difficult to see that Potier also was wrong, and that Michelson was right.

We can conclude, that we must give up relativity theory, Lorentz' ether theory and dilation of time. We need a contraction of matter 2 times the Lorentz contraction. This means the same contraction in Michelson's standard meter as in the older standard in Paris. This means also that the effect of ether wind is compensated in MMX. So, stellar, and pulsar, aberrations, and also MMX, are useless in relation to the ether wind. These questions are also treated in an article to Foundational Questions Institute. [1]

2. The illusion of particles in light

Light is not visible. So, it is not easy to see the light. We must therefore remember that we are looking at electrons dropping out from a detector. This means that the product hf , assumed to represent energy existing in light may instead indicate how much energy one electron can pick up from light. Our detectors are charges existing in electrons. Therefore, just looking at electrons is not enough to conclude quanta in light. Therefore, Planck's constant may be an electron property, and quantization is produced by the electrons.

In the experiment with photoelectric effect we can also use the wave model for light. An electron orbiting inside the wave front of light, with the correct frequency, can make interference with light. So, light can produce a force perpendicular to motion. This can affect stability since an inertial force, also transverse to motion, is balancing a radial Coulomb force. Light can therefore change the potential energy in the electron. So, we do not need particles of light.

In the same way an X-ray wave packet (not a particle)

can make interference with an electron and force the electron to escape its kernel. When this electron is captured in another atom an X-ray wave packet (with somewhat different frequency) is produced. This means that we can explain the Compton effect with 2 processes.

Another evidence for particle behavior is found by using a beam splitter to illuminate 2 detectors with the same low level of continuous light waves from a laser. Electrons are produced by the detectors to about the same intensity, but not simultaneously. This is a particle behavior caused by electron particles that are behaving independently in the 2 detectors. So, an emission takes place when an electron happens to orbit in coherence with the light waves.

We can also use 2 beam splitters, and unite the 2 beams again to get 2 output signals. Since the unification is done with different phase relations, in the 2 output signals, they get different amplitudes. Therefore, weak signals affect only one detector. This demonstrates the wave property of light, without the use of particles.

By introducing an ether, it becomes possible to describe electrons without the wave model. Electron particles, when moving, can generate a wave in the same way, as a boat moving in water. The wave function is real and we can escape the wave or particle confusion. Perhaps the ether model needs particles, but that means a kind of particles not at all related to Planck's constant. His constant looks more like an electron property.

3. The illusion of quantum jumping

The destructive superposition, that is observed in light, is in conflict with the law of energy conservation. We can solve this problem by assuming light to be empty of energy. Light without energy means that light contains only information needed to pick up energy from the ether. So light contains, from the start, no real force. Instead light contains a potential force, that can be realized if light hits a charge, like an electron. The realization of the force can be done by energy from the ether. This means that no energy is needed when light is generated, but instead later when energy is detected. Therefore, no quantum jumping is needed between the different levels of binding energy to explain thermal radiation.

This reasoning means also that light must not be produced in quanta and we do not need the photon concept. Light can be generated in continuous form by not jumping electrons. Light can also be generated in the form of wave packets. This is the case when an electron is captured by an atom, and an X-ray wave packet is produced. So, we do not need quantum jumping.

4. The ether wind and gravity

The frequency of atomic clocks depends on the ether wind. Therefore, the effect predicted by SRT for GPS clocks can be explained by the ether wind caused by the motion of the GPS satellite. This effect is reduced by half, since the satellites are not stabilized in direction of motion.

We can also substitute the effect due to GRT, by an ether wind of the same magnitude, but instead acting in radial direction to the orbit. This means, that we can explain the effects due to SRT and GRT with only one model. Another advantage is that we can explain gravity by the radial ether wind. The focused radial ether wind causes the force of gravity, but the not focused tangential ether wind causes no force. This description of gravity is in agreement to the 300 year old model due to Fatio.

A spherically symmetric ether wind is also in agreement to the high precision in the GPS system. This is easily seen by regarding the fact that all transmitters are situated on a spherical surface. All receivers are situated on a smaller spherical surface called Earth. These 2 surfaces are concentric.

Free falling bodies are moved by gravity from distant bodies in such a way that gravity is compensated by acceleration. The body is entrained by the ether. This is true as long as the mass point approximation is valid. However, we can see small deviations in gravity from Moon and Sun. We get tidal effects due to a gradient in gravity. During a solar eclipse we have observed small effects also caused by a gradient in gravity. [2] has observed this effect in horizontal motion. A vertical effect has also been observed in a sensitive gravimeter. This phenomenon is explained by the fact that our moon is shielding gravity from our sun on parts of our planet, since Moon is smaller than Earth.

Near a large body the attenuation of ether particles, passing through the body, generates an asymmetry, a falling ether, that is the cause of gravity. Therefore, a 300 years old model explains gravity better than present model based on the bending of nothing.

This article states that light travels down faster than up. Therefore, 2-way light speed in relation to a body is reduced in radial, but not in tangential direction. This means (according to earlier assumptions) that gravity from the Sun reduces 2-way light speed on a distance of 20 AU (astronomical units) in such a way that a 2-way signal is shifted in frequency about one part in a billion. This can explain the Pioneer anomaly, since an increased 2-way radial light speed (from 20 to 70 AU) can look like a decreased speed in the space station.

5. Big Bang

Is it possible that Big Bang also is an illusion? Perhaps! The cosmic background radiation is not excluding Big Bang, but does not support it either. The cosmic red shift is a very uncertain indication, since distances are difficult to estimate. At larger distances bodies must be larger to be detectable, and are therefore also at larger separations. So, there is a risk of an illusion here also, since larger mass can be confused with larger distance.

6. Discussions of light propagation

We have not enough knowledge about light propagation. Therefore, a tragic effect for physics was caused by the

change from Michelson's prediction stating no effect in the transverse arm in MMX to an effect equal to half the effect in the longitudinal arm. This mistake ignores the fact that, in coherent systems, the relevant light direction is the normal to the wave fronts, and not the real motion as described by a vector sum. So, mirrors in MMX define the normal and telescopes detect this normal, since mirrors have no relevance related to the ether wind. My opinion is therefore that Michelson's first prediction was correct. Professor Hartwig Thim in Linz has the same opinion. The vector sum of wave vector and ether wind is relevant only when we detect by amplitude. This demands light focused into a beam. So, we need 2 models for light propagation separated by the relevance of transverse ether wind. Potier's mistake seems to be caused by a thinking in particles instead of in waves. If light were particles it would be reasonable to assume that source speed would add to light speed. However, light is not particles and instead moves in relation to the ether independent of source.

Since the prediction for MMX was too small it was possible to cover up this error by means of time dilation. So, we must abolish time dilation (and also transverse Doppler shift) and double the contraction of matter. With increased contraction of matter we find that this contraction compensates for the reduction in 2-way speed of light. With this model for light we find that MMX, stellar and pulsar aberrations can not detect an ether wind. However, the ether wind can be detected in atomic clocks. If we change the orientation of an atomic clock from horizontal to vertical, we will see that the clock effect due to GRT will disappear. This means a simple way to disprove GRT.

We can also detect the first order effect of the ether wind. One method was suggested by Dr. C C Su. He used an idea from de Witte, but changed wavelength from the microwave region to HeNe lasers. He therefore could reduce the length of measurements to a couple of meters. Another possibility is to measure vertical ether wind by the GPS system. This should be possible since horizontal ether wind is indicated by the Sagnac correction.

7. Discussions of light structure and quantum jumping

We have not enough knowledge about the structure of light, and it is important that we remember that we are only looking at electrons exposed to light. As we have seen we can explain light by the wave model alone, and this means that we can do without the particle model. We do not need the photon concept. Light particles can be an illusion.

It is also possible to describe thermal radiation as producing only potential force and that light, instead of containing energy, can pick energy up from the ether, at a later time, when light hits a charge. This means that bound electrons can radiate without the loss of energy.

This means that we can see a possibility to solve the wave or particle confusion. Light can be waves only and we do not need quantum jumping either.

8. Discussions regarding ether and gravity

We have seen many examples how the introduction of an ether can be helpful to explain many phenomena. If the ether is falling it can explain gravity, and at the same time be united with the high precision in the GPS system. Therefore, we can conclude that the ether is a very important and fundamental concept in physics. Einstein realized this when he had studied physics for decades. So, he tried to correct himself, but was not allowed. It is remarkable to see how easy the ether was abolished (just because it was difficult) by a very young patent engineer. However, when a physics professor (after decades of studies in physics) wanted the ether back he was just laughed at. So, majority won over Einstein's truth just as they had done over Michelson's truth when his correct prediction for MMX was shifted (around 1882) to something wrong. Probably it will happen again.

9. Summary

We have not been able to do the transition from light particles to light waves in a correct way. Figure 1 illustrates the most important error. We must remember that light travels in relation to the ether and not in relation to the source or to the observer. So, the speed of the source does not add to the light motion. In the MMX tests this was regarded in the longitudinal arm, but ignored in the transverse arm and wave vector alone, and not its vector sum with the ether wind, is orthogonal to mirrors. The prediction for MMX was therefore wrong. This mistake gave a false support for another mistake, namely the postulation that light moves with the same speed in relation observers with different, but not accelerated, motions. So, the confusion in physics started as early as in about 1882 with the illusion of dilation of time. So, it is not enough to give up Einstein's relativity. Lorentz' relativity must also go, so we can have a physically and logically sound time concept, without dilation of time.

There appears to be more illusions. The quantity hf , regarded as a light property, may instead be an electron property, since we cannot see photons, only electrons. Therefore, we have no real evidence for light particles. The so called photons must also go.

Instead of transporting energy light can be assumed to pick up energy from the ether. This idea allows bound electrons to radiate without quantum jumping.

There are lots of evidences to the idea that the ether is necessary, as Einstein said when he really had learned physics. A most important argument is gravity. The ideas presented here are in agreement to a 300 year old model due to Fatio and Le Sage. Another argument for an ether is the possibility to explain thermal radiation without quantum jumping. Therefore, the ideas presented here should be tested, and as we have seen, this can easily be done.

10. Result

- We can have a logically sound time concept without dilation of time
- We do not need photons
- We can explain thermal radiation without quantum jumping
- We can explain photoelectric effect and Compton effect
- We can explain gravity by a falling ether in agreement to GPS precision
- We can explain gravitational anomalies
- We can solve the wave or particle confusion
- We can explain the Pioneer anomaly

11. Conclusions

- In MMX light behaves independent of the translational motion of the equipment in all 3 coordinates. Therefore, no effect in the transverse arm.
- The ignorance of Michelson's opinion caused a tragedy in physics.
- By using a beam splitter to illuminate 2 photo detectors with equal light waves we can see how electrons behave independently in the 2 detectors.
- Destructive superposition in light indicates light to be without energy. So, light picks up energy from the ether. Therefore, thermal radiation does not need energy from the electrons.
- A radial ether wind can explain gravity and also be united with the high precision in the GPS system. Ether is important.
- The ignorance of Einstein's ambition to reintroduce the ether caused a tragedy in physics.
- The reason most dissidents have failed to disprove Einstein is that they have not realized that Lorentz ether theory (with time dilation) also must be abolished.

References

- [1] John-Erik Persson. *Fundamental Errors in Physics*. URL: <https://fqxi.org/community/forum/topic/2962>.
- [2] Janos Rohan. 1961. URL: <http://astrojan.zz.mu/laki.htm>.