Paradoxes and Failures in Physics

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A world of paradoxes and questions

Today theoretical physics is in a bad state. Physics is full of unanswered questions like:

- Why the wave or particle paradox?
- Why the twin paradox?
- Why quantum jumping?
- What are quanta of light?
- Why the cosmological red shift?
- Why anomalies in gravity during solar eclipses?
- Why the Pioneer anomaly?

About light

The wave or particle paradox seems to indicate a lack of knowledge about light. Apparently, the transition from particle model to wave model, is not really finished. Therefore, thinking in terms of particles still exists. This can be explained by the use of the ray concept, without regarding that this concept only is a mathematical tool, for describing the normal to a wave front. The physical reality is instead in the wave front, when we use the wave model. So, perhaps the problem is that we have not really given up all particle ideas. We have not done enough unlearning regarding particles. This can explain the illusion of a need for a particle model, together with the wave model.

The real motion of light is a vector sum, **c**+**v**, of wave vector and ether wind. To see this direction, the *beam* direction, we must use light focused into a beam, and detect this direction as the direction of max *amplitude*. However, most optical experiments are done in coherent systems based on *phase*, and not on amplitude. Phase based detection means that an ether wind blowing inside the wave front cannot be observed. Instead, we can observe the normal to the wave fronts. This means that a relevant description of light, in coherent systems, cannot include an ether wind blowing inside the wave fronts. This means that we must use the *ray* direction, as the direction of this normal. Therefore, in coherent systems, relevant description of light is **c**(1+*v*.cosA/*c*). (A is angle between **c** and **v**). Transverse ether wind is irrelevant in coherent systems like MMX. For MMX we can see this by regarding the fact that wave fronts are defined by (and parallel to) a distant mirror, and are therefore unchanged in the frame of the ether. So, a transverse ether wind cannot tilt a wave front in MMX. Potier was wrong.

Potier's mistake

These facts were not observed by Potier in 1882, when he introduced the idea that light had to take a longer way in the transverse arm in MMX. He missed the fact that the distant mirror defines constant light behavior, in the frame of the ether. Mirror orientation and ether motion (not equipment motion) define light behavior. Potier probably was influenced by particle thinking. He did not see how MMX equipment works in such a way, in the transverse arm, that light behavior is unchanged in the only

dimension where the instrument is sensitive. In the other two dimensions the effect of the ether wind (10^{-6} times *c*) is very small, in relation to the normal sizes of the fringes, and is therefore irrelevant.

Potier's introduction of an effect in the transverse arm was a very important mistake, and this error gave a false support for the Lorentz transform. Potier thereby opened the way for the GAMMA factor, that was stated to have relevance for time dilation and contraction of matter in Lorentz' ether theory, and also for time dilation and space contraction in Einstein's theory of relativity. Correction for Potier's mistake means that we can give up the absurd concept of time dilation. However, we need a contraction of physical bodies, equal to (GAMMA squared)$^{-1}$, instead. This renders MMX to be a useless method with *compensated* effect in the longitudinal arm and *not existent* effect in the transverse arm.

MMX

MMX is a useless method, due to contraction of matter. We can explain this effect by regarding that two atoms in a crystal are communicating their positions to each other by means of how they affect the ether. These effects can be assumed to move with light speed. Therefore, a second order effect of the ether wind, (GAMMA squared)$^{-1}$, changes atomic separations to the same amount is the reduction in 2-way speed of light. This means *compensated* effect in the longitudinal arm in MMX.

Atomic clocks

A bound electron is moving forth and back in relation to the ether wind. The electron is therefore accelerated and decelerated in proportion to $+\text{-}v/c$. It is therefore reasonable to assume a clock frequency to change according to $1\text{-}v^2/c^2$ or (GAMMA squared)$^{-1}$. So, clock frequency, 2-way light speed and contraction of matter, all 3, depends on (GAMMA squared)$^{-1}$. GAMMA itself is *not* needed.

More about light

It is assumed here, that stellar aberration is caused by changes in observer motion $u=10^{-4}$ times *c*. *u* is caused by planetary *translation*. The ether wind *v* is instead caused by planetary *rotation*. This means that *v* is in the order of 10^{-6} times *c*. So, the difference between beam direction and ray direction is only around 10^{-6} radians.

Light can move in all directions, and ether wind can also move in all directions. Therefore, an ether wind can be blowing inside the wave front of light. This means that the common statement that light always moves transverse to wave front is not exactly true. It is only true as long as we can ignore the small ether wind of 10^{-6} times *c*. In MMX we cannot use this approximation, and instead we must regard the small difference between beam direction and ray direction.

Potier did not see that the distant mirror's orientation and ether motion define light behavior (independent of equipment motion) to be constant in the ether's frame. He disregarded the distinction between beam and ray. So, his interpretational error gave a negative result to *theoretical* physics, by supporting the Lorentz transform and the concept dilation of time. Therefore, MMX is empirically useless, but negative in relation to theoretical physics.

Quantum jumping – a mistake?

Forces in blackbody radiation have been regarded as real and therefore been assumed to draw kinetic energy from bound electrons. If we instead regard these forces as potential, we can conclude that energy is not needed for generation of the forces but instead for *detection* of these forces. This idea is supported by the fact that these forces are proportional to the magnitude of the charge in the detecting particle. Detector charge defines the magnitude of the force. So, we find that bound electrons can generate blackbody radiation, without consuming energy, as long as we *do not detect*

the radiation. This fact provides an indication that we should regard the forces in blackbody radiation as potential – not real.

If detection demands energy it is most reasonable to assume this energy to be provided by the ether, and not by the electron. Bound electrons (in different energy states) can therefore radiate continuously without losing kinetic energy. This means that we have an explanation to blackbody radiation that does not demand quantum jumping. So, perhaps quantum jumping is an *illusion* caused by our ignorance of the energy contribution provided by the ether.

Photoelectric effect according to the wave model for light

The traditional explanation to the photoelectric effect states that kinetic energy, directed towards a surface, causes an electron to move away from the same surface. An alternative interpretation can be found by using the wave model for light. An electron moving inside the wave front of light can make interference with the light. So, light can generate a force transverse to electron motion, and thereby change primarily the *potential* energy. This means that kinetic energy, in the electron must be high enough to make emission possible. The electron must be *tightly* bound.

The interpretation given here does not allows us to conclude quanta in light. Planck's constant, *h*, can instead be regarded as a scale constant. So, perhaps *h* is telling us more about the electron, than about light.

Compton effect

We can use the wave model for light to explain the Compton effect also, if we assume the Compton effect to consist of two processes. In the first step an electron is exited in about the same way as when an electron is emitted in the photoelectric effect. The second step goes in reverse order. So, the exited electron is captured by another atom. This means that a new X-ray wave packet is generated. The second X-ray may have lower frequency than the primary X-ray.

So, we can see that photoelectric effect and Compton effect can easily be explained by the wave model for light, and also that another important experiment can be explained by the same assumption of light as waves. This experiment is based on the use of a beam splitter to illuminate two photodetectors with the same amount of continuous light waves from a laser. Since the electrons in the two detectors act individually, we observe signals in the two detectors that are not correlated. However, the average value on the number of electrons are the same in the two signals. Apparently, we do not need the particle model for light.

In the wave model the ray direction is a mathematical way of representing a wave front. This works very well in geometrical optics, and perhaps this fact creates an illusion of particles, although the only physical reality is in the wave front, and not in the ray. Another reason to confusion is the fact that the small (10^{-6} radians) difference between ray and beam directions has not been noticed.

Gravity

Our planet moves in relation to our sun with a tangential speed of about 30 km/s. The tangential speed of a low orbit satellite is 7.91 km/s, and 3.87 km/s for a GPS satellite. In an attempt of trying to explain gravity we assume that these tangential speeds are necessary to compensate for a radial ether wind, of the same magnitude as the ether wind caused by the tangential motion.

The experiences from the GPS system say that atomic clocks depend on 7.91 and 3.87 km/s, but they do not depend on 30 km/s. This important fact must be explained. The explanation presented here says that the large mass of our own planet is generating its own gravity, and this field is assumed to be

hiding gravity from our sun. Atomic clocks and GPS satellites do not have large masses, and can therefore not do the same. Therefore, they depend on their own motions but not on motions together with Earth in a free fall in relation to Sun. (See Dr C C Su's local ether model.) [1]

These ideas can be tested in a space ship, far away from our planet. An easier way to test these ideas is to use a ground based atomic clock, and change orientation of the clock from horizontal to vertical. Since the ether wind of 7.91 km/s no longer falls inside the plane of the electron orbits, the clock frequency will increase by about 60 μs/day.

In a GPS satellite a radial ether wind of 3.87 km/s (GRT) gives a frequency slowing of 14.4 μs/day. The tangential ether wind with the same magnitude (SRT) gives only 7.2 μs/day, since the satellite is not stabilized in relation to velocity vector. The total effect in a GPS satellite is therefore about 21.6 μs/day. So, when a satellite is put into orbit clock frequency will increase by 60-21.6= 38.4 μs/day.

These calculations are based on only one model (namely the ether wind) and produce the same predictions as SRT and GRT together.

GPS

In the GPS system all receivers are positioned on a spherical surface, and all transmitters are on a 4.17^2 times larger surface. These two surfaces are concentric. This means spherical symmetry, and the radial ether wind assumed here is also spherically symmetric. This means that the ether wind assumed here can be united with the very high precision in the GPS system. This is an important fact.

Pioneer anomaly

In this theory we predict that at 1 AU (astronomical unit) from the Sun (far away from Earth) the 2-way light speed is $1\text{-}10^{-8}$ in radial direction, in relation to speed in tangential direction. At 20 AU the same relation is $1\text{-}0.5\text{x}10^{-9}$. This represents a difference in frequency in 2-way signals of -10^{-9}. So, from 20 to 70 AU frequency in returned signal will increase as $f_o(1\text{-}20/70)\text{x}10^{-9}=2.2\text{x}50/70=1.6$ Hz due to 2-way Doppler effect. This frequency increase can create an illusion of a decrease in space ship motion. Therefore, this means a possible explanation to the Pioneer anomaly. See also [2].

Fly by anomalies may also be caused by the same reasons as observed in Pioneer. However, they may be more difficult to evaluate since their orbits are not straight and radial as for Pioneer.

Anomalies in gravity

Assuming gravity to be caused by an attenuation of ether particles passing through matter can explain how a radial ether wind is produced. This model can also explain eclipse anomalies as a 4-body problem. During a solar eclipse gravity contribution from the Sun has to pass through the Moon. This phenomenon can be observed in a very sensitive gravimeter as a difference between effect on gravimeter test mass and effect on surrounding parts of our planet. The gravimeter indicates effect in vertical direction. [3] An effect in horizontal direction is also possible to detect. This has been done in a high tower where the top of the tower acted as a test mass in relation to surrounding parts of our planet. [4] As an alternative we can observe the motion of an object floating in water in a lab, during an eclipse in a low elevation angle. We should expect an effect before and after the eclipse of opposite sign in relation to the effect in the middle.

Cosmology

Distances to celestial objects cannot directly be measured. Therefore, complex and uncertain indirect methods are used. This means a risk for errors for instance due to selection bias. So, Big Bang may be an illusion and we should further discuss this possibility of a mistake.

Summary

A distant mirror is used in MMX to define the wave front orientation. Light appears to come from a virtual light source. Therefore, light is unchanged in the frame of the ether in the transverse arm in MMX. Light takes the same unchanged way in the ether's frame; not a longer way as Potier said. Therefore, we do not have to invent time dilation to cover up. We do not need the GAMMA factor; no effect in transverse arm. Instead we need (GAMMA squared)$^{-1}$ to explain contraction of matter, and this renders MMX to be a useless method.

The behavior of atomic clocks in the GPS system, that have been explained by SRT and GRT together, can instead be explained by only one model. This model is the ether wind, that produces a second order effect in the frequency of atomic clocks.

We have seen that the wave model for light can explain light behavior (photoelectric effect and Compton effect), without the need for quantization and particles in light.

Assuming forces in blackbody radiation to be potential, instead of real, means that energy is needed only for detection of the radiation, and not for its generation. This interpretation allows bound electrons to radiate without loss of kinetic energy. We do not need quantum jumping.

An ether with fast particles moving in all directions can explain gravity by a radial ether wind produced by the fact that ether particles are attenuated when passing through matter. The radial ether wind described here can be united with the high precision in the GPS system, and also explain anomalies in gravity.

The radial ether wind can also explain the Pioneer anomaly.

Conclusions

- The experiences from MMX are useless.
- The experiences from GPS and Pioneer space ships are important.
- Anomalies in gravity are important.
- We have seen that alternative interpretations -- based only on classic physics -- can be found in such a way that some paradoxes can be avoided.
- This fact seems to indicate that present physics is in a bad state.

Remark

It would be appreciated by this author if the directors of CNPS would provide feedback on these ideas.

References

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