

Tesla's "Magnifying Transmitter" - a fractal of the quantum-hologram Reality

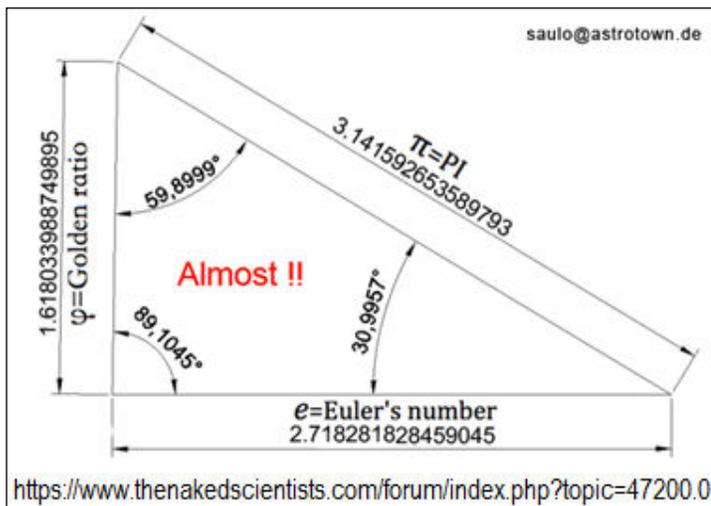
Introduction

In the text "*Nikola Tesla - Prometheus of the New Age*" [1] we have pointed out to the remarkable importance of Nikola Tesla, the significance of his work, the depth of his insights into the structure of true Reality and the principled mechanisms of Cosmos and Nature. My firm belief in the truth of Tesla's claims made in this text has been confirmed recently by the **latest findings of quantum physicists**¹ at the Hungarian Nuclear Research Institute. Although the features of the newly discovered quantum-world phenomena (X17 particle, protophobic X boson, $m \sim 17$ MeV) are so unusual that they require a re-examination of the Standard Model of Particle Physics (a theory that describes fundamental forces and classifies subatomic particles) they simultaneously **confirm** Tesla's intuitive ingenuity and **the concordance of his ether technologies with the experimental reality of modern physics and the latest ideas of theoretical physicists that could solve the mystery of dark matter and the potential discovery of the fifth force in nature!**

Although this opinion sounds very strange, it is not entirely illogical. Namely, all of Tesla's legacy researches points to his deep connection with Nature, which he truly loved and respected, and whose principles he learned as a child and "mapped" them into his apparatus, giving them qualities of perfection. My perennial theoretical and practical research into Tesla's work have shown that the efficiency and perfection of his devices are quite doubtless, as they are manifested through completely identical parameter relationships in a series of repetitive cosmic patterns, scaled to the right size, when it comes to man, the solar system, The Pyramid of Cheops e.g. or Tesla's Fountain²... In the same sense it is possible to show that **Tesla's "Magnifying Transmitter"** also is a **"part in agreement with the whole"** and, in essence, a **"Fractal of the quantum-hologram Reality"**, fully harmonized with the macro, micro and hyper universe.

In the text "*Universe – Perpetual Harmonic Oscillator*" [2], I have shown that the WORLD is the Perfect Creation, created by modeling an infinite number of variations of fractal entities into a finite set of hologram structure phenomena.

By acting of the self-similarity principle - all entities of Reality arise in the eternal processes of self-sustaining, harmonic, volumetric vibrations in the "breathing" mode, forming volume (3D) standing waves according to the principles of Sacred Geometry whose form is based on the values of elemental cosmic constants: π (circle diameter and radius ratio), ϕ Golden cross section (ideal ratio: $(a + b) / a = a / b$) and Euler number e (base of natural logarithm).



It is a real curiosity that these - though transcendental - numbers form a finite, closed, geometric shape, very close to the Pythagorean triangle [3], thus giving it the property of perfection and quality of the "Cosmic Matrix of Growth and Development". The fact that the same Pythagorean Triples also predefines the "line of growth and development" ($M \sim R^2$) of the **Energy Density Quantization Model** [4], hence all the phenomena of Reality in the macro, micro and hyper segments - speaks of the endless consistency of nature in variation of the same basic motive.

The parameters of this "Cosmic Matrix of Creation" (π, ϕ, e) are also values that, according to Vedic texts, define the conditions of "Eternal Harmonic Oscillation", and form the basis of Sacred

Geometry, "Vesica pisces", a mystical symbol of the intersection of the divine world with the world of matter and the beginning of creation, the most complex symbol of ancient times which is the basic pattern for the "Flower of Life" and the "Tree of Life". It is also said to be a symbol or description of harmonic proportions and even a source of strength and power.

¹ Attila Krasznahorkay&All, New evidence supporting the existence of the hypothetic X17 particle, 23.Oct 2019, <https://arxiv.org/pdf/1910.10459.pdf>

² Nikola Tesla U.S. Patent 1,113,716 - FOUNTAIN

The parameters of the "Cosmic Matrix" - as constituent elements of the "Eternal Harmonic Oscillation" define the mathematics of fractal geometry as the principle of limitation and ordering the chaos from which life is born, applied by the "Supreme Creator" in the creation of the world.

It is really more than fascinating that the same values are also found in the creations of ancient peoples, and it is even more unusual that the same values are characteristic of Tesla's Technologies!

Moreover, an analysis of Tesla's records in his Colorado Springs diary [5], published patents, and interviews given to reputable American journalists indicates the full consistency of the latest scientific theoretical considerations and experimental findings of quantum electrodynamics with Nikola Tesla's intuitive insights, principles, and technical solutions in the making of his famous Magnifying Transmitter he made at his Colorado Springs lab.

The exclusivity of this fact cannot be overstated given that Tesla's "Non-Hertzian"³ technologies are based on ether - a pseudo-scientific substance that is considered non-existent by today's science.

1. About Ether

According to ancient teachings, ether (also **aether** or **æther**), is a substance that fills the universe above the earth's sphere. The word αἰθήρ (*aithēr*) in Homeric Greek means "clean, fresh air" or "clear sky." In Greek mythology, it was considered to be a pure essence that fills the space inhabited by the gods and breathed by them, analogous to the air breathed by mortals.

In science it is an abstract substance and in alchemy and philosophy of the early and middle ages ether is the **"fifth element"** (besides water, earth, fire and air) into which all the elements of the cosmos are immersed. The existence of ether was widely accepted in science until the early 20th century, when the Michelson-Morley⁴ experiment was chosen as "proof" that no such fluid exists.

Otherwise, **all great scientists of the past have used the concept of ether** to explain natural phenomena, such as the spread of light and gravity, firmly believing that ether spreads through space, representing the medium through which light travels.

Isaac Newton, English physicist, mathematician and astronomer, alchemist and philosopher of nature, one of the most significant figures in the history of science, used the idea of ether in the 1670s in interpreting his theory of gravity as a medium which help to explain gravity as its cause. In the first published theory of gravity: "*Philosophiæ Naturalis Principia Mathematica*" the whole description of planetary movements was based on the dynamic interaction between distant bodies by introducing a medium he called ether.

In the wave theory of light, **Christiaan Huygens** (1678) assumed that light is a wave phenomenon that arises because light sources initiate an environment that permeates the entire cosmos and has elastic properties. This transmitter-medium of light waves he called an ether.

In his theory of light motion, **Johann II Bernoulli** (1736) proposed that the ether pervades the whole space filled with "extremely tiny vortices." These vortices allow the ether to have some elasticity, conveying the traveling vibrations of corpuscular light packages.

In "*Dynamic Electromagnetic Field Theory*", introduced to the Royal Society in 1864 by the **creator of modern electromagnetism James Clerk Maxwell**, one of the essential parts of the theory was that *"there is an etheric medium that fills space and permeates bodies, capable of being set in motion and transmitted that movement from one part to another, and the transfer of that movement to the coarse matter to warm it and affect it in different ways."*

Albert Einstein, University of Leiden, The Netherlands, May 5, 1920, "*Ether and Theory of Relativity*": *"We can say that according to the general theory of relativity, space is endowed with physical qualities, so there is also an ether in this sense (...) according to the general theory of relativity, space without ether is unthinkable, because through such space light would not travel and there would be no standard for space and time (measuring rods and clocks), nor would there be any space-time intervals in the physical sense of the word."*

Paul Dirac, the man who laid the foundations of quantum theory, says in **1951**: *"Cognition in physics has been progressing much since 1905, first of all with the advent of quantum mechanics, and the situation of the scientific credibility of ether has changed again, so that in the new electrodynamics theory to which the vacuum is filled with virtual particles – we are pretty much forced to accept the existence of ether."*

³ Tesla's expression emphasizing that he did not use the so-called "Hertzian" waves, ie. "Transverse-vector" EM waves defined by Heaviside's version of Maxwell's equations.

⁴ This famous experiment was conducted between April and July 1887 by Albert A. Michelson and Edward W. Morley.

However, there are exact measurements made with modern technologies that prove the existence of an ether, such as. Martin Grusenick experiment: "*Grusenick Experiment Proves the Existence of Ether*" [6].

On the other hand, there is a numerous of contemporary scientific research, that is, analyzes that indicate a certain "inconsistency" in interpreting the results of the Michelson-Morley experiment - which was crucial for ejecting ether from science. One of them is e.g. "*Statistics "Prove" Ether Exists!*" [7] which shows that from the point of statistical analysis view - the hypothesis: "the speed of light depends on the direction of travel through the ether" cannot be rejected - thus confirming the existence of the ether - what is strangest - based on an identical experiment setup just using more modern technology ...

Numerous modern measurements successfully detect the "ether wind" and the relative movement of earth and ether. ... (more details: "About Ether" [8])

2. Nikola Tesla about Ether

"**Tesla Sees Evidence Radio and Light Are Sound**" - New York Times, Sec. X, P. 9, c. 1, April 8, 1934

"It is true," said Mr. Tesla, "that many scientific minds envisaged the theory of a gaseous ether, but it was rejected again and again because in such a medium longitudinal waves would be propagated with infinite velocity.

Lord Kelvin conceived the so-called contractile ether, possessing properties which would result in a finite velocity of longitudinal waves... I consider this extremely important" said Mr. Tesla. "Light cannot be anything else but a longitudinal disturbance in the ether, involving alternate compressions and rarefactions. In other words, light can be nothing else than a sound wave in the ether..."

Aether; "Dynamic Theory of Gravity". For his 81st birthday, (10/07/1937) Tesla issued a statement criticizing Einstein's theory of relativity, stating:

"Aether is in fact a medium, "a perfect fluid" that wets everything in which are immersed "independent carriers". It behaves as a solid to light (high frequency) and is transparent to matter, while it's effects can be felt through inertia."

When I saw a text written by Tesla's hand and entitled: "**Considering a light as a sound wave**", about fifteen years ago, I was very surprised and confused with this Tesla's words. The document contained two pages of rather unreadable words and numbers, so despite great effort for a long time I could not figure out the full content, but Tesla's understanding of the phenomenon of light, expressed in the title, was unambiguous!

However, a few years later I found his interview [9] in which **he claimed to have found experimental proof of the existence of ether - "the medium by which longitudinal waves propagate by alternating compression and expansion"**.

An interview with Nikola Tesla, New York Herald Tribune, September 22, 1929

Here Tesla explains in detail his calculations in which - based on the density of air and the ratio of the speeds of sound / light propagation - the theoretical value of the density of ether was calculated: $\rho_{\text{theor.}} = 1.9 \cdot 10^{-27} \text{ g/cm}^3$!

It is more than astonishing that Tesla has "determined the density of the (ether) gaseous medium" experimentally also, by practical measurement – which he succeeded "just" in 1896 "when he devised a new form of vacuum tube capable of withstanding very high electrical potentials and operating at an effective voltage of about 4,000,000 volts ..."

It's obvious and is really amazing that Tesla's theoretically obtained value of ether density is very close to that he obtained by measurement ($\rho_{\text{measured}} = 2 \cdot 10^{-26} \text{ g/cm}^3$)! More interestingly, **these values** he obtained about 100 years ago **are very close to the latest scientific analyzes and estimates of dark matter parameters!**

What to say - except: Magnificent Tesla !!!

3. Why ether was thrown out from science

Officially - based on the "Michelson-Morley" experiment [10], and unofficially - in my opinion - because of the superluminal properties of the scalar, longitudinal waves inherent to ether - the substance medium – a property that is inconsistent with the basic postulate of Relativity, the Einstein postulate on the constancy of the speed of light, according to which no object with a real rest mass can not reach that speed.

It is paradoxical - but also indisputable - that the creator of modern electromagnetism, James Clerk Maxwell, based his theory on the concept of ether. What's more, the **original theory of J.C. Maxwell is given in the form of "quaternions"**, hypercomplex numbers that, to put it simply, represent the sum of scalar and vector values (figure below, left). A complete set of original Maxwell's equations has been known in electrostatics since 1865 [11].

Mathematical physicist James Clerk Maxwell, in his original mathematical equations given in form of quaternions, concerning electromagnetism, established the theoretical existence of scalar waves.

The quaternions are a set of symbols of the form $a + bi + cj + dk$, where a, b, c, d are real numbers.

They multiply using the rules $i^2 = j^2 = k^2 = -1$; $ij = k$.

- Maxwell's equations in quaternionic form (Treatise, 2nd edition, 1881, Vol. II, p. 239-240; S = scalar and V vector part of quaternion) ψ = velocity, ψ, Ω = scalar el./mg. pot., eq. numbers 1st column from 1865, 2nd one from 1881

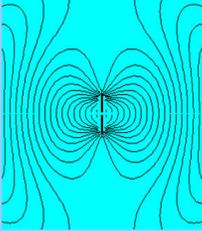
(B ₁) (A)	$\mathfrak{B} = V \nabla \mathfrak{A}$	$(S \nabla \mathfrak{A} = 0 \Rightarrow \mathfrak{B} = \nabla \mathfrak{A})$	eq. of mg. induction
(D) (B)	$\mathfrak{E} = V \psi \mathfrak{B} - \mathfrak{A} - \nabla \psi$		eq. of el. motive force
(C)	$\mathfrak{F} = V \mathfrak{E} \mathfrak{B} - e \nabla \psi - m \nabla \Omega$		eq. of el. magn. force
(D)	$\mathfrak{B} = \mathfrak{H} + 4\pi \mathfrak{J}$		eq. of magnetization
(C) (E)	$4\pi \mathfrak{C} = V \nabla \mathfrak{H}$		eq. of el. currents
(F) (G)	$\mathfrak{K} = C \mathfrak{E}$		eq. of conductiv. (Ohm)
(E) (F)	$\mathfrak{D} = \frac{1}{4\pi} K \mathfrak{E}$		eq. of el. displacement
(A) (H)	$\mathfrak{E} = \mathfrak{R} + \mathfrak{D}$		eq. of true currents
(B ₂) (L)	$\mathfrak{B} = \mu \mathfrak{H}$		eq. of ind. magnetiz.
(G) (J)	$e = S \nabla \mathfrak{D}$		[Coulomb-Gauss law]
	$m = S \nabla \mathfrak{J}$		
	$\mathfrak{H} = - \nabla \Omega$		

After J.C. Maxwell death, since scalar waves had not been empirically observed, and considering that this mathematical form is unnecessarily complicated ..., Oliver Heaviside, Josiah Willard Gibbs and Heinrich Hertz, grouped the twenty equations together into a set of only four, via vector notation.

This group of four equations was known variously as the Hertz-Heaviside equations and the Maxwell-Hertz equations, but are now universally known as Maxwell's equations. Heaviside's equations, which are taught in textbooks and universities as Maxwell's equations are not exactly the same as the ones due to Maxwell.

Today we usually think of Maxwell's Equations as a set of four partial differential equations using vector notation. You may see them in differential or integral form:

Name	Differential form	Integral form
Gauss's law	$\nabla \cdot \mathbf{E} = \frac{\rho}{\epsilon_0}$	$\oiint_{\partial V} \mathbf{E} \cdot d\mathbf{A} = \frac{Q(V)}{\epsilon_0}$
Gauss's law for magnetism	$\nabla \cdot \mathbf{B} = 0$	$\oiint_{\partial V} \mathbf{B} \cdot d\mathbf{A} = 0$
Maxwell-Faraday equation (Faraday's law of induction)	$\nabla \times \mathbf{E} = -\frac{\partial \mathbf{B}}{\partial t}$	$\oint_{\partial S} \mathbf{E} \cdot d\mathbf{l} = -\frac{\partial \Phi_{B,S}}{\partial t}$
Ampère's circuital law (with Maxwell's correction)	$\nabla \times \mathbf{B} = \mu_0 \mathbf{J} + \mu_0 \epsilon_0 \frac{\partial \mathbf{E}}{\partial t}$	$\oint_{\partial S} \mathbf{B} \cdot d\mathbf{l} = \mu_0 I_S + \mu_0 \epsilon_0 \frac{\partial \Phi_{E,S}}{\partial t}$



The very first theoretical considerations of Maxwell's equations showed that the EM waves described by the scalar part of the quaternion, the so-called **"scalar waves"** that propagate in some material medium (ether) - **propagation speed cannot be limited**, which offers the possibility of instantaneous communication over arbitrarily long distances. ...

The fact that ether - though perfect fluid - essentially is a substance, but that allow very strange and very **"exotic"** (and mystical) **possibilities** of (ether) **EM waves** ... but at the same time it pointed to the problem of consistency with the theory of relativity - whose basic assumptions were already being elaborated at that time by Hendrik Lorentz, Carl F. Gauss, Bernhard Riemann, Ernst Mach, Henri Poincaré, and Hermann Minkowski ...

And so ... after the death of J. C. Maxwell (1879), with the explanation that this mathematical form is unnecessarily complicated ..., Oliver Heaviside, Josiah Villard Gibbs and Heinrich Hertz "simplify" the original Theory of J.C. Maxwell, they eject the scalar part and transform it into a dimensionally lower form - into a vector form, in which Maxwell's set of twenty equations is grouped into a set of only four vector expressions (picture above, right). So - these **Heaviside equations, which are referred to as Maxwell's in textbooks and universities - are NOT his original...**

The fact that - **unlike the self-propagating, transverse-vector vibrations of the EM field - the propagation of longitudinal waves requires the existence of a material carrier**, also is solved very simply - **ether as a hypothetical carrier of longitudinal electrostatics vibrations was expelled from science** on the base of the well-known Michelson-Morley experiment. In that experiment was made an attempt to find the difference between the speeds of light through the presumed luminiferous ether by comparing the speed of light in mutually orthogonal directions whereby one was in the direction of earth rotation.

The result was negative. We must emphasize here that, in the opinion of a number of modern physicists, the negative result of the "M-M" experiment should by no means be the reason for denying the existence of ether, as was done by nineteenth-century scientists, and is still supported by official science. The first reason is the lack of sensitivity of the equipment used. The second is the question of the interactivity of the ether with the material detectors used, and the third is the compatibility of the true nature of the light and the experimental setup applied.

In any case, **the direct consequence** of the M-M experiment **was the ejection of ether from science**, which **with the "simplification" of the original Maxwell theory and ejection a scalar, longitudinal waves from it resulted in the complete ejection of Nikola Tesla ether technology from the science** and his original interpretations of the principles of operation and properties of the Magnifying Transmitter and of the Wardencliff Tower, etc. and its classification into a pseudoscience domain!

Therefore, all these years, modern science favors only a part of Tesla's legacy BEFORE Colorado Springs (rotating magnetic field, multiphase currents, high frequencies, the classic version of the HF/HV transformer ...) and a part of legacy related to his "non-Hertzian" waves, which is - in my opinion - the most valuable part of his insights for ours civilization - is ignored.

4. The Problem of Understanding and Interpreting Tesla

The basic problem of the extremely advanced ideas of Nikola Tesla understanding is a great, in fact **diametrically opposite difference in the interpretation of the structure of nature and the elementary mechanism of propagation of electromagnetic waves.**

According to modern science, EM waves are transversely oscillating waves of electric and magnetic FIELD that propagate independently without the need for a MATERIAL medium as their carrier and without any connection to the source of their origin (!?);

In my opinion, it's like having waves of the sea without the sea ☺, what is more - unlike quantum physics - the classic scientific definitions of this key terms are ordinary phrases that do not explain the essence at all:

- **An Electric field is a PHENOMENON (appearance) created by an electric charge or a time-varying magnetic field, which acts by force on charged objects.**

- **Electric Charge is the FEATURE of particles to create an electromagnetic field.**

- **A magnetic field is a MEDIATOR through which mutual magnetic action is realized.**

What did we explain here?

- **According to Nikola Tesla: EM waves are longitudinal, compression-expansion vibrations of ether, a MATERIAL substance that is a perfect fluid of special qualities - like sound, which is a longitudinal vibration of air molecules - which is a very simple and very logical interpretation.**

So understanding Tesla's technologies without the longitudinal vibrations of the ether - their material carrier and explaining the scalar waves, Tesla's non-Hertzian waves with "simplified", vector, Maxwell theory interpretation is absolutely impossible because the transverse vibrations of the EM field describe the longitudinal vibration of the substantial fluid and thus describes only a fraction (just the "shadow") of actual energy flows.

Tesla's original statements, on the other hand, are very specific and absolutely unambiguous (original):

1. Canadian Patent 142,352 – “Art of Transmitting Electrical Energy through the natural Medium”:

“... IT IS NECESSARY TO EMPLOY OSCILLATIONS IN WHICH THE RATE OF RADIATION OF ENERGY INTO SPACE IN THE FORM OF HERTZIAN ELECTROMAGNETIC WAVES IS VERY SMALL ...

2. Wireless transmission of electric energy, “Electrical World and Engineer”, March, 1904:

“In essence, it is the circuit of very large self inductance and low resistance, for which construction and method of excitation could be said to be **DIAMETRICALLY OPPOSED** to those of a typical transmitter for telegraphy using HERTZ or electromagnetic radiation.” (G.M: acc to J&K.Corum: “Extra Coil” have max SWR so it is “Non-broadcast antenna”)

3. US patent 5 780 – “Apparatus for transmission of electrical energy”:

“... It is too noted that the phenomenon here involved in the transmission of electrical energy is one of TRUE CONDUCTION AND IS NOT TO BE CONFOUNDED WITH THE PHENOMENA OF ELECTRICAL RADIATION ...

However - for modern science, Tesla's "Non-Hertzian" waves are merely a form of surface (but basically vector, transverse, self-propagating, so-called "Hertzian") EM waves in a "near field" of the transmitter ($l < \lambda$ region) like "Norton" - or Zenneck waves.

Tesla's interpretations based on the notion of "Non-Hertzian waves" and the concept of ether are considered absolutely wrong - due to "his lack of scientific knowledge - since he never graduated on the Technical College in Graz." ...

5. Stationary waves - Nikola Tesla 's greatest discovery!

In terms of my research, Nikola Tesla had two phases of scientific research - before and after Colorado Springs. The phase from his arrival in America (June 6, 1884) to his departure to Colorado Springs (May 17, 1899 - January 7, 1900) is well known to the public and encompasses only 16 years of his life and work in which he has given enormous contributing to the technological advancement of civilization as is illustrated by over of three hundred registered patents. The second phase of Tesla's life and work - after staying in his laboratory in Colorado Springs until his death (January 07, 1943) - is much less known to the public, but in my opinion, this is exactly the period in which Tesla materialized his most advanced and valuable ideas working persistently and consistently to himself, in spite of all the attacks and troubles, to apply his most sophisticated -

but also most controversial - invention: the "Magnifying Transmitter". This device, a masterpiece of knowledge and deepest cognitions "Stolen from Nature" (as Tesla used to say), is a significantly upgraded version of a classic HV/HF transformer which Tesla used in New York, before Colorado Springs, intended for wireless transmission of speech, pictures,..., but also a large amounts of energy at any distance...

Tesla's belief in the importance and significance of this invention is evidenced by his statement ("My Inventions", Nikola Tesla's Autobiography): "I feel with confidence that of all my inventions, the Magnifying Transmitter will be the most important and valuable to future generations." Unfortunately, there are few who believe in these and many of Tesla's farsighted words. Here is a Nikola Tesla statement that made the biggest impression on me:

"... I was very lucky to discover new and amazing phenomena, such as rotating magnetic field, glowing of wireless vacuum tubes and many other high frequency effects, which amazed the world, BUT WHAT IMPRESSED ME AS MORE BEAUTIFUL THAN ANYTHING ELSE WAS THE DISCOVERY OF STATIONARY WAVES, to which I came in 1899, and which showed that that the whole planet on which we live, despite its incomprehensible size, could be made to respond with vibration to the lowest whisper of human voice. ...".

It is really not easy to believe that the Earth with a mass of $6 \cdot 10^{24}$ kg responds to the quietest whisper - but when it comes to Tesla - it should be trusted because he has always verified his findings by measurement. Regarding the stationary waves he found the following:

"Tesla's prophecy", M.Matić, No Limit Books, page 143:

"The Earth's vibrations are periodic and last about an hour and 45 minutes. That is, if I shake the earth, a contraction wave passes through it and returns in an hour and 45 minutes, but in an expansion state. Earth, like everything else, is in a constant state of vibration. It constantly shrinks and expands..." (G.M: "Volumetric", "3D" mechanical vibration = 105 min.)

"Tesla's prophecy", M.Matić, No Limit Books, page 187:

"Later that night the instrument again started to work and stopped alternately, in intervals of near half an hour, although the sky had already cleared."

From the quotations given above it can be seen that Stationary waves caused by storm (Colorado Springs, July 04, 1899) have a periodicity of about 28 min which is approximately $\sim 1/4$ of the mechanical vibration period. These values will be crucial in selecting the appropriate parameters of the "Magnifying Transmitter" and especially its much more powerful version - the World Radio Station - "Wardenclyffe Tower".

6. "Magnifying Transmitter"

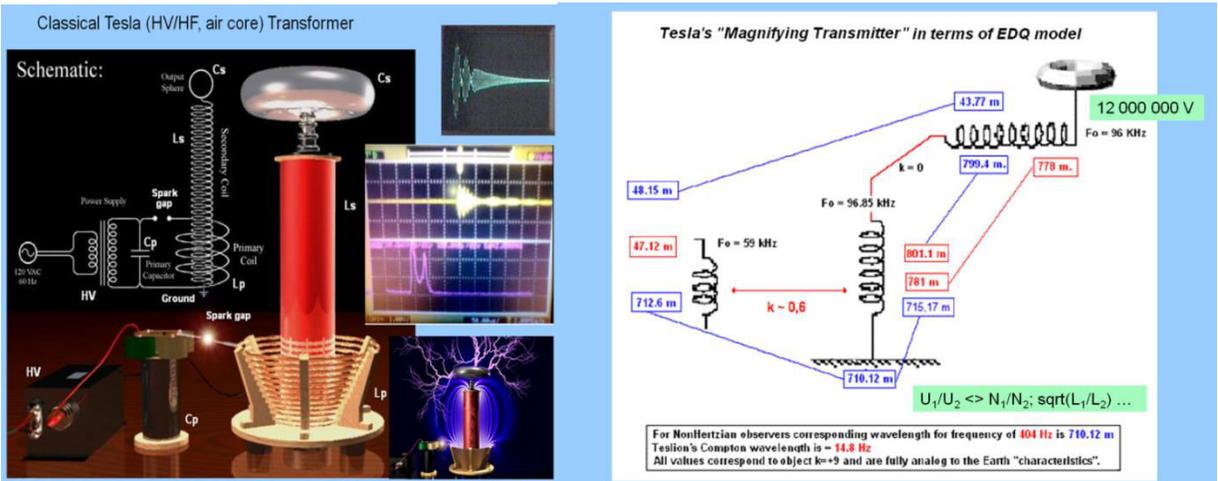
Despite of all its simplicity, Tesla's "Magnifying Transmitter" certainly is one of the most perfect machines of this civilization. The **principles on which its work is based is fundamentally different from the classic version** - the HF/HV air-core transformer, which Tesla developed and used in New York, before Colorado Springs.

In the classical version (pic. bottom left), the increase in voltage is based on the principle of EM induction, where the voltage ratio is proportional to the ratio of the primary and secondary circuits number of windings. In order to transfer energy from the primary to the secondary circuit, their resonant frequencies must be identical (or very close).

At Magnifying Transmitter (pic. bottom right) - Tesla boosts its potential by using an "extra coil" - a quarter-wave helicoidally resonator (acc. to an analysis by Dr. James F. Corum: Ph.D. in Electrical Engineering, Kenneth L. Corum: B.A. in Physics) in which stationary waves forms and whose magnitude grows with constant supplemental energy feeding (G.M. -as at a baby swing - a pendulum) to a value limited only by the conductivity of the environment⁶, **whereby Tesla uses the planet EARTH as a resonator fully harmonized with the "Extra Coil" !!!** Previous statement is very important for understanding Tesla's technologies - but is maximally ignored - because "Hertzian" emission techniques, and electromagnetism in general, is based on fundamentally different principles from those emphasized here and based on Tesla's original statements.

Figuratively, it could be said that the difference between a "Hertzian" radio transmitter of Marconi's type and Tesla's "Non-Hertzian" "Magnifying Transmitter" is quite analogous to the difference between a Stradivarius violin (which has an **extremely** sophisticated "resonator") and a plain board on which a wire is stretched between two nails... ☺

⁶ Tesla chose Colorado Springs for his laboratory not only because of frequent atmospheric discharges but also because of the extremely dry air.



7. Tesla's key notes

The previous comparison of the Hertzian-NonHertzian principles can look for someone like mine excessive partiality and the "mystification" of Tesla - as some have said - but nevertheless - it is the pure truth that can be seen from Tesla's authentic statements that follow and which I quote in the original to avoid any subjective "coloring" by translation:

1. - Nikola Tesla, Colorado Springs Notes, 1899-1900, June 5, 1899 (original):

"From this, the **inferiority of the induction method** would appear immense as compared with **DISTURBED CHARGE OF GROUND AND AIR METHOD**" !!!

Tesla writes this note in his diary on June 5 - that is, just few days after he started with his work in Colorado Springs, at the very beginning of his machine design - and even then he was firmly convinced of the advantages of the system, that is not based on induction but on the special features of his "Extra Coil" and the specificity of the whole "Magnifying Transmitter" system. **Researchers absolutely ignore this Tesla's very important note but this is a REAL Tesla!**

2. - My Inventions - chapter 6: The Magnifying Transmitter

" ... it is accurately proportioned **to fit the globe and its electrical constants and properties**, by virtue of which **design** it becomes highly efficient and effective in the wireless transmission of energy. **Distance is then absolutely eliminated, there being no diminution in the intensity of the transmitted impulses.** It is even possible to make the **actions increase with the distance** from the plant according to an exact mathematical law. ... this wireless transmitter is one in which the **Hertz-wave radiation is an entirely negligible quantity as compared with the whole energy**, ... Such a circuit may then be excited with impulses of any kind, even of low frequency and it will yield sinusoidal and continuous oscillations like those of an alternator."

This is one of Tesla's original statements that particularly emphasizes the importance of selecting the appropriate operating frequency, design and geometry of each element of machine, and in particular their mutual and overall compatibility with PLANET Earth and all its geometric, mechanical and electrical parameters!

3. - L.I. Anderson, Sun Publishing, Denver 1992.[pg. 203]

"In this system that I have invented it is necessary for the machine to get a grip of the earth, otherwise it cannot shake the earth. **It has to have a grip on the earth so that the whole of this globe can quiver**, and to do that it is necessary to carry out a very expensive construction. I had in fact invented special machines". ... Now **that was a very expensive part of the work**, but **it does not show on the tower, but it belongs to the tower**".

From this Tesla statement one can clearly see that the importance of the underground part of the Wardenclyyfe Tower obviously is equal, if not greater, to that of its above ground part because **"the machine must firmly grab the earth ... and shake it well ... so that the whole globe quiver"** !!!

It is absolutely impossible to explain this Tesla's instruction from the standpoint of a valid variant of EM theory and that could be the main reason for its total disregard and disavowal - which automatically discredits ALL of Tesla's "Magnifying Transmitter" "Replicas" known to me. Of course - everyone has the right to their own path ...

4. - Colorado Springs Notes, 1899–1900, Nolit Beograd, Yugoslavia, 1978, str. 76, 07. July 1899:

"There are two ways to achieve voltage through resonant overvoltage: either the secondary is placed in a loose coupling ($k < 0.2$) with the primary to allow free oscillations of the secondary (G.M: classic version) or the secondary must be firmly fixed ($k > 0.5$) with the primary and then raise the voltage with an additional coil - an "Extra Coil" - or inductance that is not inductively coupled to the primary. The latter method is more appropriate when we want to achieve very high EMS."

Although this Tesla's comment is the last in series of his notes in this section – it is actually the most significant. In his analysis of possible methods of achieving voltage, July 7, 1899, only three days after his greatest discovery of "Stationary waves" and three days before his birthday, Tesla decides to use the "latter method", method of strong coupling of the primary and secondary circuits - which requires exceptional skill of the constructor (energy reflections due to impedance mismatching ...) and which many of today's researchers are avoiding for this reason, and the achievement of a very high EMF (Electro Motive Force) with an "extra coil" that is not inductively but galvanically coupled to a secondary !

The favor of electromotive force at the very beginning of his research, and the **CHOICE OF PURE POTENTIAL INSTEAD OF VOLTAGE**, is a very important decision of Nikola Tesla, which, I am sure, **was crucial for his success** and for achieving the **efficiency** of the machine with which Tesla was pleased (final measurements on December 14, 1899).

A potential is a scalar field, a term perfectly suited to the term "ether" while the **voltage** (def.) is equal to the potential difference and **in fact the work** required to move the electric charge between two points in the electric field. Although both phenomena are measured in the same units (Volt), the difference is huge and completely justifies Tesla's statements that " sparks from Top Load" are pure energy loss ... So what we see around the world as a demonstration of "Tesla's transformer" - is his classic version, significantly different from the variant that Tesla chose on July 7, 1899. The first version of high voltage, high frequency transformer with an air core, spark gap and a capacitor in the primary circuit, Tesla patented on June 23, 1891, *U.S. Pat. Patent 454,622 - "System of electric lighting"* he used to research high frequency and high voltage areas and for use in new, more efficient lighting systems. Although this device was a true miracle at that time, which significantly pushed the boundaries of our understanding of electricity and enabled numerous of Tesla's inventions (also of other researchers) that followed (medical devices, x-rays...) - Tesla rejects this version because he evaluates the induction method as inferior to the version with "Extra Coil" (acc. To his statement given in the original in item 7.1: **"inferiority of the induction method would appear immense..."**) ... However, the classic version of Tesla's transformer, which is nowadays widely used at various events, in museums, institutes ..., is Tesla's transformer, but it belongs to his "early works" and has neither approximate features nor possibilities as a "Magnifying Transmitter". ☺

8. **Exclusivity of Tesla's technologies**

In numerous Magnifying Transmitter quasi-replicas, IN NO ONE a case known to me are NOT followed Tesla's instructions outlined in the previous section - except only partially and arbitrarily, based on subjective interpretations of Tesla's work. My analysis has shown that very often not even the most elemental of Tesla's remarks - that the length of the coil wire should be close to a quarter of the wavelength of electrical vibration - was not respected⁷. Unlike them, Tesla's **ORIGINAL version described in his diary from Colorado Springs is characterized by a great accordance with the ancient knowledge and basic cosmic principles woven into the structure of Nature in all its aspects.**

Based on many years of my theoretical and practical research into Tesla's work, especially the "Magnifying Transmitter" - I have developed my own empirical formulas to calculate the "Hertzian - Non-Hertzian" parameters - which determine the measure of compliance of some coil features with Nikola Tesla's "He-NeHe" principles. The table below shows that the parameters deviate significantly from the value 1 (a measure of compliance with Tesla's instructions) which means that **none of the coils tested is not even close to Tesla's "Extra Coil" features.**

⁷ James & Kenneth Corum: „ Many thin wire windings are the worst possible way to get high voltage !“.

Illustration of multidimensional resonance of Tesla coils by G.M.'s "He-NeHe" parameters:

D mm	H mm	N	razm mm	Hercijan. param	Neh A	Neh B		
609	2108	781	0,12	1,33	0,03	39	Korum Lo	Lopt.m.
450	1420	432	0,12	1,27	0,03	48	Korum Hi	Lopt.m.
617	1406	317	1,85	1,11	0,53	2,08	Ko. 145%	exper
600	2485	342	4,68	1,2	1,04	1,16	Ko. 66%	exper
83	386	1250	0,07	0,87	0,31	2,77	Richie sec	
110	287	1028	0,04	0,95	0,15	6,3	test debela	
2400	3146	110	25,4	1,07	1,2	0,9	N.T. po Ko	
2540	2400	98	21	1,02	1,01	1,06	N.T.dnevn	
300	1150	425	1,7	1,03	1,03	1,03	G1	
500	1520	510	2	1,03	1,04	1,01	G2	

In my opinion, Tesla's Colorado Springs machine is - in its sophistication - completely analogous to the Cheops pyramid and is truly a masterpiece of knowledge - and strong evidence of the depth of Tesla's insights into the Technologies of Perfection and General-Cosmic Harmony, characterized by a specific form of energy flows achieved by a very special geometry, a "geometry of perfection", and a special design based on the relations and values of the elemental cosmic constants (ϕ, π, e).

Evidence that these words are not without foundation can be seen from Tesla's original records ([5]) of his measurement results of the machine's parameters at the very end of his stay in Colorado Springs.

Nikola Tesla, Colorado Springs Notes, 1899-1900

December 14, 1899

Determination of the system vibration with latest version of Extra Coil

The resonant frequency of the primary circuit /with coupl. coef. $k=0.4$:
 $f_{0,prim} = 56,4 \text{ kHz}$
 The resonant frequency of the system with latest version of extra coil:
 $f_{0, sist} = 89,42 \text{ kHz}$
 $\Rightarrow 1) f_{0, sist} = f_{0,prim} * \pi/2 = 56,4 * 1,58 = 89,42 \text{ kHz}$
 $2) f_{0, sist} / \pi = 89,42 / 3,14 = 28,47 \text{ kHz} ! (\text{Wardencllyfe, Visocica, Rtanj} !!!)$

π relation!

" ϕ, Φ, π, e " in Tesla tech.: "Corum & Associates, TCTUTOR", v.1.0, 1987.

Za dužinu trajanja varnice od 10.8 usec, furijeova analiza daje spektar sa pikovima na $Lf = 54.8 \text{ kHz}$ i $Hf = 128.2 \text{ kHz}$.

Ozbirom da je: $F_{10.8} = 1/10.8e-6 = 92.592 \text{ kHz}$,
 $92.592 * 0.618 (f) = 57.2 \text{ kHz} \sim 54.8 \text{ kHz}$,
 $92.592 * 1.618 (F) = 149.8 \text{ kHz} \sim 128.2 \text{ kHz}$
 $54.8 * 2.71 (e) = 148.5 \sim 128.2 \text{ kHz}$
 $f_{0, sist} = 89.42 \text{ kHz}; f_{0,prim} = 56.4 \text{ kHz}$
 $\Rightarrow f_{0, sist} / f_{0,prim} = 89.42 / 56.4 = 1.58 \sim \pi/2$

Poštujući holističke principe svojstvene Kreatoru, Tesla je harmonizovao celokupan svoj sistem i uskladio ga sa (višedimenzionalnom) strukturom Realnosti kako "izvan" (makro) tako i "Unutar".

TCOIL.exe

POURIER SPECTRUM OF U_{ind} Max plotted value = 3732 μV at 55.0 MHz
 $U_{ind} \langle t \rangle / U_{ind} \langle f \rangle / \text{Resonator/Master Osc/UC} \langle t \rangle / \text{Save UaLU} \langle t \rangle / \langle T/F/R/H/C/S/U \rangle ?$
 Go to PC settings to activate Windows.

Analysis of Tesla's measurements of the "resonant frequencies of the primary circuit and the resonant frequency of the system with the latest version of the "Extra coil" (top left), that Tesla made on 14. December 1899 in CoSpgs ([5]), shows that their relationship is equal to the value $\pi/2$ - the same one that can also be found in the Cheops pyramid as the ratio of the length of the sides and its height whereby this value is also a decade multiple of the earth-sun distance ($230/146=1.57= \pi/2$). Tesla's analog of the earth-sun distance - the value that determines all other parameters of the pyramid (the base line length, the angles "first" and "second" rainbow angles /...), that actually also is the "resonator" - is the choice of a working frequency of 28 kHz and a value of 57 m as a height of above ground part of the Wardencllyffe Tower - which can by no means be obtained from the relations of classical electromagnetism...

What's more, the Corum brothers' specially written software (Dr. James F. Corum: Ph.D., Kenneth L. Corum: B.A.) which serves exclusively for a detailed theoretical analysis of the "Magnifying Transmitter" work, allows us - by using the most advanced technology of today - to see the results of the operation of a real experimental setup of the apparatus that Tesla came to 120 years ago, with very primitive tools - no oscilloscopes, spectrum analyzers, computers ... With great effort and tireless work, after numerous changes of the series of details and analysis of the effects achieved, at the end of 1899 Tesla get the configuration he was pleased with. This is evidenced by his words upon his return to New York: "All my dilemma I have resolved in Colorado Springs."

Corum Brothers Software:: "TCTUTOR, v.1.0.,1987, Corum&Associates" allowed us to see something truly amazing. For a realistic Magnifying Transmitter setup such as Tesla used in CoSpgs on December 14, for all actual system element parameters (inductance, capacitance, coupling strength, spark duration ...) Fourier analysis of the energy spectrum is obtained (top right), in which it can be found all values and relations very close to the values of the elemental cosmic constants (ϕ , π , e) that characterize all creations of Nature - but, obviously, also a "technical" systems that are harmonized with the whole structure of Reality "outside" - "inside", and whose basic features are perfection and maximum efficiency !!!

Regarding Tesla's notes in his diary from CoSpgs and the statements given - Tesla was not aware of these relations and was not aspired to them in his work because - to my knowledge - he never mentioned them anywhere – yet, **striving for the maximum efficiency** of his apparatus, he achieved the conditions of "eternal harmonic oscillation", full analogy, harmony and accordance with Earth and the Cosmos, which hints at the same features and **properties of that machine as are woven into all of God's Creations.**

Therefore, Tesla's idea of lossless energy transfer is not "absolutely impossible" - as it currently looks from the point of view of current theories, but also from practical examples. Unfortunately, today, researchers claiming to have achieved Tesla's wireless power transmission succeeds in just a few meters and with very little energy because they use classic EMWs - though in some cases "modified" with an accentuated magnetic component - or vice versa - with raised electrical component - but basically still "transversely vector," "Hertzian" waves.

In support of the above, I cite a well-documented statement by Nikola Tesla on the basis of which it is clearly evident that he was fully aware of the (in)capabilities of "Hertzian" technology:

Nikola Tesla, US patent 5 780 – “Apparatus for transmission of electrical energy“:

“... PHENOMENA OF ELECTRICAL RADIATION which have heretofore been observed and which from the very nature and mode of propagation WOULD RENDER PRACTICALLY IMPOSSIBLE THE TRANSMISSION OF ANY APPRECIABLE AMOUNT OF ENERGY TO SUCH DISTANCES AS ARE OF PRACTICAL IMPORTANCE. ...“

So today's "wireless power transmission" solutions are based on the principles that are Tesla's - but version he developed and used in New York, before Colorado Springs. Real Tesla "wireless energy transfer" **system is based on** a substantially **different** and significantly improved **version** of the "transformer" - in accordance with HIS statements set out in Sections 6 and 7.

In support of the logic and quite realistic feasibility of Tesla's ideas is the fact that modern science achieves the effect of "superconductivity" by making a "special material medium" – e.g. - by inserting Yttrium, Barium, ... atoms into ceramics, which is actually an ideal insulator (!) - and then cooling to very low temperatures to become "superconductive" ... So we create a very special medium for the "Hertzian" EM vibration.

Nikola Tesla achieves a absolutely analogous effect by a completely "opposite" process - he creates a special form of energy vibration for already existing media - as can be seen from the title of his patent: *U.S. Pat. Patent 787,412 - Art of Transmitting Electrical Energy through Natural Mediums.*

9. Conclusion

Understanding of Tesla's technologies and their interpretation is directly conditioned by understanding **the essential structure of EM interaction** and answering the question: are EM waves merely transversal **vibrations** of an electric and magnetic "**field**" or it is a "compression-expansion" (volumetric) **vibration of some material fluid** like ether?

Ancient knowledge, e.g. The *Sankhya* of Maharishi Kapilla, tell us that - the electric and magnetic fields are just different forms of vibration of the elemental substrate constituted by the "mulaprakrithi" - the essence of matter, the "root of nature" or the "root of Prakriti"; meaning "basic matter"! (More detailed in [12])

In classical physics, an electromagnetic field is a phenomenon created by an electric charge, or a variable magnetic field, that has a value for every point in space and time.

From the perspective of quantum theory, the field is interpreted as a quantized phenomenon originating from quantum fluctuations in vacuum - an infinite set of infinitesimal harmonic oscillators - a turbulent sea of excited energy states, virtual-real particles, which, due to constant mutual excitations, interactions and transformations, appear and disappear (annihilation - pair creation) making the material world as it is. So, **from the perspective of quantum theory, the field phenomenon is more fundamental than elementary particles.**

Moreover, the latest theoretical considerations of modern science show - but also experimentally prove - that not only are electromagnetic FIELDS physical, nor that electromagnetic POTENTIALS are pure mathematical construction - but on the contrary - that **potentials are more basic physical subjects than fields !!!**

Namely, according to the scientifically argued opinion of Dr. V.L.Bychkov [13] - The **EPR paradox is a direct proof of the existence of ether.** Similarly, the **Aharonov-Bohm experiment, performed in multiple laboratories in the world, proved** that the ELECTROMAGNETIC POTENTIAL IS EXISTING AND INFLUENCE ON CHARGED PARTICLE IN A PART OF A SPACE IN WHICH THE MAGNETIC AND ELECTRICAL FIELDS ARE ZERO.

In this way - by "**Aharonov-Bohm**" experimental verification of the "**hidden vector potential**" it is **confirmed that electromagnetic interaction can take place in areas where there is no EM field !!!**

So - the experimental reality of modern physics points to the fact that the "electric potential" scalar field, is a more fundamental level of reality than the vector electric field that appears in Heaviside's (simplified) version of Maxwell's equations! The fact is that Heaviside vector interpretation can also be expressed in the form of potential [14], but this does not solve the problem of the "missing" scalar part of the original Maxwell "quaternion" version ... or - more precisely – does not solve the problem of LONGITUDINAL vibration, which requires a substantial medium for its propagation!

The micro-world is hard to reach, but the macroscopic manifestations of "quantum vacuum fluctuations" indicate the extraordinary complexity of the energy processes that take place there. Nevertheless, the experimental reality of modern science shows us that (e.g.) the effect of superconductivity, semiconductor, dielectric and magnetic properties are **not related to the electron flow in the wire, but to the specific flow based on the material properties.** These experimental insights of modern physics completely agree with the concept of work [15] where was asked the **question about the nature of current in superconductors, which does not heat the conductor material,** that is possible only in the absence of moving charges in it ?!

In any case - according to the latest scientific theoretical and experimental insights, **pure potential** (scalar field) currently **is the most fundamental phenomenon in modern physics !!!**

In view of this, Tesla's scalar waves as longitudinal wave of potentials make full scientific sense!

It is really more than astonishing that the latest findings of modern science are in complete agreement with the INTUITIVE insights of the ingenious Nikola Tesla who, even centuries ago, favored potential (EMF) rather than "voltage" (potential difference = work) and the principles of operation of his "Magnifying Transmitter" developed in that direction !!! ... (section 7.4)

The fact that the field essentially is a gradient (degree of change) of the potential ($E_{\text{vektor}} = \delta V/d$), where the electric potential is a scalar value, indicates a realistically possible - and scientifically justified - idea of the correlation of ether with "quintessence" - a hypothetical form of dark energy in the form of a scalar field, which could be the "fifth fundamental force", postulated by the cosmological model "Quintessence" and offered as an explanation for the accelerated rate of expansion of the universe.

Recent experiments by the Hungarian Nuclear Research Institute⁸ (Attila Krasznahorkay and colleagues) and detection of particle "X17" (protophobic X boson, $m \sim 17$ MeV) in the process of the energy releasing of an excited helium atom point to the realistic possible existence of a new - "fifth force" in nature, in addition to electromagnetic, weak, strong and gravitational ones, of which it could be a quantum carrier (like a photon for EM) and which could be related to dark matter and thus - via the Quintessence model - with ether !?

Considering possible consequences of experiments of this type, the restraint of the scientific establishment is understandable, since the existence of this particle requires a "rearrangement" of the Standard Model of Particle Physics ... Still, it's good to be reminded that the same group of researchers who recently published the discovery of particle X17 also reported the first evidence of detection of the same particle back in 2016 in experiments with radioactive Beryllium atoms.

So, it is quite obvious that modern physics, with its latest insights and developments, approaches its initial theoretical set-ups and - most interestingly - ancient teachings.

⁸ New evidence supporting the existence of the hypothetic X17 particle, 23.Oct 2019, <https://arxiv.org/pdf/1910.10459.pdf>

All of the above points to the need, and indeed the necessity, for science to "go back a few steps" and to correct some of its, perhaps unintentional, yet too hastily made decisions regarding ether and scalar waves.

Returning to the concept of ether and reaffirming the original theory of J.C. Maxwell, or at least the "enhancement" of this currently valid, "simplified" version, and the "enrichment" of "transverse-vector" EMWs by their natural longitudinal and vortex component (e.g., the work of Dr. Ivan Simatovic⁹) **is possible and a good way to bring all of Nikola Tesla's ideas and explanations of his Technology back into the scientific framework** - making their feasibility even more certain. Consequently, all the unrealized ideas of this proven intuitive genius become attainable, and many different "pseudo-scientific" terms such as instantaneous inter-galactic communication, teleportation, anti-gravity, zero-inertia, zero-point energy and the like become much more acceptable.

In Belgrade, December 14, 2019

Mr. Goran Marjanovic, B.Sc.

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