About ether

Abstract:

The importance of the most controversial element: a "zero" element, from the "Original Periodic System" of Dmitry Mendeleev, placed in the **zero column and zero row** (section 2 in [1]), about which we are not learned at school, which he called "Newtonium" in honor of the immortal Newton, and represents **"the most important and fastest element in nature: ETHER" - can not be overemphasized.**

The reason is very simple.
- **According to modern science EM waves propagate by themselves without the need for a MATERIAL medium as its carrier and without any connection with the source of its origin** (sections 4, 5 in [1]).
- **According to Nikola Tesla EM waves are complex vibrations of the Ether - MATERIAL substance which is the perfect fluid of special quality,** which behaves as a solid to light (high frequency} and is transparent to matter, while it's effects can be felt through inertia (section 1.5 in [1]).

Hence - the main problem of understanding the extremely advanced ideas of Nikola Tesla is a great difference in the interpretation of the structure of nature and elemental mechanism of electromagnetic waves propagation.

My opinion is completely identical to all those who believe that electrodynamics without ether is equally wrong as it would be the fluid mechanics without fluid!" [2].

1. History of the ether [3]

According to ancient science **aether**, also spelled **æther** or **ether** is the material that fills the region of the universe above the terrestrial sphere. The concept of aether was used in several theories to explain several natural phenomena, such as the traveling of light and gravity. In the late 19th century, physicists postulated that aether permeated all throughout space, providing a medium through which light could travel.

2. Mythological origins [3]

The word αἰθήρ (*aithēr*) in Homeric Greek means "pure, fresh air" or "clear sky". In Greek mythology, it was thought to be the pure essence that the gods breathed, filling the space where they lived, analogous to the *air* breathed by mortals.

Medieval concept of the cosmos is based on five elements. The innermost spheres are the terrestrial spheres, while the outer are made of aether and contain the celestial bodies.

Plato mentions that "there is the most translucent kind which is called aether but otherwise he adopted the classical system of four elements.

In his Book "On the Heavens" Aristotle introduced a new element to the system of the classical elements of Ionian philosophy (earth, water, fire, and air or dry, wet, hot, and cold). He noted that the four terrestrial classical elements were subject to change and naturally moved linearly. The new element however, located in the celestial regions and heavenly bodies, moved circularly and had none of the qualities the terrestrial classical elements had. It was neither hot nor cold, neither wet nor dry. With this addition the system of elements was extended to five and later commentators started referring to the new one as the fifth element called it aether.

With the 18th century physics developments, physical models known as "aether theories" made use of a similar concept for the explanation of the propagation of electromagnetic and gravitational forces. As early as the 1670s, Newton used the idea of aether to help match observations to strict mechanical rules of his physics.

These aether theories are considered to be scientifically obsolete, as the special relativity and **modified version of Maxwell equations** (see 4, 5 in [1]) do not require the aether for the transmission of these forces. However, Einstein himself – as well as J.C. Maxwell in his original work - noted that his own model which replaced these theories could itself be thought of as an aether, as it implied that the empty space between objects had its own physical properties.

Despite the early modern aether models being superseded by general relativity, occasionally some physicists have attempted to reintroduce the concept of aether in an attempt to address perceived deficiencies in current physical models. One proposed model of dark energy has been named "quintessence" by its proponents, in honor of the classical element. This idea relates to the hypothetical form of dark energy postulated as an explanation of observations of an accelerating universe. It has also been called a fifth fundamental force.

3. Aether and light [3]

The use of aether to describe motion of light was popular during the 17th and 18th centuries, including a theory proposed by Johann II Bernoulli, who was recognized in 1736 with the prize of the French Academy. In his theory, all space is permeated by aether containing "excessively small whirlpools". These whirlpools allow for aether to have a certain elasticity, transmitting vibrations from the corpuscular packets of light as they travel through.

This theory of luminiferous aether would influence the wave theory of light proposed by <u>Christiaan Huygens, in which light traveled in the form of longitudinal waves via an "omnipresent, perfectly elastic medium having zero density, called aether".</u> At the time, it was thought that in order for light to travel through a vacuum, there must have been a medium filling the void through which it could propagate, as sound through air or ripples in a pool.

Later, when the nature of light and EM waves in general, were explained as transversal-vectorial instead of longitudinal-scalar (4, 5 in [1]), Huygens' theory was replaced by subsequent theories which rejected the existence and necessity of aether to explain the various optical phenomena. These theories were supported by the results of the Michelson–Morley experiment in which evidence for the motion of aether was conclusively absent. The results of this experiment influenced many physicists and modern theories.

4. Aether and gravitation [3]

Aether has been used in various gravitational theories as a medium to help explain gravitation and what causes it. It was used in one of **Sir Isaac Newton's first published theories of gravitation**, "Philosophiæ Naturalis Principia Mathematica" (the Principia). He based the whole description of planetary motions on a theoretical law of dynamic interactions between distant bodies by introducing a mechanism of propagation through an intervening medium. **He calls this intervening medium aether**. <u>**In his aether model, Newton describes aether as a medium that "FLOWS" continually DOWNWARD toward the Earth's surface and is partially absorbed and partially diffused.**</u>

This theory described different aether densities, **creating an <u>aether density gradient</u>**. His theory also explains that aether was dense within objects and rare without them. As particles of denser aether interacted with the rare aether they were attracted back to the dense aether much like cooling vapors of water are attracted back to each other to form water …

THE ABSOLUTE CONSISTENCY of this Newton's interpretation with the explanations given in ancient Vedic scripts (7,8,9 in [1]) indicates the extraordinary intuitive power of the great Newton.

<u>Although Newton eventually changed his theory of gravitation to one involving force and the laws of motion, his starting point for the modern understanding and explanation of gravity came from his original aether model on gravitation.</u>

5. Longitudinal etheric vibrations in my previous papers

Bearing in mind great accordance of Nikola Tesla's explication of the "Non-Hertzian waves" phenomenon he was utilize in his researches ("Nikola Tesla's Ether technology", [1]), as well as his interpretations of experimental settings forms and structure of energy processes that took place in the used apparatus with:

- the original Dmitry Mendeleyev interpretations of Nature (§ 2, [1]),
- Anatoly F. Ohatrin Theory of microlepton fields (§ 3, [1])
- the original version of Maxwell's theory (§ 4, 5, [1])
- Vladimir LJ. Bychkov equations of hydrodynamics analogous to the macroscopic electrodynamics (§ 6, [1])
- the axiomatic principles of Sankhya (§ 7, 8, 9, [1])
- EDQM postulates (§ 10, [1])
- modern astrophysical research (§ 11, [1])

it is absolutely indisputable that Tesla's "non-Hertzian" waves exist. Their parameters and properties can be determined by the synthesis of insights outlined in Sections 1-11 in [1] and, in particular in section 10 in [1], according to the expected values of the EDQM for the "Stable Object" of the quantization level k=9, named "Teslion", which makes the future of TESLA'S ETHER TECHNOLOGIES much more certain!

Previously presented statement in the text [4] ("Brilliance of magnificent Tesla technology") that Tesla - thanks to his intuition and aspiration towards perfection – succeeded to harmonize his "Magnifying Transmitter", both with macro and with a micro structure, is in full accordance with this opinion. In other words, Tesla succeed to perfectly harmonize vibrations form of his machine with both - the "external" and the "internal" sequentially-simultaneous mechanisms of the Linga/Bhava transformation with Abhiman/Ahankar interface states. Accordingly, Nikola Tesla's statement that he uses **"disturbed charge of ground and air method"** (June 5, [5]) <u>gets a much deeper meaning</u> - completely **analogous to the "stress transmigration" term used according to Sathwa-Raja-Thama-Guna principles** !!!

<u>Summarizing all of the above, in my opinion, it is completely beyond doubt that Tesla's "non-Hertzian" waves are the really existing ethereal vibrations, "potential transfer" or "substrates stress transmigration"</u>, ..., and I firmly believe that the latest scientific knowledge combined with ancient Vedic wisdom and unconventional theoretical considerations presented in the EDQ Model - helps us to perceive the size and the depth of the Nikola Tesla knowledge and to get insight in the true brilliance, the magnificence and significance of his technologies for the future of our civilization.

6. Modern researchers about ether [6]

Robert B. Laughlin, Nobel Laureate in Physics, endowed chair in physics, Stanford University, had this to say about ether in contemporary theoretical physics:

"It is ironic that Einstein's most creative work, the general theory of relativity, should boil down to conceptualizing space as a medium when his original premise [in special relativity] was that no such medium existed [..] The word 'ether' has extremely negative connotations in theoretical physics because of its past association with opposition to relativity. This is unfortunate because, stripped of these connotations, it rather nicely captures the way most physicists actually think about the vacuum …

Relativity actually says nothing about the existence or nonexistence of matter pervading the universe, only that any such matter must have relativistic symmetry. [..] It turns out that such matter exists. About the time relativity was becoming accepted, studies of radioactivity began showing that the empty vacuum of space had spectroscopic structure similar to that of ordinary quantum solids and fluids. Subsequent studies with large particle accelerators have now led us to understand that space is more like a piece of window glass than ideal Newtonian emptiness. It is filled with 'stuff' that is normally transparent but can be made visible by hitting it sufficiently hard to knock out a part. **The modern concept of the vacuum of space, confirmed every day by experiment, is a relativistic ether. But we do not call it this because it is taboo**" [7].

According to the philosophical point of view of Einstein, Dirac, Bell, de Broglie, Maxwell, Newton and other theorists, there might be a medium with physical properties filling 'empty' space, an aether, enabling the observed physical processes.

Albert Einstein in 1894 or 1895: "The velocity of a wave is proportional to the square root of the elastic forces which cause [its] propagation, and inversely proportional to the mass of the aether moved by these forces." [8].

Albert Einstein in 1920: "We may say that according to the general theory of relativity space is endowed with physical qualities; in this sense, therefore, there exists an Aether. According to the general theory of relativity space without Aether is unthinkable; for in such space there not only would be no propagation of light, but also no possibility of existence for standards of space and time (measuring-rods and clocks), nor therefore any space-time intervals in the physical sense. But this Aether may not be thought of as endowed with the quality characteristic of ponderable media, as consisting of parts which may be tracked through time. The idea of motion may not be applied to it." [9].

Paul Dirac wrote in 1951: "Physical knowledge has advanced much since 1905, notably by the arrival of quantum mechanics, and the situation [about the scientific plausibility of Aether] has again changed. If one examines the question in the light of present-day knowledge, one finds that the Aether is no longer ruled out by relativity, and good reasons can now be advanced for postulating an Aether ... We have now the velocity at all points of space-time, playing a fundamental part in electrodynamics. It is natural to regard it as the velocity of some real physical thing. Thus with the new theory of electrodynamics [vacuum filled with virtual particles] we are rather forced to have an Aether". [10]

John Bell in 1986, interviewed by Paul Davies in "The Ghost in the Atom" [11] has suggested that an Aether theory might help resolve the EPR paradox by allowing a reference frame in which signals go faster than light. He suggests Lorentz contraction is perfectly coherent, not inconsistent with relativity, and could produce an aether theory perfectly consistent with the Michelson-Morley experiment. Bell suggests the aether was wrongly rejected on purely philosophical grounds: "what is unobservable does not exist" [p. 49]. Besides the arguments based on his interpretation of quantum mechanics, Bell also suggests resurrecting the aether because it is a useful pedagogical device. That is, many problems are solved more easily by imagining the existence of an aether.

Ioan-Iovitz Popescu, in 1982, wrote that the aether is "a form of existence of the matter, but it differs qualitatively from the common (atomic and molecular) substance or radiation (photons)". The fluid aether is "governed by the principle of inertia and its presence produces a modification of the space-time geometry" [12].

Built upon Le Sage's ultra-mundane corpuscles, Popescu's theory posits a finite Universe "filled with some particles of exceedingly small mass, traveling chaotically at speed of light" and material bodies "made up of such particles called etherons". [13].

7. Space and time in ancient Vedic scripts [14, 15]

It's really more than a fantastic fact that the **modern scientific researchers describe an ether in an almost identical way as the axiomatic principles outlined in the ancient Vedic script "Sankhya Karika" aged over 30 000 years** [14].

According to the **Sankhyan definitions given** in [15], **"the smallest time change"** has the value Tp:

$$Tp = M l y C / 7 = 5.697 E - 44 ... seconds = Lp / C$$

that is almost identical to a modern definition of Planck time = $5.391*10^{-44}$ s.

Smallest, rigid and coherent displacement Lp is equal to Tp*C$_s$ = 1.689*10^{-35}, and is amazingly close to the modern-day value of the Planck Length = 1.61*10^{-35} m !

7.1 Definition of C: Sankhya is a unified field theory based on a Perpetually, Harmonic, Oscillatory state (PHO) forming the dynamic base for all manifestation. The constant PHO oscillating frequency in space is derived by the factor $2/(x-1/2) = 8.47214$ /x=golden mean/ as the log value to the cyclic base of 10 cycles. Hence $Cs = 10^{8.47214} = 296\ 575\ 966$ cycles per second of ten cycles as the axiomatic, constant oscillatory cyclic rate of interactions in space. This value corresponds to the concept of the speed of light in contemporary physics (299 792 458 m/s).

7.2 Definition of Mly: Moolaprakrithi is the smallest interactive component of the Purusha. The coherent Purusha state or black hole of maximum mass or inertia or delay or "static" state per cycle is $Kx = 0.9149879388$. In essence, Mly is the smallest cycle or the shortest possible count per interaction. Simultaneous colliding or instant interaction between two such states is $C^{3*2} = C^6 = 6.8*10^{50}$. Not more than two states can act simultaneously to equal C^6 (G.M, volumetric vibrations: up, down, left, right, front, back). Kx being the ultimate state of coherent activity then the ratio Kx / C^6 gives the Mly value or the smallest cycle or the shortest possible count per interaction. Hence Moolaprakrithi $Mly=Kx/c^6 = 1.344*10^{-51}$.

From [15]: <u>interval less than Tp seconds, the components in space act as a continuum as the interactive stress density is at its maximum. Therefore the components in space will behave as a solid or rigid or incompressible object of length Lp meters in an interactive cycle of C interactions per second.</u>

This ancient vedic statement reminds greatly to the properties of the ether described by the modern researchers given in section 6. However, it is even more interesting that Sankhya defines value DD:

$$DD = \left[\frac{Lp}{Rp^3}\right]\left[\frac{Mps}{RU}Crs\right] = \left[\frac{MU}{RU^3}\right] = 3.63E - 25\,kgs\,/\,cu.m..Critical.density. \qquad [0.109]$$

That is **"The critical volumetric density"** of interactive stresses in space is the vital parameter that sustains the Perpetual Harmonic Oscillatory state everywhere in space. $DD= MU/RU^3 = 3.63*10^{-25}$ kg/m = $3.63*10^{-28}$ g/cm^3 (MU=Mass of Universe=$7.81711993*10^{52}$ kg, RU=Space radial count=$5.99334*10^{25}$ m [15]).

In contemporary physics, "Critical Universe density" [16] is calculated to be: $\rho = 9.47*10^{-27}$ kg/m^3 ~ 10^{-26} kg/m^3 = 10^{-29} g/cm^3.

Of this critical density, ordinary matter (baryonic matter) is thought to make up only about 4%. This baryonic matter is equivalent to about 1 hydrogen atom per 4 cubic meters of space.

As we already mentioned in section 2, concept of aether is reintroduced in current physical models via term of the dark energy. One proposed model of dark energy named "quintessence" is a hypothetical form of dark energy, more precisely a scalar field, postulated as an explanation of the observation of an accelerating rate of expansion of the universe.

The average density of dark matter near the solar system [17] is **approximately** 1 proton-mass for every 3 cubic centimeters, which is roughly $6*10^{-28}$ kg/cm^3 = $6*10^{-31}$ g/cm^3. The actual density might be a little lower or higher, but this is the right order of magnitude. Dark matter is not distributed uniformly in space. The galaxy is embedded in a large cloud of dark matter, and gravity makes this cloud denser in the center than at the edges. The density varies slowly over many light years distance.

Anyway, values of the average density of dark matter defined by contemporary scientist are very close to the DD value, defined by ancients as "Space critical density" which is crucial for maintaining the Perpetual Oscillatory State of the (G.M. eteric) substrate!

8. Nikola Tesla radio Theories

In his interview given in September 1929 [18], Tesla said:

"**<u>Wireless power transmission is impractical with present apparatus</u>**. This conclusion will be naturally reached by any one who recognizes the nature of the agent by which the impulses are transmitted in present wireless practice. When Dr. Heinrich Hertz undertook his experiments from 1887 to 1889 his object was to demonstrate a theory postulating a medium filling all space, called the ether, which was structureless, of inconceivable tenuity and yet solid and possessed of rigidity incomparably greater than that of the hardest steel. He obtained certain results and the whole world acclaimed them as an experimental verification of that cherished theory. But in reality what he observed tended to prove just its fallacy.

I had maintained for many years before that such a medium as supposed could not exist, and that <u>we must rather accept the view that all space is filled with a gaseous substance. On repeating the Hertz experiments with much improved and very powerful apparatus, I satisfied myself that what he had observed was nothing else but effects of longitudinal waves in a gaseous medium, that is to say, waves, propagated by alternate compression and expansion.</u> He had observed waves in the ether much of the nature of sound waves in the air.

<u>Up to 1896,</u> however, I did not succeed in obtaining a positive experimental proof of the existence of such a medium. But in that year I brought out a new form of vacuum tube capable of being charged to any desired potential, and operated it with effective pressures of about 4,000,000 volts. I produced cathodic and other rays of transcending intensity. The effects, according to my view, were due to minute particles of matter carrying enormous electrical

charges, which, for want of a better name, I designated as matter not further decomposable. Subsequently those particles were called electrons. …

One of the first striking observations made with my tubes was that a <u>purplish glow for several feet around the end of the tube was formed</u>, and I readily ascertained that it was <u>due to the escape of the charges of the particles as soon as they passed out into the air</u>; for it was only in a nearly perfect vacuum that these charges could be confined to them. The coronal discharge proved that there must be a medium besides air in the space, composed of particles immeasurably smaller than those of air, as otherwise such a discharge would not be possible. On further investigation I found that this gas was so light that a volume equal to that of the earth would weigh only about one-twentieth of a pound.

Regarding that 1 pound is 453,592 g, and Earth Radius $R_z = 6\ 371\ 000\ 00$ cm, => m = 453,59/20 = 22.6796 g, and $V_z = 1.08*10^{27}$ cm^3 , so **density of Tesla's (etheric) gaseous medium:**

⇨ **ρ,Eth,Tesla = $2*10^{-26}$ g/cm^3,**

Regarding Energy Density Quantization model [19] postulates appropriate quantum level for Tesla's gaseous medium is: k = log/3 = -25.67/3 =-8.56 - which corresponds to the energy density between the "Stable objects" quantum levels of k = -8 that is Galaxy and quantum level k = -9 belonging to the Galaxy clusters.

In other words – **Nikola Tesla's practical measurements and estimations of his "gaseous ether" density are very close to both ancient and modern estimates of this controversial "ethereal" fluid.**

According to EDQM to postulates, all phenomena of Reality exist in their manifested form and simultaneously in their "inverse" ("Space-Time-Energy") form. Regarding this fact, **it is really more than interesting that the <u>inverse value of the Tesla's (etheric) gas medium density (k = -8.56) is very close (k = + 8.56) to the "stable object" of quantum level k = + 9 which, according to the postulates of EDQM, belongs to "Tesla's Waves"</u> and/or "Teslion" as their corpuscular analogue** [20].

Well-known Tesla's statement: "light can be nothing else than a sound wave in the ether" (§1.4 in [1]) certainly was the basis of his mathematical analysis of the density of the ether [18]:

"The velocity of any <u>sound wave</u> depends on a certain ratio between elasticity and density, and for this <u>ether</u> or universal gas the <u>ratio is 800,000,000,000</u> times greater than for air. This means that the velocity of the sound waves propagated through the ether is about 900,000 times greater than that of the sound waves in air, which travel at approximately 1,085 feet a second. Consequently the speed in ether is 900,000 x 1,085 feet, or 186,000 miles, and that is the speed of light. Regarding air density (0.001225 g/cm^3) and sound/ether ratio, Tesla calculated the **theoretical value of the ether density: ρ,Eth,Tesla, Theor = $1.9*10^{-27}$ g/cm^3!**

Obviously Tesla's theoretical value of the ether density is very close to the value he obtained by measuring (ρ,Eth,Tesla = $2*10^{-26}$ g/cm^3) ! What to say except: **Magnificent Tesla !**

9. **Other researchers estimations of ether parameters**

9.1 An Attempt Towards A Chemical Conception Of The Ether by Dmitri Mendeleev,
http://bourabai.kz/mendeleev/ether.html:

"But since ether possesses so great a penetrative power that it passes through every envelope, it is, of course, impossible to experimentally determine its mass in a given amount o other substances, or the weight of a given volume of ether. We ought, therefore, not to speak of the imponderability of ether, but only of the impossibility of weighing it. …

The only addition made is to ascribe to ether the properties of a gas, like argon and helium utterly incapable of entering into true chemical combination. This point lies at the basis of our investigation into the chemical nature of ether, and includes the following two fundamental propositions: (1), that the ether is the lightest (in this respect ultimate) gas, and is endowed with a high penetrating power, which signifies that its particles have, relatively to other gases, small weight and extremely high velocity, and (2), that ether is a simple body (element) incapable of entering into combination or reaction with other elements or compounds, although capable of penetrating their substance, just as helium, argon, and their analogues are soluble in water and other liquids. …

Hence the atomic weight of x (Here x and y stand for two unknown elements having atomic weights less than that of hydrogen, whose discovery I now look for.) as the lightest elementary gas, permeating space and performing the part of the ether, must be within the limits (formula II) of 0.000,000,96 and 0.000,000,000,053, if that of H = 1."

So, atomic weight of Ether is between $5.3*10^{-11}$ and $9.6*10^{-7}$ times Hydrogen mass:
Mean value is: sqrt($5.3*10^{-11}$ * $9.6*10^{-7}$) = $7.1*10^{-9}$. Hydrogen mass: $1.67*10^{-27}$ kg;

⇨ **Mendeleev's "atomic weight of ether = M_{MenEt} = $7.1*10^{-9}$ * $1.67*10^{-27}$ = $1.19*^{-35}$ kg**

9.2.1 Lord Kelvin, V.Thomson, Aether, *http://evgars.com/aeph.htm:*

"The mass of one <u>m^3 of Ae</u> (ether), according to Lord Kelvin (V.Thomson), weighs ~ 10^{-16} grams, while one m^3 of water weighs 10^6 grams, one m^3 of hydrogen weighs 90 grams"

9.2.2 Encyclopedia Britannica/Aether,
https://en.wikisource.org/wiki/1911_Encyclop%C3%A6dia_Britannica/Aether

Lord Kelvin: density of the aether must exceed 10^{-18}

⇨ **Kelvin/Thomson ether density: ~ 10^{-16} g/m3 = 10^{-22} g/cm3**

9.3 The Weight of the Vacuum: A Scientific History of Dark Energy,
https://books.google.rs/books?isbn=3642550908

"The energy density of Lodge's ether, if transformed to a mass density by means of $E = mc^2$, corresponded to about 10,000 tons cm−3. In a later chapter on the possible granular structure of the ether, he repeated the estimate of 10^{30} to 10^{33} erg cm−3, adding that "the ether may quite well contain a linear dimension of the order 10^{-30} to 10^{-33} cm." (Lodge 1920, p. 171). Although not more than a curiosity, it is worth pointing out that <u>the linear dimension of Lodge's ether happened to be in the same range as what would later become known as the Planck length,</u>

The ether was sometimes thought of as a very tenuous, primordial gas, perhaps consisting of ether atoms of the incredibly small mass 10^{-45} g.

⇨ **Lodge's ether mass ~ 10^{-45} g**

9.4 Maxwell's Density of aether, http://ether.wikiext.org/wiki/Maxwell_1877_en

"If we take Pouillet's estimate of 1.7633 as the number of grammecentigrade units of heat produced by direct sunlight falling on a square centimeter in a minute, this is equivalent to 1.234x106 ergs per second. Dividing this by 3.004x1010, the velocity of light in centimeters per second, we get for the energy in a cubic centimeter 4.1x10-6 ergs. Near the sun the energy in a cubic centimeter would be about 46.000 times this, or 1.886 ergs. If we further assume, with Sir W. Thomson, that the amplitude is not more than one hundredth of the wave-length, we have Ap = 2π/100 , or about 1/16 ; so that we have

⇨ **Maxwell's density of aether = $\rho = 9.36*10^{-19}$ g/cm^3."**

When Maxwell presented his Dynamical Theory of the Electromagnetic Field to the Royal Society in 1864 [21], an essential part of his theory was that: "there is an ethereal medium filling space and permeating bodies, capable of being set in motion and of transmitting that motion from one part to another, and of communicating that motion to gross matter so as to heat it and affect it in various ways".

9.5 Microleptons, Anatolij Fedorovich Ohatrin,
https://www.liveinternet.ru/users/valentin_tsmakaliuk/post130059289/

All the objects of the material world are surrounded by and filled with super-lightweight particles- Microleptons. All environment and living systems are soaked with them. <u>These particles carry information about the composition and structure of the</u> substantial <u>body.</u> For them <u>there are no physical barriers.</u> Heavy and inert <u>mass depend on the density and temperature of the microleptonic gas</u> in it. **If microleptonic gas - in any way – is removed from the masses - the body loses weight!** Microleptons are elementary particles that form a weak-field. They have the characteristics inherent in torsion, axial and spin fields. Fulfills all environment and the land, water and air and the cosmos, ..., <u>have a mass of 10^{-39} to 10^{-44} kg!</u>

<u>As a curiosity we emphasize the fact that, according to the EDQ model, Stable object</u> **k9, that represents the "Tesla waves"** quantum carrier, has a rest mass with expected value of about: $1.6*10^{-47}$ kg !

⇨ **Microleptons mass> 10^{-39} to 10^{-44} kg!**

9.6 PRINCIPLES OF THE THEORY OF VORTEX GRAVITATION, S. A. Orlov, Petrozavodsk State University, https://arxiv.org/ftp/astro-ph/papers/0410/0410365.pdf\

Cosmic space is filled with a cosmic matter (ether) which forms an infinite spatial system of torsion vortexes. The physical characteristics of the ether are [22]:

⇨ **S.A. Orlov density –** $8,85*10^{-12}$ kg/m3 = **$8.85*10^{-15}$ g/cm^3**

pressure $2*10^{32}$ Pa, temperature $7*10^{-51}$ K. (G.M: ether is colder than Universe !?)

9.7 About fluid parameters, V. Bychkov, [23],

"… 6. About fluid parameters.

In this section, we will consider issues related to the type of energy density in a hydrodynamic fluid, as well as what parameters it can satisfy in order to realize the analogy between hydrodynamics and electrodynamics.

… Thus, we obtained the parameters of the hydrodynamic medium in which hydrodynamic analogs of electrodynamic phenomena are realized. …"

⇨ **Hydrodynamic analog of electrodynamic phenomena:** $\rho \approx 2 \cdot 10^{-6}$ kg/m^3 = **$2*10-9$ g/cm^3**

9.8 SAO/NASA Astrophysics Data System (ADS), New Theory of the Aether, T.J.J., http://adsbit.harvard.edu/full/1920AN....211...49S

"… Exact Calculation shows the elastic power of the aether to be 689 321 600 000 times greater than that of our air in proportion to its density: Thus it can not be disrupted by any known force, and only the quick action of dynamite will generate waves in it." …

⇨ **Density of the aether at the <u>sun</u> surface = $2*10^{-18}$ g/cm^3**
⇨ **Density of the aether at the <u>earth</u> surface = $4,38*10^{-16}$ g/cm^3**

9.9 Physics Letters B, Einstein-aether theory as an alternative to dark energy model, https://www.sciencedirect.com/science/article/pii/S0370269312002882

"In the generalized Einstein-aether theories by taking a special form of the Lagrangian density of aether field, the possibility of Einstein-aether theory as an alternative to dark energy model is discussed in detail, that is, taking a special aether field as a dark energy candidate" …

9.9.1 Dark Energy, http://hyperphysics.phy-astr.gsu.edu/hbase/Astro/dareng.html

If we take the WMAP (The Wilkinson Microwave Anisotropy Probe) value for critical density
$\rho_{c,0}$ = 9.47*10-27 kg/m3 and presume that dark energy makes up about 73% of that, then the effective density of the dark energy would amount to just over 4 hydrogen atoms in a cubic meter of space:

⇨ **density of the dark energy:** 0.73*9.47*10-27 kg/m3 **~ $7*10^{-30}$ g/cm^3**

10 Ether (wind) detection

The **M**ichelson–**M**orley experiment ("M-M") was performed between April and July 1887 by Albert A. Michelson and Edward W. Morley [24]. It compared the speed of light in perpendicular directions, in an attempt to detect the relative motion of matter through the stationary luminiferous aether ("aether wind"). The result was negative, in that Michelson and Morley found no significant difference between the speed of light in the direction of movement through the presumed aether.

We have to **strongly emphasize** here **that the negative result of the "M-M" experiment should in no way be the reason for negating the <u>existence</u> of ether** as XIX century-scientist have done and modern science supports. The first reason is the possibility of insufficient sensitivity of the used apparatus. The second is the interactivity of ether with the material detectors, and the third – compatibility of the real nature of the light and applied experimental setting.

"M-M" experiment did not really clarify the nature of light. Two hundred years earlier, Newton had suggested that light consists of tiny energized particles that bounce off objects and are detected by our eyes and Robert Hooke, on the other hand, thought that light must be a kind of wave, like sound.

At last, different scientific considerations, led to the notion that light is a wave. When a sound wave propagates, it needs some medium to pass through, like air, water, metal, etc. If light is a wave like sound then what medium it passes through? Regarding science EM waves does not need no one material supstrate to propagate as sea waves require sea water …

However, it is much more logical and natural to suppose that light must be moving through some (mysterious) material, which was called "ether", surrounding and permeating everything …

10.1 Ether can be observed experimentally, Demjanov, http://ether-noo.narod.ru/

<u>The measurements</u> made in the end of 1960-ies and beginning of 1970-ies years <u>at interferometers of the Michelson type</u> with gaseous, liquid and solid optical light carriers <u>appeared to be positive</u> in principle (i.e. detecting "aether wind"). ...
All details of these experiments are reported at above site.

10.2 Successful Search for Ether Drift in a Modified Michelson Morley, Experiment Using the GPS, Stephan J. G. Gift , http://www.rxiv.org/pdf/1201.0058v1.pdf

Abstract: <u>Ether drift</u> resulting from the rotation of the Earth <u>has been detected.</u> This was accomplished using GPS technology in a modified Michelson-Morley experiment.

10.3 The Relative Motion of the Earth and the Ether Detected, https://www.scientificexploration.org/docs/20/jse_20_2_gift.pdf

4. Conclusion: <u>Ether drift is detectable and has been detected.</u>

10.4 Summary of Ether drift experiments measuring our velocity in Absolute space, http://www.helical-structures.org/new_evidences/modern-ether-drift-exp/ether-drift-exp.pdf

Summary of Ether drift experiments measuring our velocity in Absolute space
(Compiled by Stoyan Sarg)

Authors, I-st publication date	Epoch	RA	δ	l	γ	V (km/s)	Type
David Miller, 1933	1925-26	4h54m	-70d33m	282d	-35.2d	208	Interferometer, continuous light
K. Illingworth - analyzed by R. Cahill & Kitto, 2003	1927					369+/-123	Interferometer, continuous light
Stefan Marinov, 1983	1973	Earth abs. velocity along instrument axis 130+/-100 km/s					Rotating mirrors, chopped light
Stefan Marinov, 1980	1975-76	13h23m +/- 20m	-23+/-4d	313d	38.9d	303+/-20	Interferometer, rotating mirrors, chopped light
Muller et al.	1976			Velocity towards Leo		~ 400	CMB
G. Smoot et al., 1977	1977	11+/-0.6d	6+/-10d	245+/-15d	54+/-10d	390+/-60	CMB
Wilkinson and Corey	1978?	12h+/-1h	-21d +/-21d	288d	40d	320+/-80	CMB
C. Monstein and J. Wesley, 1996	1978-96	8.7d +/-3.5m	-1.1d +/-10d	227.9d	24.3	359+/-180	Muon flux anisotropy
Stefan Marinov, 1995	1984	12.5h +/-1h	-24d +/-7d	397.5d	38.4	362+/-40	Coupled shutters, chopped light
E. Silvertooth, 1986						378+/-?	Rotating mirrors, chopped light
M. Consoli et al., 2006		202d	-44d	309d	18d	276+/-71	Analysis of rotating optical resonators

10.5 Dayton Miller's Ether-Drift, Experiments: A Fresh Look by James DeMeo, Ph.D.,
http://www.orgonelab.org/miller.htm

"Miller would today be cited in every physics textbook as having "proved the ether did not exist", and nobody would refer to Michelson-Morley. The fact that the present-day situation is totally opposite."

Dayton Miller [25] performed over 326,000 turns of interferometer with 16 readings each one, so - more than 5,200,000 measurements. They showed what appeared to be a small amount of drift, about 9 km/s = 1/3 of the velocity of the earth around the sun …

11 Conclusion:

> Having in mind all the foregoing, **I personally do not have the slightest doubt that ether (or luminiferous aether) exists.**

Bearing in mind all the estimations of the values that characterize the ether phenomenon, presented in sections 7, 8 and 9, defined in the past, including the insights of ancient but also modern estimations - the ether parameters are most likely suitable to the amounts obtained by the averaging of all presented values, that are not pretty close but are relatively similar - and are defined by axiomatic the principles of Sankhya, Tesla's theoretical predictions and practical measurements, the postulated values of the EDQ Model, Mendeleev's considerations, non-typical researchers, such as A.Ohatrin, and contemporary theoretical analysis of SA Orlova, dr. V.Bickov and proponents of the correlation between ether and dark matter/energy.

Consequently, Tesla's "Non-Hertzian" ether Technologies [1] become an achievable segment of our Reality.

To what extent is the ether structure related to the modern-scientific substitution for this phenomenon - to "quintessence", hypothetical form of dark energy, more precisely a scalar field, fifth fundamental force, postulated as an explanation of the observation of an accelerating rate of expansion of the universe – is not as significant as it is reaffirmation of the **essence of the EM interactions structure** interpretation. Are they only vibrations in the electric and magnetic field or vibrations of material fluid ?

In physics, an electromagnetic field is a physical field produced by electrically charged objects and a field is a physical quantity, represented by a number or tensor, that has a value for each point in space and time. From the perspective of quantum field theory, the field is seen as quantized, being composed of hypothetical particles as excited states (also called quanta) of their underlying fields, which are—in a sense—more fundamental than the basic particles - subatomic particles (in particle physics) and quasiparticles (in condensed matter physics).

It is quite obvious that modern physics, by its development, approaches to its initial theoretical settings and, the most interestingly, to the ancient teachings. All this points to necessity that science "have to return a few steps backward" and correct several, perhaps unintentionally but hastily made decisions:

1. According to Hypothesis 3 of EDQM [26] - original value of Maxwell's constant – as a REAL theoretical limit of the EM interaction propagation velocity; should be restored in the Lorentz transformations used in the General and Special Theory of relativity;
   Result: photon can have a **real** rest mass as all other nuclear corpuscles …
2. Maxwell's equations should be restored to its original format that contained the scalar component;
   Result: Tesla's Technologies can be understood and explained much better than with contemporary version.
3. EM phenomenology should be promoted in the form of volumetric vibrations, i.e. 3-dimensional disturbances of ether - apropos its spatial density changes which implies and involves its alternating compressions and rarefactions so that the axial inward/outward changes predetermine their longitudinal-transversal-torsion-vortex pattern and thus a scientifically-detectable form of vibration;
   Result: many peudo scientific and experimentally verified phenomenon's as torsion field etc can be explained.
4. The "superluminal" velocity property that characterize longitudinal etheric vibrations, described in the original Maxwell theory form, should be linked to the "phase changes" transmigration within the "quasi-particle" substrate (quantum field e.g.…);
   Result: all valid theories remain preserved and the EPR effect becomes easily and logically explicable.

Suggested corrections and supplements do not violate the existing transverse-vectorial (Hertzian) form of EM interaction but only enriches it with its natural longitudinal (Non-Hertzian) and vortical component (e.g. [2]).

In this way, all Nikola Tesla's ideas and his Technology explanations are coming back to the science framework and thus its feasibility becomes more certain. Consequently, all controversial ideas of this proven intuitive genius becomes attainable, and numerous different "pseudo-scientific" terms such as teleportation, antigravity, inertia, zero-point energy and the like becomes much more acceptable. [4]

In Belgrade, November 29, 2018   Goran Marjanović, BScE

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