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Review

Returning to the old belief of "ether" is mandatory

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Luminiferous ether or light-bearing ether or simply ”ether”, which had been mentioned somehow since 17th century by Boyle, once believed to be a medium for traveling of light. Although, experiments like the Michelson and Morley could not prove its existence. In this article, we try to explain that, the experiments for detecting ether should be done in ultra-high velocities (over 5000 km/s), and that; the “cosmic microwave background”, and the special kind of universe expansion that creates the Hubble’s constant, are great proofs for the existence of ether.

Key words: Ether, cosmic microwave background, ether induced velocity limit.

INTRODUCTION

Since the early ages of Greek civilization (Sarton, 1993), most of the philosophers (like Aristotle, Plato and even after that, other philosophers like Avicenna and Sadra) believed that there is no empty space and everywhere is filled with something. Their reason was this:”there is always a resistance for increasing our speed”. Although after the Torricelli’s experiment, many accepted the existence of vacuum or empty space, but these days, we know that even in inter-planetary empty space you cannot get any amount of speed you desire. As special relativity points that there are always a resistance for reaching high speed, that means;”even vacuum space is filled with something”.

Later, it would be concluded that a particle should have low velocity to be recognized as a particle and after passing over a limit of speed, it would gain a new behavior called wavy behavior. By accepting existence of the ether all around ourselves in the universe, not as an atmosphere, but, as a restrictor of velocity, and as the media, that the quantum particles in wave state (and also the light), travels in it, it enable one to describes a velocity-radius to mass proportion, for any particle moving in any direction and guiding it (since any motion can at last be considered circular) (Dirac, 1951; Jacobson and Mattingly, 2004; Nakashima and Kobayashi, 2011).

LITERATURE REVIEW

As special relativity has predicted, a massive particle cannot experience high velocities because of severe increase in mass. But, what is the reason of this increment? How a rocket has reached a high velocity and should increase its mass or decrease its length. It should be emphasized that the mass of the rocket really increases and there is no misinterpretation or relative calculation errors. Sure, what we call “empty space” is occupied with something that interacts with any moving particles. This “thing” that once has been known as ether (or now, the Higg’s bosons in quantum field theory), cause de Broglie’s wave motions and familiar relativistic findings. According to effect of de Broglie waves, to change the particles charge are comparable to the spatial scales of the system (Asenjo et al., 2011). Imagine that some intelligent and very small creatures live in a large crystal of quartz, they can move slowly between atoms, but when viewed from far above, one will find that they are living in a condensed matter. How may they detect that the space they are living in is a condensed matter? The only way is to find that, there is a restriction on increasing velocity to any degree they want. Can they detect the condensed matter or "ether" that they are living within, with experiments like Michelson and Morley (1887) (Munera et al., 2006)? Of course not, since they are doing their experiments in very small scales and the devices that they would design to estimate the changes of light velocity would be very small and motion less, relative to ether (MacKay and Oldford, 2000).

Sure, if the Michelson (1927) used a speed of about 10 000 km/s for his device, instead of the speed of about

Table 1. Some calculations of $[\Gamma]$ in our world.

Definition of the particle	Mass (kg)	Velocity (km/s)	Radius (km)	$[\Gamma]$ km^3/kgs^2
An aero plane moving close to the earth	10^5	0.3 ± 1.3	6378	≈ 5×10^{-3}
A very small particle of dust at the surface of the earth	10^{-4}	1.3	6378	11×10^7
A beam of electrons with the lowest possible speed in a laboratory at the surface of moon	9.1×10^{-31}	$10^3 \times 0.004$	1738	1.9×10^{39}

29 km/s (which is the speed of the earth), for his device, he could experience the ether, although he could never reach a velocity with such heavy devices. For other experiments that repels the existence of ether, the same descriptions can be argued. Interestingly, in 1918, Einstein also stressed that; "the space should be endowed with physical quality" (Abraham, 1909; Einstein, 1909). From a general relativity point of view, we simply accept that the space around the mass or energy location is curved. But, actually what is in the space that accepts curvature. How does the earth tells the moon that "the space is curved"?

This condensed mass of energy or boson particles that exists all around us, is exactly the thing that, once had been called ether. The Higg's bosons are hypothesized as relatively heavy particles that cause mass, by interacting with other particles, are as a matter of fact a return to the theory of ether by quantum field theorists.

WHAT IS THE EXACT VELOCITY LIMIT THAT THE" ETHER" OR MASS OF HIGG'S BOSONS, DO IMPOSE?

First of all, instead of talking about the velocity limit, we should take a look at the term; linear movements. Does any free linear movement exits at all? When you are working in a laboratory, the devices are moving curvilinear. Here, at least the laboratory is moving with the earth. It is clear that, when a particle moves with a low velocity of ≈ 30 km/s, it stays at the surface of the earth, and the line of movement is circular and when it increases its velocity, the only thing that happens is an increase in the radius of motion. In fact, it first orbits around the earth and after running off the earth, it will begin to orbit around the sun and even then, around the galaxy center. This means that any moving thing with a mass, increases its velocity only by enlarging its radius and can never cross the ratio, we talked about. After too many times of calculations, and rechecking of the previous findings, it seems that a constant that can be called $[\Gamma]$, which refers to this limit can be described as below:

$$[\Gamma] = \frac{V^2 R}{M} \quad km^3 \big/ kgs^2$$

In this way, the earth which rotates around the sun, with a radius of about $\sim 1.49 \times 10^8$ km, a velocity of 29 km/s, and has a mass of about ~ 5.97×10^{22} kg, would have a $[\Gamma]$ of about $\sim 2 \times 10^{-12}$. By doing the same calculations on any kind of particles (some of them are shown in the Table 1), it can be seen that the largest possible amount for $[\Gamma]$ of anything, to stay in a particle state and not to been interacting with ether is $\sim 11 \times 10^7$ $km^3 \big/ kgs^2$.

WHAT HAPPENS IF A MATERIALISTIC PARTICLE CROSSES THIS LIMIT?

It will begin to act like a wave and shows wavy behaviors, because of being loaded on the matrix or ether, and should be expected to be found at any place around the universe ($\Psi_{(x,t)} = Ae^{i(kx-\omega t)}$), and should respect to, Schrödinger's equation ($i\hbar \frac{\partial \psi}{\partial t} = \frac{\hbar^2}{2m} \frac{\partial^2 \psi}{\partial r^2} + V_{(r)}$).

Let's make an example with a beam of electrons. Here, if the electrons, with the least possible velocity (≈ 1000 km/s) are ejected toward the screen which is interrupted with two holes (Young's experiment), and the whole laboratory is moving with the earth with a speed of 1.39 km/s (at the equator) around the center of the earth, the beam, depending on the direction of the beam, would have a velocity between 998.61 to 1001.39 km/s. Now, if we accept that the mass of electron is about ~9.1×10^{-31} kg, the $[\Gamma]$ ratio of this beam would be about 7×10^{39},

that is much larger than the maximum $[\Gamma]$ that was calculated for an object to behave as a particle. So, at these velocities, (although the electron is a particle with mass), we should expect a wavy form of behavior for the beam of electron, as actually is seen.

WHAT IS A REAL WAVE?

Now, there is a need for turning back to this simple explanation that seems has been forgotten for about a 100 years. Wave means passage of energy without traveling of particles (the first particle accepts the input energy and without consuming it for its motion, repels new energy to the next particle). Here, a very delicate point is hidden. When it is mentioned that electrons show wavy form of behavior, it means that electrons on the screen are not the electrons that was repelled from the lamp. As a matter of fact, when the $[\Gamma]$ gets high enough, the ether acts like a matrix, and the electrons are absorbed and released by it repeatedly until they reach to the screen (this is the same as current of electrons in a wire on which, the input electrons are not exactly the output ones). So, existence of a matrix is mandatory.

Although, for studying and prediction of electromagnetic (EM) wave behavior, the Maxwell's triple equations are useful, but it is impossible to imagine that a train travels in space by building railway under itself and continues its travel for billions of years (Maxwell and Clerk, 1878).

IS IT POSSIBLE TO DISAPPEAR SOMETHING HERE AND TRANSFER IT BY ETHER?

By taking a look to the formula of ether limit $[\Gamma]=\frac{V^2.R}{M}$, it is possible, at least theoretically, to upload some stable and small particles on ether by giving them enough velocity. For example if we want to transfer a small particle of iron with a weight of ~10^{-3}, a velocity of ~3.5 × 10^3 km/s should be given to it, if a collider with a radius of 0.01 km is being used for its velocity accentuation. As a matter of fact, crossing the $[\Gamma]$ borderline causes the particle (of enough stability) to be loaded on ether, but how to download it from ether at a new place, should be discussed more.

Now let us make a trip with an imaginary vehicle that is able to increase its velocity to very high ranges. By increasing the velocity, the mentioned vehicle slowly flies up (as Kepler said when the velocity increases, the radius of your orbit also does increase), until you escape from the earth.

Then, you will begin to move around the sun. By increasing the velocity more and more, you set far from the sun and at last you get very far from it, to a degree that, you can say that your motion is not a circular one around the sun, but still you are moving around something, for example around the centre of the galaxy.

By more increase in the velocity, nothing changes, and you are still trapped in a condensed matter that gives you apparent velocity but your angular velocity would not change much, except your vehicle finds a way to increase its velocity above the ethers limit for that radius, which (if ever possible, since we pay the velocity for buying larger radiuses) will cause a change in the quality of the whole vehicle. It will enter a new state of behavior and act like a -materialistic-wave (which can be called a third behavior of matter in response to receiving energy or a "Buzz" state). Now, you and your vehicle would be scattered in all around the galaxy, and only if you would be able to reduce your speed, you may reappear in a really different place (as wormhole theory predicted). Clearly, by adding a new behavior called "buzz", the gap between relativity and quantum mechanics would be filled.

COSMOLOGIC PROOFS FOR ETHER

After a short discussion on velocity limit that can be referred to the existence of something, not exactly known, called "ether" or (heavy particles named "Higg's bosons"), let's have a search into cosmologic physics to answer this question, is there any footsteps of the ether? One of the greatest findings in the field of cosmology in the last century was the discovery of the relation between distance of the galaxies and the speed that they are getting far from us. Hubble found that "the more a galaxy is far, the more is its speed of moving away from us" (V = H. R in which V is the speed of getting far and R is the distance and H is a constant that is about 65 km/s/Mpc).

This finding was explained by believing that the universe is expanding (Figure 1). For having a better imagination of this, one can put four dots on a balloon and blows it. As is expected the dots always get farther from each other. Here one important thing is over passed. The most important thing for such a special kind of expansion to happen is, being stick to a base, just like the elastic surface of the balloon. If the galaxies were free and not aware of each other (gravity at these distances act very small), there would never be such a kind of getting far. So the occurrence of such relation between velocity and distance, strongly suggests that something dense exists all around us, though, because of the low velocity that we have in it, it is undetectable.

There is also another, but very important proof for ether on cosmology. Before talking about that, let's turn back to our small creatures that lived in a solid crystal of quartz. What else would they detect except of the limitation of velocity (as previously described, they only had some brawny-like motions, which was very fast to their eyes). Surely, they would receive a spectra of microwaves that could be referred to a dark matter radiation (of the crystal that they are living in), and these microwaves would be

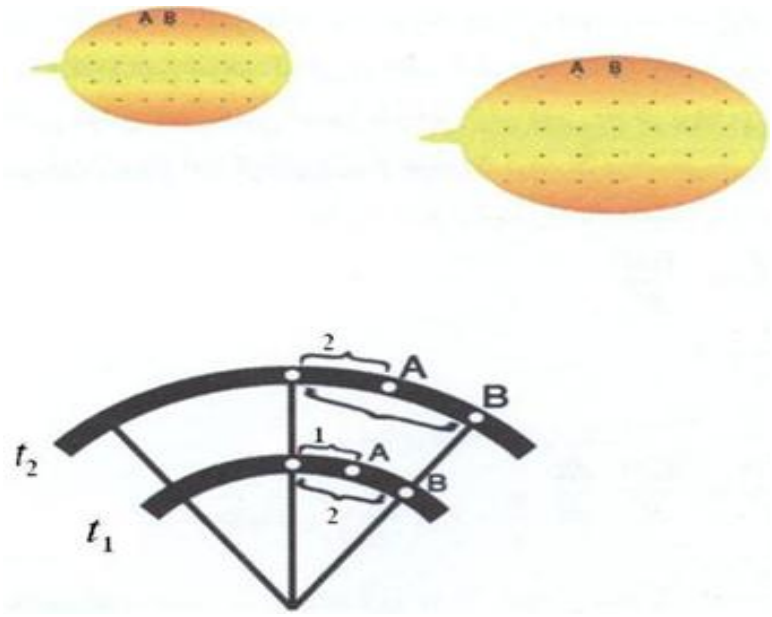

Figure 1. Expansion pattern of the universe.

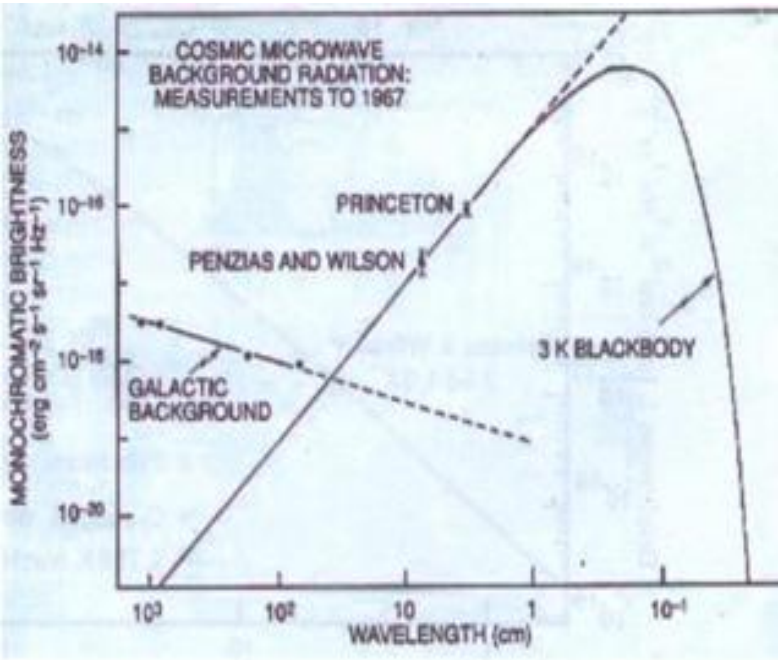

Figure 2. Data Referable to a cosmic microwave background.

found to be emitted from all around of the space toward them.

Fortunately, since 1965 and then, such EM waves has been detected step by step, and by putting them together, an exact manner of radiation, like dark matter radiation of something at about 2.5°K has been demonstrated. These waves, which are called cosmic microwave background (CMB) (Gawiser and Silk, 2000; Fernández-Cobos et al., 2011) were believed to be the remaining of the big bang (although not wrong) refers to nothing, but the temperature of the ether (Mz and Ho, 2011), which is, the ether that begins from inside of us and extends to the deepest part of our known universe (Figure 2).

CONCLUSION

Einstein (1909) once said that, there is no place for undetectable things in physics, but it seems that we now have enough proofs to accept the ether. Accepting the existence of a universal ether that exists everywhere from the inter-atomic to the inter-cosmic spaces, can describe many of our physical findings like; the stability and the sphere appearance of atoms, observations related to especial relativity, CMB, Hubble's pattern of universe expansion, and even gravity much more easier.

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