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Einstein relativity vs. aether-based theory!

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(1 February 2011)

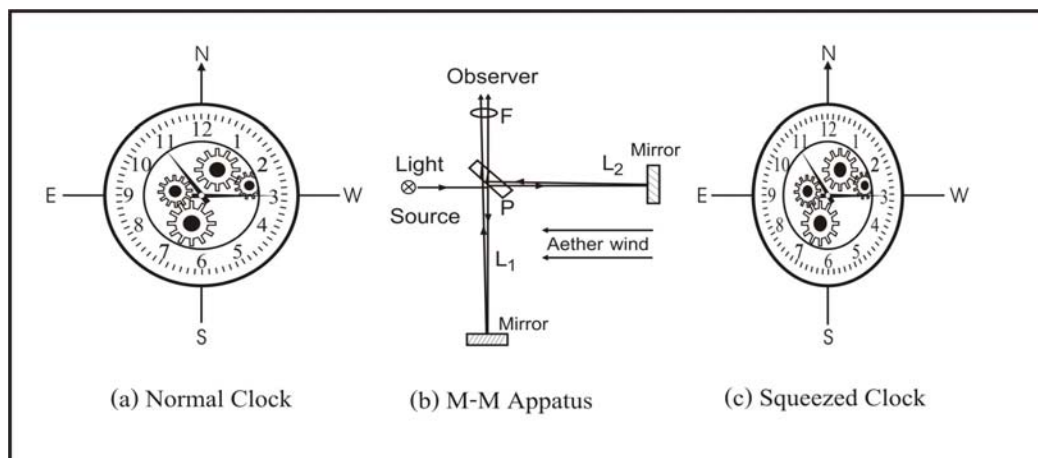
Anyone who is familiar with conventional Einstein special theory of relativity (STR) would found that it is **non aether-based** theory, i.e. it works on the concept of empty vacuum space. Anyway, nowadays there are increasing people which believe that vacuum space is not empty anymore, such as physicist like Frank Wilczek (a Nobel Prize winner in physics 2004), then leading to a realistic **aether-based** theory of relativity!

Here we will take a look for overall view; first we will summarize how Einstein had derived his conventional special theory of relativity (STR) as non aether-based theory. Next we will see why and how STR has to change to aether-based theory, and finally we will see what we will gain from changing the base concept of the theory. (Detail explanation could be found in "Completed Einstein special theory of relativity" in; www.vacuum-mechanics.com.)

1) Let us start with **principle of relativity** (the first postulate for derivation of STR) which state that laws of physics are the same reference to any inertial frame. And this means that there is no **privileged frame of reference**, i.e. all inertial frames are **equivalent** whether it is a rest frame or a moving one. So in order to fulfill the mentioned condition, the space in which all inertial frames were occupied must be an **empty vacuum space** (not a physical one)!

Actually, the concept of relativity principle was first stated by Newton, in one of his corollaries to the law of motion: "The motion of bodies included in a given space are the same among themselves, whether that space is at rest or moves uniformly in forward in a straight line". Note that Newton's concept of nature of space and time is that there is **empty vacuum space acting as the privileged frame of reference** (otherwise the principle of relativity will not valid); while **time is universal** i.e. time is the same everywhere!

2) In Einstein's time, the question whether the aether is existed or not, was a hot debate then follow with the result of the famous Michelson-Morley experiment which seem to flavor that no aether is existed! Anyway, there is something **crazy** in the experiment; they concluded that there is the **length contraction** of the instrument's arms (in the direction of the rotation of the earth). And it is easy to visualize the situation by using the analogous effect arisen from a "**magic clock**"; a mechanical wheels and gears clock below.



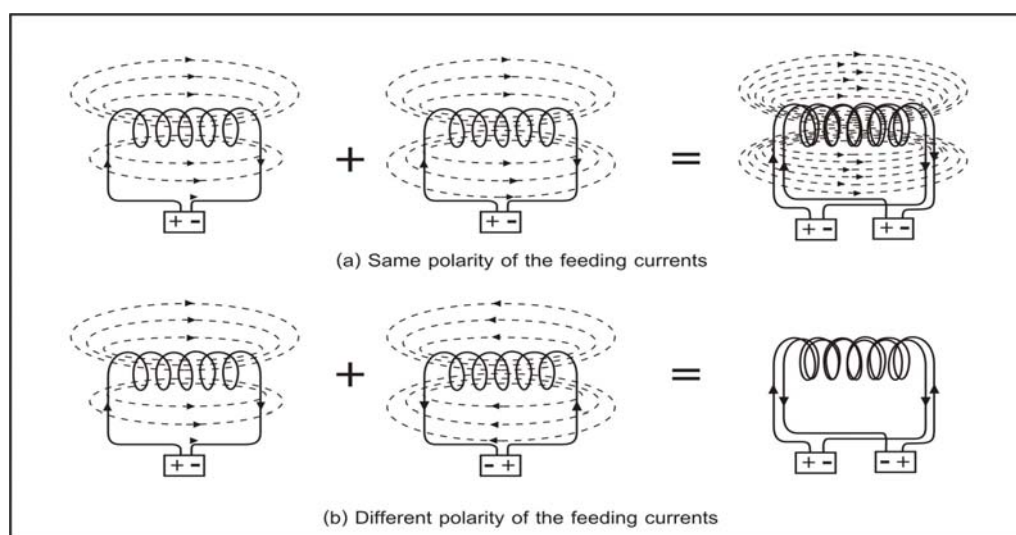
Magic clock vs. M-M apparatus.

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In Michelson-Morley experiment, it was done on a circular rotating platform lay horizontally. Now suppose we place a normal clock on the platform, then the clock's shape would **be squeezed and having a distorted shape** as shown in diagram (c) depend on the direction on the earth surface. The reason is because there is a length contraction of the clock in the earth rotation direction in order to give the result of the experiment!

Remember that these pictures of the clocks were observed by someone who stays, for example, in the sun rest reference frame. For us who stay on the moving earth with the clock, what we saw is the normal (shape) clock! This is not because the distortion is too small to be noticed, but it is because the ruler is also distorted in the same scale. So we could **never seen the distort part of the clock**, and indeed we are facing with a **magic clock**!

3) Anyway the experiment's result is not clear cut to rule out the existence of the aether, but here we will not argue further. Instead here we will prove that the **aether is existed** obviously by using a simple scientific experiment.



Two-solenoid experiment

In the diagram (a), sum of the created magnetic field is double, while in (b) the sum is zero. This is what it should be according to electromagnetic field theory, but the problem is where the created magnetic field energy was gone? We know that energy cannot disappear because it will violate the **principle of conservation of energy**! So the only sensible answer is that the magnetic energy was used to cancel the opposite rotational stress in the **physical vacuum medium space**! This is an obvious indirect prove for the existence of the aether, isn't it?

4) Due to the existence of vacuum medium as the privileged reference frame, we have to modify STR from non aether-based theory to aether-based theory one. And in order to do that we have to **reinterpret** concept of the conventional relativity principle to a new one; i.e. changing it from "laws of physics are the same reference to any inertial frame" to laws of physics are the same **reference to the vacuum medium privileged reference frame**!

Together with the first hypothesis of STR, we also have to change the second hypothesis of STR from "light velocity is the same for any observer" to "light velocity is the same reference to the **vacuum medium privileged reference frame**". Actually we need not have to mention about this second hypothesis because the nature of light is also one of laws of physics!

(3)

5) Next, for our modified STR, we can also derive Lorentz transformation (which was used to keep laws of physics invariant) as the conventional STR does. But what we got is a better concept of the transformation; i.e. it could **explain the philosophic problems** (increasing mass, length contraction and time dilation) which occurred in the conventional STR!

Let us see for example, the problem of increasing mass of a moving object in which we could not understand why it is something like that. Armed with our aether-based STR, we could explain that the increasing mass was due to the **resistance of vacuum medium space**!

And it is easy to see an analogy in our daily life – our driving car experience in which we will found that at low speed the fuel consumption rate is less than at high speed, the faster car - the higher consumption rate. The reason is because of **air's resistance**, the faster speed - the higher resistance. In another view, we can equally say that the faster moving car means **the greater increasing mass of the car**!

Now, let us suppose that we are driving in an air free tunnel **without air's resistance**, then we would found that the fuel consumption rate is constant at any speed and which also means that the moving car's mass is constant too! This is the concept of **Galilean transformation** which works under the concept of Newton absolute empty space!

6) By using the same reason we would found that **time dilation** is also caused by the resistance of vacuum medium space which **slows down the mechanism** of the moving clock. Lastly the reason for length contraction was due to that there is no reference rest frame in STR; it is an appearance of relative length – not a real contract length. In conclusion we may say that Einstein tried to keep the conventional principle of relativity, so what he had to sacrifice is the **distortion of space and time**!

7) Next let us consider the second hypothesis of STR - **light velocity is the same for any observer**, the problem is that we do not know why it is being so! Armed with the concept of vacuum medium space, it is more reasonable and easy to understand that light velocity is **constant** (the same) for any observer reference to (the same) **vacuum medium reference frame**!

8) Finally we will solve the conventional believe about the different between the **Doppler Effect** which occurred with sound wave and light wave. The reason is because it was misleading by STR that **light wave need no medium for travelling** while sound wave travelling via air medium!

(And to explain the mislead concept, it was claimed that light could travel by itself via mutual creation between electric field and magnetic field. But the problem is that both electric field and magnetic field are simultaneous rise and fall at the same time, and then they cannot create each other; otherwise it will **violate principle of causality**!)

Now under our new concept of vacuum medium space; it is more rational and understandable that **light wave use vacuum medium for travelling**! And we could derive relativistic Doppler Effect formula for sound wave in the same way as was done with the light wave. Finally what we got is that we can use the **same concept for deriving Doppler Effect** for both sound wave and light wave!

In conclusion we could say that Einstein created his STR which based on non aether-based (empty space) concept due to lacking of the evidence of physical space, so what he got with STR was the side effect due to the existence of vacuum medium. Nowadays we have found vacuum medium space, and then what we got is more **complete aether-based STR** without any side effect!

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