

Universe in a glass of iced-water

Exploration in off-the-wall physics



by Victor Christianto

In participation with
Prof. Florentin Smarandache, PhD. &
Robert Neil Boyd, PhD.

End of July 2023

Eunoia Publisher, East Java

Indonesia

Dedication

To all of those truthseekers, and especially those who *persistently wait upon the Lord.*

Hear this Logion No. 2 from Gospel of Thomas:

Jesus said,

"Those who seek should not stop seeking until they find.

When they find, they will be disturbed.

*When they are disturbed, they will marvel, and will rule over all."*¹

¹ Source:

<https://www.pbs.org/wgbh/pages/frontline/shows/religion/maps/primary/gthomas.html#:~:text=2%20Jesus%20said%2C%20%22Those%20who,and%20will%20rule%20over%20all.%22>

Preface

Dear readers,

Various exploration in astrophysics has revealed many breakthroughs nowadays, not only with respect to James Webb Telescope, but also recent finding related to water and ice deposits in the Moon surface (see figure 1 below).

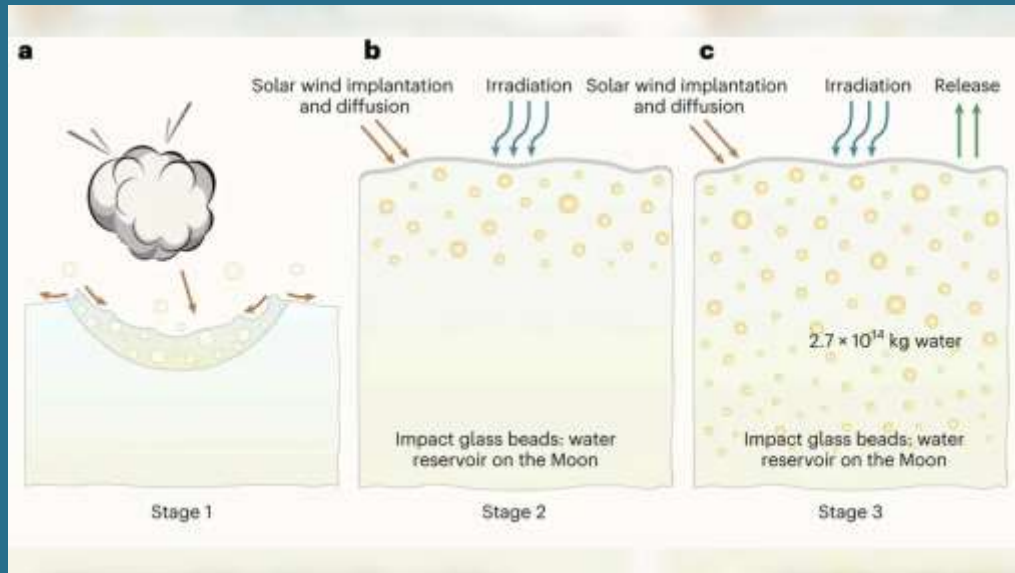


Figure 1. Impact glass beads on Moon surface



Figure 2. Moon surface

Those new findings seem to bring us to new questions related to origin of Earth, Moon and the entire Universe. Do they remind us to what the book of Genesis told us: "Holy Spirit hovering over the deep." Then what was the actual formation process before and during the creation of Earth, and

what was it meant to be tehom and tohu va bohu? Allow me to bring to your attention several old and more recent papers of this author.

This author would like to express deep gratitude to Prof Florentin Smarandache, Robert Neil Boyd, PhD, and several other colleagues, and also to Christian scholars who wrote on the topics of Genesis book and its account of creation, notably: Prof John Lennox, and Prof John Polkinghorne, the late.

We put the articles in 3 sections:

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- c. Main course: our new findings in this direction.

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Prelude





Remark on vacuum fluctuation as the cause of Universe creation: Or How Neutrosophic Logic and Material Point Method may Resolve Dispute on the Origin of the Universe through re-reading Gen. 1:1-2

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Received: 10 Sep 2018



Accepted: 16 Nov 2018



Published Online: 05 Apr 2019

Abstract: Questions regarding the formation of the Universe and what was there before the existence of Early Universe have been great interest to mankind of all times. In recent decades, the Big Bang as described by the Lambda CDM-Standard Model Cosmology has become widely accepted by majority of physics and cosmology communities. Among other things, we can cite A.A. Grib & Pavlov who pointed out some problems of heavy particles creation out of vacuum and also other proposal of Creatio ex nihilo theory (CET). But the philosophical problems remain, as Vaas pointed out: Did the universe have a beginning or does it exist forever, i.e. is it eternal at least in relation to the past? This fundamental question was a main topic in ancient philosophy of nature and the Middle Ages, and still has its revival in modern physical cosmology both in the controversy between the big bang and steady state models some decades ago and in the contemporary attempts to explain the big bang within a quantum cosmological (vacuum fluctuation) framework. In this paper we argue that Neutrosophic Logic offers a resolution to the long standing disputes between beginning and eternity of the Universe. In other words, in this respect we agree with Vaas, i.e. it can be shown: “how a conceptual and perhaps physical solution of the temporal aspect of Immanuel Kant’s „first antinomy of pure reason“ is possible, i.e. how our universe in some respect could have both a beginning and an eternal existence. Therefore, paradoxically, there might have been a time before time or a beginning of time in time.” By the help of computational simulation, we also show how a model of early Universe with rotation can fit this new picture. Further observations are recommended.

Key words: Big Bang, Steady state, rotating universe, fluid, singularity-free, cosmology model, early Universe, the book of Genesis, Spirit, Creation.

1. Introduction

Questions regarding the formation of the Universe and what was there before the existence of Early Universe have been great interest to mankind of all times. In recent decades, the Big Bang as described by the Lambda CDM-Standard Model Cosmology has become widely accepted by majority of physics and cosmology communities. Among other things, we can cite A.A. Grib & Pavlov who pointed possible heavy particles creation out of vacuum and also other proposal such as Creatio Ex-Nihilo theory (CET)[1, 2].

But the philosophical problems remain, as Vaas pointed out: Did the universe have a beginning or does it exist forever, i.e. is it eternal at least in relation to the past? This fundamental question was a main topic in ancient philosophy of nature and the Middle Ages. Philosophically it was more or less banished then by Immanuel Kant’s Critique of Pure Reason. But it used to have and still has its revival in modern physical cosmology both in the controversy between the big bang and steady state models some decades ago and in the

contemporary attempts to explain the big bang within a quantum cosmological framework.

Interestingly, Vaas also noted that Immanuel Kant, in his Critique of Pure Reason (1781/1787), argued that it is possible to prove both that the world has a beginning and that it is eternal (first antinomy of pure reason, A426f/B454f). As Kant believed he could overcome this „self-contradiction of reason“ („Widerspruch der Vernunft mit ihr selbst“, A740) by what he called „transcendental idealism“, the question whether the cosmos exists forever or not has almost vanished in philosophical discussions [3].

Further problems also remain with the Big Bang theories, such as: a) what force was responsible to trigger the first creation of heavy particles out of vacuum?, b) if we take the statistical approach, i.e. the vacuum fluctuation alone was responsible for first creation, then one can ask how much is probability of such statistical chance to create all regularities as we observe of the Universe? (such as Tifft’s quantized redshift data.)

In this paper we will take a closer look at Genesis 1:2 to see whether the widely-accepted notion of creatio ex-nihilo is supported by Hebrew Bible or not. It turns out that Neutrosophic Logic is in agreement with Kant and Vaas’s position, it offers a resolution to the long standing disputes between beginning and eternity of the Universe. In other words, in this respect we agree with Vaas: “how a conceptual and perhaps physical solution of the temporal aspect of Immanuel Kant’s „first antinomy of pure reason“ is possible, i.e. how our universe in some respect could have both a beginning and an eternal existence. Therefore, paradoxically, there might have been a time before time or a beginning of time in time.”[3] In the subsequent chapter we will discuss how to answer this question by the lens of hermeneutics of Sherlock Holmes. This is a tool of mind which we think to be a better way compared to critical hermeneutics.

1.1. What is Hermeneutics of Sherlock Holmes?

One article suggests: Holmes: “I have no data yet. It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.” Far too often students of the Bible (and cosmology folks as well) twist verses to suit interpretations instead of formulating interpretations to suit what the verses say. Guide: Don’t approach your passage assuming you know what it means. Rather, use the data in the passage – the words that are used and how they fit together – to point you toward the correct interpretation.

2. A closer look at Genesis 1:1-2 & implications

One of the biggest mysteries in cosmogony and cosmology studies is perhaps: How to interpret properly Genesis chapter 1:2. Traditionally, philosophers proposed that God created the Universe out of nothingness (from reading “empty and formless” and “bara” words; this contention is called “creatio ex nihilo.”). Understandably, such a model can lead to various interpretations, including the notorious “cosmic egg” (primeval atom) model as suggested by Georges Lemaitre, which then led to Big Bang model.[18–20] Subsequently, many cosmologists accept it without asking, that Big Bang stands as the most faithful and nearest theory to Biblical account of creation. But we can ask: Is that primeval atom model the true and faithful reading of Genesis 1:2? Let us start our discussion with examining key biblical words of Hebrew Bible, especially Genesis 1:1-2. It can be shown that the widely accepted creation ex nihilo is a post-biblical invention, rather than as faithful reading of the verses. To quote Ian Barbour: “Creation out of nothing is not a biblical concept.”[4] Let us consider some biblical passages:

2.1. bereishit

The literal meaning of Gen. 1:1, “bareishit bara Elohim.” This very first statement of the book of Genesis literally reads: ‘first’ and ‘beginning’ are reasonable alternatives for the Hebrew noun, reishit. Also note that in Hebrew, subjects and verbs are usually ordered verb-first (unlike English in which the subject is written first). If the verb and subject of this verse are reordered according to natural English grammar we read: [1] In, When first, beginning Elohim created... reishit: The noun, reishit, has as its root the letters, (Resh -Aleph-Shin). Words derived from this root often carry the meaning of ‘primary’, ‘chief’, ‘begin’, ‘first’ or “first-in-line”, “head of”, and so forth. Harris’s Theological Wordbook of the Old Testament (TWOT) is more specific, namely, reishit means[1] “. . . first, beginning, choicest, first or best of a group. [Reishit is] a feminine noun derived from the root [Resh-Aleph-Shin], it appears fifty times in nearly all parts of the [Old Testament]. [Its] primary meaning is “first” or “beginning” of a series.” Accordingly, we can now retranslate bareishit bara Elohim as ”When first created Elohim”, or as we would render in English,[1] ”When Elohim first created...”

2.2. Gen. 1:2

Gen. 1:2, “And the earth had been.” In English this is easily handled by the past perfect tense (also called the pluperfect or the “flashback” tense). Likewise, if haytah in v 1:2 is translated as a past perfect verb, then verses 1:1-2 would read,[1] When Elohim first created the heavens and the earth, the earth had been ... In this translation the universe, in some form or other, was already in existence when God executed His first creative act, the creation of light.

2.3. Re-reading Gen. 2:7 with Hermeneutics of Sherlock Holmes?

If we glance at Gen. 2: 7, we see at a glance that man is made up of the dust of the ground (adamah) which is breathed by the breath of life by God (nephesh). Here we can ask, does this text really support the Cartesian dualism view? We do not think so, because the Hebrew concept of man and life is integral. The bottom line: it is not the spirit trapped in the body (Platonic), but the body is flowing in the ocean of spirit. (check also Eric McKiddie’s article: <https://www.thegospelcoalition.org/blogs/trevin-wax/10-tips-on-solving-mysterious-bible-passages-from-sherlock-holmes/>)

2.4. Gen. 1:2, formless and void

Gen. 1: 2, ”The earth is without form and void, darkness over the deep, and the Spirit of God hovering over the waters.” Patterns such as Adam’s creation can also be encountered in the creation story of the universe. Earth and the oceans already exist (similar to adamah), but still empty and formless. Then the Spirit of God hovered over it, in the original text ”ruach” can be interpreted as a strong wind (storm). So we can imagine there is wind/hurricane, then in the storm that God said, and there was the creation of the universe. See also Amos Yong [6], also Hildebrandt [15]. From a scientific point of view, it is well known in aerodynamics that turbulence can cause sound (turbulence-generated sound). And primordial sound waves are indeed observed by astronomers.

2.5. Psalm 107

Ps. 107: 25, ”He said, he raised up a storm that lifted up his waves.” The relation between the word (sound) and the storm (turbulence) is interactive. Which one can cause other. That is, God can speak and then storms, or the Spirit of God causes a storm. Then came the voice.

2.6. Ezekiel 37

Ezekiel. 37: 7, "Then I prophesy as I am commanded, and as soon as I prophesy, it sounds, indeed, a crackling sound, and the bones meet with one another." In Ezekiel it appears that the story of the creation of Adam is repeated, that the Spirit of God is blowing (storm), then the sound of the dead bones arises.

2.7. Conclusion to re-reading the above three verses

The conclusion of the three verses above seems to be that man is made up of adamah which is animated by the breath or Spirit of God. He is not matter, more accurately referred to as spirit in matter. In other words, a close reading of Hebrew Bible seems to suggest that creatio ex-nihilo is a post-biblical invention. Other scholars have suggested an alternative concept, called creatio ex-materia, but many orthodox Christian scholars have raised objection to this notion, partly because the term seems to undermine God's ultimate power and control of the Universe. Besides, the notion of creatio ex-materia has been advocated by Mormon preachers. To overcome this problem, and based on what we learned recently, allow us now to come up with a new term: creatio ex-rotatione (rotatione is a Latin word for rotation). As we shall see in the next chapter, it is possible to come up with a physical model of early Universe with rotation, where the raw materials have been existed for long period of time, but suddenly it burst out into creation. And it seems to fit with Kant's idea to resolve the dichotomy between finite past or eternal Universe. Furthermore, it can be shown that the model naturally leads to accelerated expansion, without having to invoke ad hoc assumption like dark energy or cosmological constant.

3. A physical model of turbulence-generated sound for early Universe

Our discussion starts from the fundamental question: how can we include the rotation in early Universe model? After answering that question, we will discuss how "turbulence-generated sound" can be put into a mathematical model for the early Universe. We are aware that the notion of turbulence-generated sound is not new term at all especially in aerodynamics, but the term is rarely used in cosmology until now. We shall show that 3D Navier-Stokes will lead to non-linear acoustics models, which means that a turbulence/storm can generate sound wave.

3.1. How can we include rotation in early Universe model?

It has been known for long time that most of the existing cosmology models have singularity problem. Cosmological singularity has been a consequence of excessive symmetry of flow, such as "Hubble's law". More realistic one is suggested, based on Newtonian cosmology model but here we include the vortical-rotational effect of the whole Universe. In this section, we will derive an Ermakov-type equation following Nurgaliev [8]. Then we will solve it numerically using Mathematica 11. After he proceeds with some initial assumptions, Nurgaliev obtained a new simple local cosmological equation:[8, 9]

$$\dot{H} + H^2 = \Omega + (4.\pi.G.\rho)/3$$

where

$$\dot{H} = dH/dt.$$

The angular momentum conservation law $\Omega.R^2 = \text{const} = K$ and the mass conservation law makes equation solvable:[9]

$$\dot{H} + H^2 = (K^2/R^4) - (GM)/R^3$$

or

$$\ddot{R} = (K^2/R^3) - (GM)/R^2$$

Equation above may be written as Ermakov-type nonlinear equation as follows:

$$\ddot{R} + (GM)/R^2 = (K^2/R^3)$$

Nurgaliev tried to integrate equation (3), but now we will solve the above equation with Mathematica

11. First, we will rewrite this equation by replacing $GM = A, K^2 = B$, so we get:

$$\ddot{R} + A/R^2 = B/R^3$$

As with what Nurgaliev did in [8, 9], we also tried different sets of A and B values, as follows:

a. A and $B \leq 0$

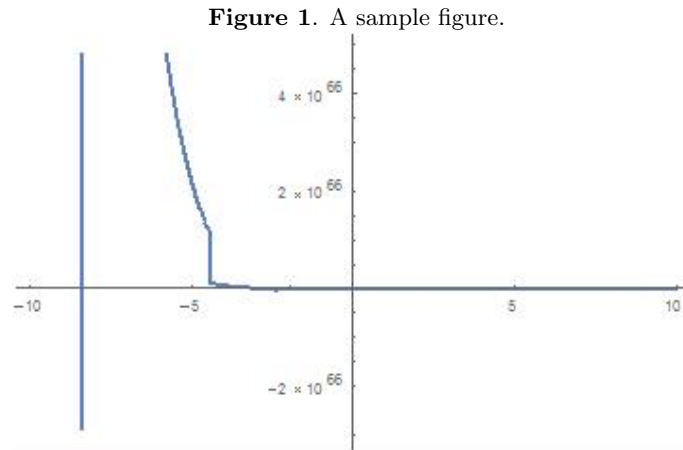
$A=-10$;

$B=-10$;

$ODE = x''[t] + A/x[t]^2 - B/x[t]^3 == 0$;

$sol = NDSolve[ODE, x[0] == 1, x'[0] == 1, x[t], t, -10, 10]$

$Plot[x[t]/.sol, t, -10, 10]$



b. $A \geq 0, B \leq 0$

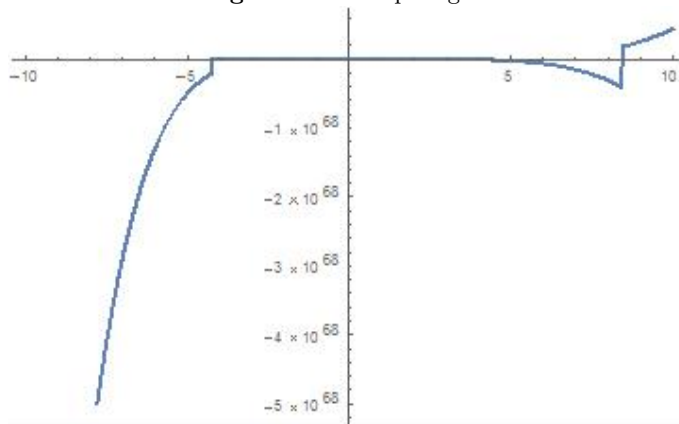
$A=0$;

$B=-10$;

$ODE = x''[t] + A/x[t]^2 - B/x[t]^3 == 0$;

$sol=NDSolve[ODE,x[0]==1,x'[0]==1,x[t],t,-10,10] Plot[x[t]/.sol,t,-10,10]$

From the above numerical experiments, we conclude that the evolution of the Universe depends on the constants involved, especially on the rotational-vortex structure of the Universe. This needs to be investigated in more detailed for sure. One conclusion that we may derive especially from Figure 2, is that our computational

Figure 2. A sample figure.

simulation suggests that it is possible to consider that the Universe has existed for long time in prolonged stagnation period, then suddenly it burst out from empty and formless (Gen. 1:2), to take its current shape with accelerated expansion. As an implication, we may arrive at a precise model of flattening velocity of galaxies without having to invoke ad-hoc assumptions such as dark matter. Therefore, it is perhaps noteworthy to discuss briefly a simple model of galaxies based on a postulate of turbulence vortices which govern the galaxy dynamics. The result of Vatistas' model equation can yield prediction which is close to observation [14]. Therefore it appears possible to model galaxies without invoking numerous ad hoc assumptions such as dark matter, once we accept the existence of turbulent interstellar medium. The Vatistas model is also governed by Navier-Stokes equations, see for instance [14].

3.2. How “turbulence-generated sound” can be put into a mathematical model for the early Universe

We are aware that the notion of turbulence-generated sound is not new term at all especially in aerodynamics, but the term is rarely used in cosmology until now. We will consider some papers where it can be shown that 3D Navier-Stokes will lead to non-linear acoustics models, which means that a turbulence/storm can generate sound wave. In this section we consider only two approaches:

3.2.1. Shugaev-Cherkasov-Solenaya's model

They investigate acoustic radiation emitted by three-dimensional (3D) vortex rings in air on the basis of the unsteady Navier–Stokes equations. Power series expansions of the unknown functions with respect to the initial vorticity which is supposed to be small are used. In such a manner the system of the Navier–Stokes equations is reduced to a parabolic system with constant coefficients at high derivatives. [16]

3.2.2. Rozanova-Pierrat's Kuznetsov equation

she analysed the existing derivation of the models of non-linear acoustics such as the Kuznetsov equation, the NPE equation and the KZK equation. The technique of introducing a corrector in the derivation ansatz allows to consider the solutions of these equations as approximations of the solution of the initial system (a compressible Navier-Stokes/Euler system). The direct derivation shows that the Kuznetsov equation is the first

order approximation of the Navier-Stokes system, the KZK and NPE equations are the first order approximations of the Kuznetsov equation and the second order approximations of the Navier-Stokes system. [17]

4. Neutrosophic Logic perspective and implications

In the previous sections we have discussed how closer look at Gen. 1:1-2 leads to different scenario than the widely accepted creation ex-nihilo. This new scenario is quite in agreement with Kant's idea that it is possible that the Universe has both finite history in the past and also eternal background. We also discussed how such a mixed view can be modelled by introducing rotation in the early universe. Now there is an immediate question: Is this new look at the origin of Universe justifiable logically, or is it merely a compromised solution? So, in this chapter we will review Neutrosophic Logic, a new theory developed in recent decades by one of these authors (FS). Vern Poythress argues that sometimes we need a modification of basic philosophy of mathematics, in order to re-define the redeemed mathematics; see [21]. In this context, allow us to argue in favor of Neutrosophic logic as one basic postulate, in lieu of the Aristotle logic which creates many problems in real world. In Neutrosophy, we can connect an idea with its opposite idea and with its neutral idea and get common parts, i.e. $\downarrow A_i / \downarrow \text{non}A_i = \text{nonempty set}$. The common part of the uncommon things! It is true/real... paradox. From neutrosophy, all started: neutrosophic logic, neutrosophic set, neutrosophic probability, neutrosophic statistics, neutrosophic measure, neutrosophic physics, neutrosophic algebraic structures etc. It is true in restricted case, i.e. the Hegelian dialectics considers only the dynamics of opposites ($\downarrow A_i$ and $\downarrow \text{anti}A_i$), but in our everyday life, not only the opposites interact, but the neutrals $\downarrow \text{neut}A_i$ between them too. For example: you fight with a man (so you both are the opposites). But neutral people around both of you (especially the police) interfere to reconcile both of you. Neutrosophy considers the dynamics of opposites and their neutrals. So, neutrosophy means that: $\downarrow A_i$, $\downarrow \text{anti}A_i$ (the opposite of $\downarrow A_i$), and $\downarrow \text{neut}A_i$ (the neutrals between $\downarrow A_i$ and $\downarrow \text{anti}A_i$) interact among themselves. A neutrosophic set is characterized by a truth-membership function (T), an indeterminacy-membership function (I), and a falsity-membership function (F), where T, I, F are subsets of the unit interval $[0, 1]$. As particular cases we have: single-valued neutrosophic set when T, I, F are crisp numbers in $[0, 1]$, and interval-valued neutrosophic set when T, I, F are intervals included in $[0, 1]$. Neutrosophic Set is a powerful structure in expressing indeterminate, vague, incomplete and inconsistent information. See also [22–24]. To summarize, Neutrosophic Logic study the dynamics of neutralities. And from this viewpoint, we can understand that it is indeed a real possibility that the Universe has both initial start (creation) but with eternal background. This is exactly the picture we got after our closer look at Gen. 1:1-2 as discussed in the above section. In other words, our proposed term of “creatio ex-rotatione” has sufficient logical background.

5. Advantages of “creatio ex-rotatione” concept

In the preceding section, we have discussed on how our proposed term of “creatio ex-rotatione” has sufficient logical background. Now, allow us to discuss some advantages of the proposed “creatio ex-rotatione” cosmology view over the Lemaitre's primeval atom (which is the basis of Standard Model Cosmology).

5.1. Avoid inflationary scheme

It is known that inflationary models were proposed by Alan Guth et al. (see [25, 26]), in order to explain certain difficulties in the Big Bang scenario. But some cosmology experts such as Hollands & Wald has raised some difficulties with inflationary model, as follows: “We argue that the explanations provided by inflation for the

homogeneity, isotropy, and flatness of our universe are not satisfactory, and that a proper explanation of these features will require a much deeper understanding of the initial state of our universe.”[27] In our diagram plot above, it is clear that an early rotation model can explain why the Universe can burst out into creation in a very short period, without invoking ad hoc postulate such as inflation model.

5.2. Explain the observed late accelerated expansion.

As far as we know, one of the earliest models which gave prediction of accelerated expanding Universe is Carmeli’s Cosmological General Relativity.[29] But it has been shown by Green & Wald that for the large scale structures of the Universe, Newtonian model can give similar results compared to general relativity picture.[28] Furthermore, it seems that there is no quite clear arguments why we should accept Carmeli use of 5D metric model (space-time-velocity metric). In the meantime, in our rotating Universe model, we do not invoke ad hoc dimension into the metric.

5.3. Explain inhomogeneity, breeding galaxies etc.

Astronomers have known for long time, that the Universe is not homogeneous and isotropic as in the usual model. It contains of inhomogeneity, irregularity, clumpiness, voids, filaments etc, which indicate complex structures. Such inhomogeneous structures may be better modelled in terms of turbulence model such as Navier-Stokes equations, see also our early papers [11, 12].

Furthermore, observations clearly suggest that matter ejected continuously in galaxy centers, which view is difficult to reconcile with Big Bang scenario of galaxy creation. From our point of view, the Hubble’s law indicates that galaxies move fast from each other were because of continuous matter ejection, which effect seems to be a direct refutation of singularity point in the beginning of the Universe. This is in opposite to mainstream view that Hubble’s law support Big Bang theory. It is also interesting remark that Edwin Hubble himself remained rather refrained from attributing his “law” to support the expanding Universe hypothesis. Remark on his seminal paper: “The features, however, include the phenomena of red-shifts whose significance is still uncertain. Alternative interpretations are possible, and, while they introduce only minor differences in the picture of the observable region, they lead to totally different conceptions of the universe itself. One conception, at the moment, seems less plausible than the other, but this dubious world, the expanding universe of relativistic cosmology, is derived from the more likely of the two interpretations of red-shifts. Thus the discussion ends in a dilemma, and the resolution must await improved observations or improved theory or both.” See [34, 35].

Added note: Moreover, for years, some researchers have developed a novel theory of gravity based on an old theory of Le Sage/Laplace (it is known as Le Sage’s gravitation theory). An interesting remark on impetus to Le Sage gravitation theory can be found in article by the late Prof. Halton Arp on his work with Narlikar: “Nevertheless the ball had started rolling down hill so to speak and in 1991, with Narlikar’s help, I outlined in Apeiron the way in which particle masses growing with time would account for the array of accumulated extragalactic paradoxes. Later Narlikar and Arp (1993) published in the Astrophysical Journal Narlikar’s original, 1977 solution of the basic dynamical equations along with the Apeiron applications to the quasar/galaxy observations. The first insight came when I realized that the Friedmann solution of 1922 was based on the assumption that the masses of elementary particles were always and forever constant, $m = \text{const}$. He had made an approximation in a differential equation and then solved it. This is an error in mathematical procedure. What Narlikar had done was solve the equations for $m = f(x, t)$. This a more general solution, what Tom Phipps calls a covering theory.

But Narlikar had overwhelmed me with the beauty of the variable mass solution by showing how the local dynamics could be recovered by the simple conformal transformation from t time (universal) to what we called τ time (our galaxy) time. The advertisement here was that our solution inherited all the physics triumphs much heralded in general relativity but also accounted for the non-local phenomena like quasar and extragalactic redshifts.” [2] Summarizing, it is very significant to consider matter creation process in nature. For instance, one can begin by considering the correct presentation of Newton’s third law is not $F = ma$, but $F = d(mv)/dt = v(dm/dt) + m(dv/dt)$. In other words, it is possible of matter creation (dm/dt), and this is consistent with Narlikar’s work. We will explore this effect of receding Moon from Earth, in calculations to be presented in a forthcoming paper.

6. Note on Methods

In this paper, basically we use two methods: (a) a new material point for fluid model; (b) logically, we use Neutrosophic logic. As with the material point assumption, allow us to quote from Nurgaliev: [30, 31] ”The method used in this article is nonlinear mathematical modeling. The concept of the nonlinear reaction-advection-diffusion equation along with the second type material point harmoniously provides a bridge between classical and quantum physics and explains why matter is organized discretely with different levels of organization (from clusters of galaxies to atoms and elementary particles). We may expect that system of evolutionary equations (called advection-diffusion-reaction equations) describe arbitrary amount of material components with densities ρ_i , Hubble parameters H_i and coefficients of the effective diffusion D_i , generalized and adopted when needed. It may also provide nonlinear evolution scenarios for evolution of the cosmological perturbations in the multi-component cosmological reacting media. The nonlinear term f stands for mutation of the components (i.e., nuclear and chemical reactions, gravitational clustering, and cosmological morphogenesis). A linear consideration of the cosmological perturbations within demonstrated method for the arbitrary amount of components done in the form of exact analytical solutions in terms of higher transcendental G-functions of Majer. This method in the frame Einstein-Cartan theory gave static cosmological solution. The last remark is: so, sometimes, more complicated theories help understand simpler ones.”

7. Concluding remarks

In this paper we argue that Neutrosophic Logic offers a resolution to the long standing disputes between beginning and eternity of the Universe. In other words, in this respect we agree with Vaas, i.e. it can be shown: “how a conceptual and perhaps physical solution of the temporal aspect of Immanuel Kant’s „first antinomy of pure reason“ is possible, i.e. how our universe in some respect could have both a beginning and an eternal existence. Therefore, paradoxically, there might have been a time before time or a beginning of time in time.” We argue that a re-reading of Genesis 1:2 will lead us to another viable story, albeit the alternative has not been developed rigorously as LCDM theories. It took around three years before now we have been thinking this problem out loud, and here our answer can be summarized as follows: “The relic sound wave in early creation is a faithful interpretation of John 1:1, but we can come up with a more complete picture if we combine it with Gen. 1:2, that is the Holy Spirit came to hovering over the primordial fluid, then a kind of hurricane/storm started which created perfect medium where God spoke (Logos).” And one conclusion that we may derive especially from Figure 2, is that our computational simulation suggests that it is possible to consider that the Universe has existed for long time in prolonged stagnation period, then suddenly it burst out from empty and formless (Gen. 1:2), to take its current shape which is accelerating. Such a possibility has never been considered

before in cosmology literature. It is our hope that our exploration will lead to nonlinear cosmology theories which are better in terms of observations, and also more faithful to Biblical account of creation.

Acknowledgment

One of these authors (VC) would like to express his gratitude to Dr. Joas Adiprasetya, Dr. Yonky Karman, and Dr. Wonsuk Ma for discussions on early creation of the Universe. VC also thanks to a number of professors in physics, including Prof. Bambang Hidayat, Prof. Liek Wilardjo. And special thanks to Prof. Thee Houw Liong for suggesting VC to look to J. Narlikar's works. May God be with you. **The authors's contributions are as follows: V.C. gave the idea and wrote the paper, F.S provided background theory of Neutrosophic Logic and proofread the manuscript.**

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Discussion on whether the notion of complex numbers do exist

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Received: 18 Jan 2022

• Accepted: 23 Jul 2022

• Published Online: 31 Aug 2022

Abstract: It is known that complex numbers, complex geometry, complex algebra etc. have become common mathematical tools for many scientists, physicists, and mathematicians for long time. Nonetheless, among serious mathematicians, still there are people who question if such entities do exist in nature, or are they only in the mind? For these authors, we admit that complex numbers are convenient tools to work out physics problems, but we shall be cautious to come up with complicated new mathematical structures, even if we hear such “generalization” method can be useful for finding the new physics (cf. Dirac). On the contrary, it is often the case that going simpler and simpler will lead you to new physics; for instance, instead of come up with monster group etc., perhaps one can begin to consider low dimensional geometry (cf. William Thurston, Three-dimensional geometry and topology, Princeton Univ. Press, NJ, 1997). Perhaps, the real space of crystalline corresponding to complex 3D geometry can be found useful in the near future.

Key words: complex numbers, generalization method, Dirac’s advise, findings new physics through new mathematics

1. Introduction

To speak frankly, these authors wrote a number of papers in the past based on the notion of quaternion algebras and quaternion numbers. A senior physics professor once asked one of authors (VC): “Do you believe in such a universe of quaternion numbers?” At the time, we didn’t think that much, it seems like the simplest approach to find 6D-version of Maxwell equations. At the time, we believe much in the following statement by J. Hadamard, something like that: “a shortest way to reach infinity is through complex plane.” But, more recently, there are a number of people who raise these issues, whether quaternion numbers do exist? There is also another quote: “Quaternions came from Hamilton after his really good work had been done; and, though beautifully ingenious, have been an unmixed evil to those who have touched them in any way, including Clerk Maxwell.” - William Thomson, first baron Kelvin, 1892.

We also notice that there is recent paper by our former professor, who argues in favor of biquaternion algebra in relation to twistor etc. According to him, which can be paraphrased as follows: “The polynomial math of complicated quaternions, biquaternions, B is the most fitting contender for the job of a space-time variable based math (the idea presented first and foremost by D. Hestenes.” [1] With all our respect, allow us to put these algebraic structures into a deeper look: whether such complex numbers do exist, let alone their extensions such as quaternion, biquaternion, Clifford algebra etc.? Nonetheless, there is also possibility that the 6D geometry, or more exactly (3D, symmetric) can be found in nature, especially in quasi-crystalline structure.

Therefore all we can say is that may be this is still useful, although these 6D geometry may be seen more like a mathematical artefact. We will discuss shortly in subsequent section, an alternative to complex algebra and Clifford algebra, etc.

2. Short history of complex numbers

As Dempsey summarizes, which can be paraphrased as follows: “Complex numbers, albeit befuddling on occasion, are one of the most fascinating subjects with regards to math to have surfaced over the most recent five centuries. Despite the fact that it took time for them to get on as authentic numerical apparatuses, they have substantiated themselves once more what’s more again to be valuable in a wide assortment of math and designing points.” [6] According to Peters, which can be paraphrased as follows: “The most punctual hints of nonexistent numbers end up in Italy, settled inside a cubic condition. During the mid 1500s, the splitting line between college math also casual science contracted, and there was a quick improvement in variable based math. In the mid 1530s, numerical virtuoso Nicolo Tartaglia showed up at the scene ... and then Cardano etc.” [5] See also Dempsey [6].

3. Problem of Dirac’s recipe toward new physics

As Anderson & Joshi wrote, which can be para-phrased as follows: “One of the significant ways improvement happens in math is through a course of generalization. A portrayal given by Kitcher of one of the significant ways math advances, which he distinguishes as one of ”generalization.” This refines an idea communicated by Dirac in 1931 on the manner by which certain progressions in science can play a huge heuristic occupation in material science.” [7] See also how Maxwell and Heavyside worked out their way. [8, 9] Actually, Dirac advises as follows: “. . . .that a “powerful new method” for the physicist comprises of picking a branch of arithmetic and afterward continuing ”to foster it along appropriate lines, simultaneously searching for that manner by which it seems to loan itself normally to actual translation.” [10]

While initially such an advise sounds clear and worth to follow, but from the last few decades, there is a quite unhealthy trend, a kind of obsession to find new and the largest group ever, and then physicists try to find if there is signature of Nature’s approval of their wild adventure. Such a gloomy situation has been reported in Hossenfelder’s *Lost in Math*, which attracts responses from various luminaries such as Wilczek etc. As far as we can consider, these situations are caused because physicists tend to be absorbed more on mathematical structures, symmetry, beauty -so to speak. While they often forget to ask Nature what it actually says - through experiments. Such a simple problem. Even, there are rumours that Michelson-Morley experiment was designed and ordered as such to prove that “ether” the all-filling-primary fluid does not exist. Therefore, many more precise experiments which came later, such as Miller etc., are systematically discarded. They say: ether is not required – by definition, they would prefer “mathematical beauty” over reality itself (these are the attitude of many mathematicians and physicists alike, even if some of them do not agree with special relativity). Such and such is the case, until we found the arrogance of string theorists, who insist that string and superstring etc. should be the only game in town. Thanks to Peter Woit etc., we know that supertring theories are far from being the correct theory we sought for. [17] Part of the problem, as we can think, is that most physicists forget the latter part of Dirac’s advise above : “at the same time looking for that way in which it appears to lend itself naturally to physical interpretation.” [10] Therefore, what Dirac actually wrote is to find a balance between mathematical structures but we shall keep our feet on the grounds. See our paper in *Journal J*, where we argue that it is actually Kolmogorov’s ”theorem of contradiction” that shows the possibility of complicated

mathematical theories to end up with so many paradoxes and problems, and it also was proved later on by Godel (1931). Therefore allow us to argue a few guides, including a simple one-to-one correspondence between mathematical variables and physical observables, as well as keeping our postulates to a minimum. [12] In a more general parlance, provided we can accept that actually all of us are crazy, especially we mathematical physicists in general, only with varying degree of madness; then what we argue is to keep principle of parsimony. This may be called, in a pun, as “Principle of minimal madness.”

4. Remark by a senior mathematics professor

AK: “It is clear that the complex number was introduced to make quadratic equations always have solutions. Considering the nature of real number, only a fool will expect that the simplest such a case a quadratic of $x=-1$ will have a solution. The proposed solution i and $-i$ is a joke. It has no meaning in the world of quadratic equations where everything is real numbers. Using complex plane and geometry, if we try to represent the situation of solving quadratic equations geometrically, we get nowhere. It is because the complex plane is not Euclidean plane. I am more and more convinced that the so called algebraists disserved mathematics. As far as I can see, the concept of algebraic equations is the source of all problems we have. Solving equations is an engineering problem which has little to do with mathematics. For me mathematics is to study structure and equations have little to do with structures. It is a mindless game which was popular among the mindless “merchant mathematicians” in the renaissance period. What do business people know about mathematics. There are more important things to do in life. Did Euler know that Aristotle already knew that a point is not a part of the plane? The problem is that people like Euler was too busy counting the money.”

5. Discussion: An alternative route beyond complex algebra, Clifford algebra, etc.

In the aforementioned section, we argue that complex geometry, complex algebra Clifford algebra, including Hestenes’s spacetime algebra etc., are not quite tenable. At this point, some readers may ask: “So, is there alternative route?” In this context, one of us (FS) presented new theories in recent papers, i.e. from Classical Algebraic Structures to NeutroAlgebraic Structures and AntiAlgebraic Structures. Here is a summary: In 2019 Smarandache [18] generalized the classical Algebraic Structures [that are too abstract for our real world] to NeutroAlgebraic Structures (or NeutroAlgebras) whose activities and maxims are to some degree valid, somewhat uncertain, and to some extent false as expansions of Partial Algebra, and to AntiAlgebraic Structures (or AntiAlgebras) whose tasks and sayings are absolutely false and on 2020 he kept on creating them [19, 20]. The NeutroAlgebras and AntiAlgebras are one more field of assessment, which is impelled from our real world. In old style arithmetical designs, all activities are 100 percent obvious, and all adages are 100 percent valid, yet, all things considered, by and large these limitations are excessively cruel, since in our reality we have things that. Definitions of Operation, NeutroOperation, AntiOperation: i.e. Whenever we characterize a procedure on a given set, it doesn’t naturally imply that the activity is obvious. There are three prospects: 1) The activity is distinct (additionally called inward characterized) for every one of set’s components [degree of truth $T = 1$] (as in old style arithmetical designs; this is a traditional Operation). Neutrosophically we compose: Operation(1,0,0). 2) The activity if distinct for certain components [degree of truth T], uncertain for different components [degree of indeterminacy I], and outer-defined for the other elements [degree of falsehood F], where (T,I,F) is different from $(1,0,0)$ and from $(0,0,1)$ (this is a NeutroOperation). Neutrosophically we write: NeutroOperation(T,I,F). 3) The operation is outer-defined for all set’s elements [degree of falsehood $F = 1$] (this is an AntiOperation). Neutrosophically we write: AntiOperation($0,0,1$). Meaning of Axiom, NeutroAxiom, AntiAxiom: for example

Comparably for an adage, characterized on a given set, blessed with some operation(s). At the point when we characterize an aphorism on a given set, it doesn't consequently imply that the maxim is valid for every one of set's components. We have three prospects once more: 1) The saying is valid for every one of set's components (absolutely obvious) [degree of truth $T = 1$] (as in traditional arithmetical designs; this is an old style Axiom). Neutrosophically we compose: Axiom(1,0,0). 2) The aphorism if valid for certain components [degree of truth T], uncertain for different components [degree of indeterminacy I], and misleading for different components [degree of AntiAxiom(0,0,1)]. He established the NeutroAlgebras in light of the fact that the regulations don't similarly apply to all residents, so they are NeutroLaws. A few regulations apply somewhat to a classification of residents, and to an alternate degree to another classification. Quite often there are exemptions for the law! In that capacity, there is an American folkloric joke: All individuals are conceived equivalent, yet certain individuals are more equivalent than others. A couple of models: - There are influential individuals that are over the regulations, and others that advantage of insusceptibility regarding the regulations. - For instance, in the official courtroom, special individuals benefit from preferred protection legal counselors over the lower classes, so they might get a lighter sentence. - The Double Standard are generally spread: some guideline applies to certain individuals, however not to other people. To summarize: The point of NeutroAlgebra is that this is realistic (i.e. in our every day life the laws (axioms, regulations) do NOT apply in the same degree to all elements (people) but in different degrees. So, the classical algebraic structures are idealistic (not real) since the axioms (regulations) apply to all elements in the same degree to each element.

6. Almost a conclusion

As we are not yet specialists in studying this philosophy of complex numbers and complex geometry...let us just make a remark that this problem shall be discussed more openly among mathematicians and also physicists. These problems shall include whether the notion of Minkowski metric do exist in nature, or is it just fantasy? We mean:

$$ds^2 = dx^2 + dy^2 + dz^2 + (ic.dt)^2 \quad (1)$$

From philosophic perspective, it can be shown that there is no way that time can be merged with space, and also including imaginary number only makes it worse. According to Kenneth Taylor, which can be paraphrased as follows: "Obviously, relativity is frequently and properly said to dismiss both outright space and outright time. In any case, dismissing outright reality actually doesn't exactly get us to the space-time continuum. To get to that objective, we want to discuss light. Light is, obviously, the quickest thing known to mankind." So, the essence of departure from Newtonian space concept, is that velocity of light is assumed to be the largest velocity in nature, then on the ground, Minkowskian metric obtains its justification. Moreover, physical properties of space were denied, and in turn, they tried to introduce certain properties into the notion of spacetime. But if we think rather deeply, we will realize that there is no physical property whatsoever that can be assigned to spacetime metric. With all our respect to those theoretical physics luminaries who coined term such as "geometro-dynamics," let us argue as follows: Are we sure that geometro-dynamics is a valid term? Let us, for the sake of argument, draw a triangle. It is a geometric shape, right? Now, watch and observe the triangle for let say, 4 days, will it move an inch? Definitely not, because a triangle is a drawing, not a physical object. Therefore, we can conclude: "The notion of geometro-dynamics is merely *contradictio in terminus*." Therefore, it is understandable that the late John Wheeler himself, who coined term geometro-dynamics, later on abandoned many features of that approach. See J. Stachel's article: The rise and fall of Geometro-dynamics,

and also W. Misner. [13–15] We can recall too, that there is senior professor in Germany who was brought to justice a few years ago, and then he admitted that there is no way to measure “spacetime curvature.” This case file can be found in internet, related to LIGO project. Actually, there are several criticisms on that observation project [16]. Of course, by mentioning all of these, it does not mean that we are right all along, but let us face the truth as it is. Physics is more related to solid experimental evidences, not just made of tower of sand. As we wrote in introduction, with all our respect to all our former professors (at IGC, and also around many countries) who are so kind to teach many things (especially to one of us, VC), allow us to put these algebraic structures into a deeper look: whether such complex numbers do exist, let alone their extensions such as quaternion, biquaternion, Clifford algebra etc. Nonetheless, there is also possibility that the 6D geometry, or more exactly (3D, symmetric) can be found in nature, especially in quasicrystalline structure. Therefore all we can say is that may be this is still useful, although these 6D geometry may be seen more like a mathematical artefact. Zlabys et al wrote their abstract as follows: “Here we show that time and space crystalline structures can be combined together and even six-dimensional time-space lattices can be realized. As an example, we demonstrate that such time-space crystalline structures can reveal the six-dimensional quantum Hall effect quantified by the third Chern number.” [3] All in all, if there is any of you who can measure precisely “spacetime curvature”, you can contact us by email: victorchristianto@gmail.com and smarand@unm.edu.

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Continuum Hypothesis Revisited: From Cantor, to Godel, then to Discrete Cellular Space model

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Received: 18 Jan 2022

Accepted: 23 July 2022

Published Online: 31 Aug 2022

Abstract: This article is a follow-up to our previous article (cf. Octagon Mathematical Magazine, 2018). As we know, Continuum Hypothesis is one unresolved problem in mathematics, and it is likely to affect physics theories too, once a reasonable solution has been achieved. The Continuum Hypothesis can be stated as follows: if you are given a line with an infinite set of points marked out on it, then just two things can happen: either the set is countable, or it has as many elements as the whole line. There is no third infinity between the two (cf. Juliette Kennedy’s article, IAS, 2011, <https://www.ias.edu/ideas/2011/kennedy-continuum-hypothesis>). Here we review CH from Godel view etc, then we also review Smarandache’s partially denying of axioms, and then we will review our proposed Discrete Cellular Space.

Key words: Continuum Hypothesis, Discrete Cellular Space, Godel’s view on Continuum Hypothesis, quasicrystalline

1. Introduction

The word ‘geometry’ comes from the Greek words ‘geo’, which means the ‘earth’, and ‘metrein’, signifying ‘to gauge’. Math seems to have started from issues that emerged for estimating land. This part of math was contemplated in different structures in each old civilisation, be it in Egypt, Babylonia, China, India, Greece, the Incas, and so forth. Individuals of those ancient civilisations dealt with a few useful issues which required the improvement of math in different ways. Euclidean Geometry is the investigation of Geometry dependent on definitions, vague terms (such as points, line and plane) and the presumptions of the mathematician Euclid (330 BC). As historians of mathematics told us, it was in 1900 at the Paris conference that Hilbert presented his list of unsolved mathematical problems; as number one on that list, which was entitled *Mathematische Probleme*, stands the continuum problem, already conjectured by Cantor.[1] The famous Poincaré’s remark to be mentioned in Russell’s classic book, *The Principles of Mathematics* (Russell 1937, p.347), and it can be paraphrased as follows: “The continuum consequently considered is only an assortment of people organized in a specific request, endless in number, it is valid, yet outside to one another. This isn’t the customary idea, where there should be, between the components of the continuum, a kind of personal bond which makes an entire of them, in which the point isn’t preceding the line, yet the line direct.”[3] In Godel’s article, he once wrote, that “Cantor’s continuum problem is simply the question: How many points are there in a straight line in Euclidean space?”[2] According to Koellner (2011): “The Continuum Hypothesis is one of the most central open problems in set theory, one that is significant for both numerical and philosophical reasons. The issue

©Asia Matematika, DOI: [10.5281/zenodo.7120843](https://doi.org/10.5281/zenodo.7120843)

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really emerged with the introduction of set hypothesis; for sure, in many regards it animated the introduction of set hypothesis. In 1874 Cantor had shown that there is a balanced correspondence between the regular numbers and the mathematical numbers. All the more shockingly, he showed that there is nobody to-one correspondence between the regular numbers and the genuine numbers. Taking the presence of a coordinated correspondence as a measure for when two sets have a similar size (something he unquestionably did by 1878), this outcome shows that there is more than one degree of limitlessness and subsequently brought forth the higher endless in science.”[6] As we see that this is unsolved problem in mathematics, and even according to Hamkins (2015), a dream solution to this problem is unattainable. See also Cohen (1953), Feferman (2011). Why does this problem matter to physics sciences? Because as we know, theoretical physics have become so abstract but yet many more problems are unresolved, as Sabine Hossenfelder wrote in her book, *Lost in Math* (2019). As an education expert puts it: ”it is such that we are as confused as ever, only at a much higher level.” Therefore one of things needed to review, is to check if there is problem in the very corner stone of geometry itself, i.e. Euclid axioms. In the following section, let us discuss a possible path to find out if this CH problem is still within our reach. First of all, let us review Euclid’s five axioms and other related definitions.

2. Euclid’s five axioms and several definitions

The followings are the axioms of standard Euclidean Geometry. They show up toward the beginning of Book I of *The Elements* by Euclid. Propose 1: A straight line fragment can be drawn joining any two focuses. Hypothesize 2: Any straight line fragment can be stretched out endlessly to shape a straight line. Propose 3: Given any line portion, a circle can be drawn involving the fragment as the range with one endpoint as the middle. Hypothesize 4: All right points are consistent. Propose 5: If a straight line falling on two straight lines make the inside points on a similar side under two right points, the two straight lines, whenever delivered endlessly, meet on that side on which are the points not exactly the two right points. Then, let us audit a portion of Euclid’s Book 1 Definitions. (1). A point is what has no part. This can be perceived to imply that a point is something that can’t be partitioned into anything more modest. (2). A line is breadthless length. A line is a develop that has no thickness. It very well may be considered as a constant progression of focuses. (3). A straight line is a line which lies equally with the focuses on itself. (4). A plane point is the tendency to each other of two lines in a plane which meet each other and don’t lie in an orderly fashion.

3. Motivation of this study

Quite some time ago, these writers began a small book dedicated to discretization and quantization in astrophysics. It becomes clear, that discretization of space requires deeper understanding. Later on, we put forth some ideas which appeared later in *Octogon Mathematical Magazine* (2018). Around a year later, we got involved in another book project, which several contributing physicist fellows. Among some of us, and also with other contributors, discussion arises on several unsolved problems in mathematics, including continuum problem, and whether theoretical physicists have concern on that issue [44]. It is clear, that once this problem in underpinning of mathematics has been solved, then the implications will be profound to many diverse area of physics fields. One hint to find the solution to this Continuum Hypothesis problem is: The basic idea is NOT to get number correct, BUT to get the ideas correct. Mathematics is not solving equations! It is understanding.

4. Previous efforts to solve Continuum Hypothesis

In this section, let us review five existing attempts to solve CH problem. For an introduction, see for example [47], Let us discuss one by one, as follows: (a) Cantor's set theory. In 1874, Georg Cantor, then, at that point, a youthful teacher at Halle University, distributed a four-page note in Crelle's Journal, showing that the arrangement of mathematical numbers is countable, and the arrangement of genuine numbers uncountable. Cantor, in his attempt to build Cardinal chain reached the first continuum Cardinal. The first continuum Cardinal was at the limit of the chain of finite Cardinals. As he kept going up constructing Cardinal chain, he reached the largest Cardinal C . Then a shock wave hit him. He discovered that $C+1$ is a Cardinal such that:

$$C \leq C + 1. \quad (1)$$

When Cantor announced this shocking result which proved that his set theory is inconsistent, Russell who badly needed Cantor's set theory for his Principia Mathematica was in shock. His life time project was demolished. In his desperate attempt to save Cantor's set theory, Russell ended up with a simplest proof for the inconsistency of Cantor's set theory, aka Russell's paradox. As a desperate patch up solution to this shocking problem, ZF and von Neumann developed an axiomatic set theory. Though we still have not found an inconsistency proof for this new set theory, and most of us have already given up on this, all attempts to show that this formal set theory is consistent failed. To make the matter even more discouraging, Paul Cohen showed in his PhD, that the Continuum hypothesis which is the formal version of Cantor's first continuum set is independent upon the ZF. Disappointed by his own discovery, Cohen left set theory and moved to mathematical analysis. Under this discouraging situation, the only bright light was the result which showed that ZF minus (what ever) one axiom is always consistent. Practically minded mathematicians say this is enough. Conclusion: Cantor set theory is inconsistent. Cantor himself proved it. He was the first. Then Russel presented the simple most proof which goes as follows: Let $R = \{x : x \text{ not in } x\}$. If $R \in R$, then $R \text{ not in } R$. If $R \text{ not in } R$ then $R \in R$. Cantor's original proof used an infinite chain of cardinals. Russell's proof is simple most. But they say the same thing: Set theory of Cantor is inconsistent. So, on mathematics side, things are not in good shape and we are seriously concerned about the implication of this to theoretical physics. See also Rede [41]. (b) Dedekind cut theorem. From 1872 onwards, Cantor compared with Richard Dedekind (1831- 1916), who was 14 years his senior and had quite recently advanced the meaning of Dedekind cuts of genuine numbers. Before that, Dedekind proposed an answer, called Dedekind cut. A Dedekind cut is a fragment of the plan of normal numbers into two subsets A_n and B , so much that any part of A_n isn't precisely any part of B ; Dedekind displayed that the plan of cuts acts unequivocally as one would guess that the arrangement of genuine numbers ought to act, with the cut (A,B) tending to the novel veritable number between A moreover B . Dedekind slice would in this manner have the option to be used to foster authentic numbers.[37] Dedekind looked to draw motivation from specific properties of the line, when we mean to place in correspondence and arrange the arrangement of genuine numbers on it. The property of coherence of the straight line introduces itself as a mathematical, perceptual and subjective person that Dedekind tried to foster a conventional treatment.[40] Crosby concludes Dedekind method with remark, which can be paraphrased as follows: "On Richard Dedekind's independent endeavor to exhibit the progression of the genuine numbers utilizing just arithmetical thinking. It is worth taking note of that his meaning of progression didn't go unchallenged by other numerical personalities of his time. The most noticeable elective perspective cases that a continuum can't be compositional in nature. That is, as Dedekind's genuine numbers are made out of discrete components, they can't be persistent. Paul du Bois-Reymond, a German mathematician who was alive at the point when "Progression and Irrational Numbers" was distributed, called the decrease of a continuum to discrete components "a program whose philosophical cogency,

and surprisingly legitimate consistency, had been tested many occasions throughout the long term" [39]. Such a remark can be viewed as early indication that the solution of CH problem shall be found in redefining what is "discreteness." (c) Godel's restatement of the problem. Godel gave a restatement of CH problem, which can be paraphrased as follows: "This shortage of results, even with regards to the most key inquiries in this field, might be because of some degree to simply numerical troubles. ... This negative mentality towards Cantor's set hypothesis, nonetheless, is in no way, shape or form a fundamental result of a nearer assessment of its establishments, yet at the same just the after effect of specific philosophical originations of the idea of math, which concede numerical items just to the degree wherein they are interpretable as acts and developments of our own brain." [38] (d) Woodin's recent result. A review of Woodin's result has been given by Dehornoy, including his conjecture: "Conjecture 1 (Woodin, 1999). Every set theory that is compatible with the existence of large cardinals and makes the properties of sets with hereditary cardinalityunder forcing implies that the Continuum Hypothesis be false." [42] (e) Lakoff & Nunez's cognitive function approach. In our interpretation, Lakoff & Nunez's approach is the closest to Godel's remark: "wherein they are (or alternately are accepted to be) interpretable as acts and developments of our own brain." Therefore, let us see where the problem began. Firstly, let us quote from Robinson, which can be paraphrased as follows: "Concerning the establishment of science, my position (assessment) depends on the accompanying two fundamental standards: (1) No matter what an importance of words is utilized, endless sets don't exist. (They do not exist by and by or in principle). All the more explicitly, any assertion on endless sets is just inane. (2) However, we should in any case direct numerical works and exercises not surprisingly. In other words, when we work, we should in any case regard endless sets as though they really existed." [43] Such a conclusion shall be startling, indicating that the very notion of infinite sets etc. do not exist at all, except in the human mind. Lakoff & Nunez make it more clear in preface in their book, which can be paraphrased as follows: "How would we see such fundamental ideas as endlessness, zero, lines, focuses, and sets utilizing our ordinary theoretical device? How are we to figure out numerical thoughts that, to the fledgling, are paradoxical—thoughts like space-filling bends, little numbers, the point at in-limit, and non-very much established sets (i.e., sets that "contain themselves" as individuals)?" [23]. It becomes more clear that such an alteration from daily experience with "line segment" began with Descartes. Lakoff & Nunez wrote in chapter 12 in their book: "Euclid characterized a surface as "that which has length and broadness just," a line as "breadthless length," and a point as "that which has no part." Euclid utilized the customary idea of a come up short on: A surface needs thickness, a line needs expansiveness also thickness, and a point (which is comprised of no skillet) comes up short on these." [23]p. 265]. Moreover, they conclude: "Space has been conceptualized in two altogether different ways in the historical backdrop of math. Before the mid-nineteenth century, space was conceptualized as the vast majority ordinarily consider it-in particular, as normally consistent. Here is how we as a whole contemplate space in daily existence. ... Descartes' creation of logical calculation changed science for eternity. His focal similitude, Numbers Are Points on a Line (see Case Study 1), permitted one to conceptualize number juggling and polynomial math in mathematical terms and to envision capacities and logarithmic conditions in spatial terms. The reasonable mix of the source and target areas of this illustration allows us to move to and fro conceptually among numbers and focuses on a line." [23] [p. 260] So we know, why for most mathematicians, they assign real number line to define finite line segment, which actually do not exist in reality. The aforementioned discussions can be found helpful in order to see where we get lost.

5. On theorem of partially denying of axioms and known attempts to solve Continuum Hypothesis

Quite some time ago, Smarandache when he was young, introduced partial denial of axiom, especially considering Euclid's fifth axiom. Smarandache (b. 1954) partially negated Euclid's V postulate: "There exist straight lines and exterior points to them such that from those exterior points one can construct to the given straight lines: 1. only one parallel – in a certain zone of the geometric space [therefore, here functions the Euclidean geometry]; 2. more parallels, but in a finite number – in another space zone; 3. an infinite number of parallels, but numerable. [7] We can make the following remark on partial denying of axioms, which can be paraphrased as follows: "While the Non-Euclidean Geometries came about because of the complete invalidation of only one explicit maxim (Euclid's Fifth Postulate), the AntiGeometry results from the all out nullification of any adage and even of additional sayings from any mathematical proverbial framework (Euclid's, Hilbert's, and so on), and the NeutroAxiom results from the halfway refutation of at least one aphorisms [and no all out nullification of no axiom] from any mathematical aphoristic framework." [46] Now, we can say that among existing attempts to solve Continuum Hypothesis include: Dedekind cuts, algorithm approach etc., of which none has achieved to solve CH problem. In our view, the deep root cause why this problem has not been solved until today is: to remind you the aforementioned remark by Godel, i.e. the simplest formulation of the problem can be restated as follows: "How many points are there in a straight line in Euclidean space?" That is, according to principle of parsimony, we don't have to complicate the arguments beyond what is necessary, such as what Cantor did (while surely we appreciate his inventive transfinite sets etc.). In other words, we shall consider continuum hypothesis as it is from a more realistic perspective, not to do with real numbers or infinite numbers. To assert a finite length of line segment with real numbers only lead us to complicated arguments.

6. Discrete Cellular Space and its implications

In this section, allow us to review in a more accessible way, our arguments as we presented in Octogon Mathematical Magazine (2018). From previous section, we can recall that Definition of a point is as follows: (1). A point is that which has no part. In other words, that can cause serious contradiction. Let us start that we assume that a line segment is composed of infinite number of points, but a point is defined as "circle with zero diameter." By definition, a circle is the arrangement of all places in a plane that are equidistant from a given point called the focal point of the circle. We utilize the image to address a circle. The line section from the focal point of the circle to any point on the circle is a sweep of the circle. Furthermore, by meaning of a circle, all radii have a similar length. We likewise utilize the term span to mean the length of a sweep of the circle. That would imply:

$$"o + o + o + \dots \text{ ad infinitum} = \text{finite length of line segment.}" \quad (2)$$

Of course, that is confusing and contradictory, because by definition, a series of infinite number of zeroes never become a finite length. In our perspective, that is nothing to do with real numbers, but it is required to revisit our definition of what a point is. A more realistic definition can be given as follows: a point is defined as "a circle with small but non-zero diameter cell, let say we call it, z." From that starting point, we can arrive to a more palatable argument, i.e.:

$$"z + z + z + \dots \text{ ad infinitum} = \text{finite length of line segment.}" \quad (3)$$

Therefore we arrive to a plausible solution to continuum hypothesis, that space is composed of Discrete Cells; that is why we call it Discrete Cellular Space hypothesis. While for some mathematician readers, that

proposed solution may be found too pragmatics, we suppose that for many physics sciences, astrophysics etc., that solution shall be sufficient "for all practical purposes" – provided we are allowed to use that popular phrase for physicists. QED. With regards to Smarandache's aforementioned theorem, the proposed DCS model do not really make use of such a partial denial of axiom, except just a redefinition and clarification of the first axiom of Euclid. (Postscript note: In Sm. Hybrid Geometries, an axiom may be denied 100 percent but in different ways (see a book-chapter by E. Gonzalez), for example: the 5-th postulate of Euclid is denied as: a) there are lines and exterior points such that there is no parallel to the lines; b) there are lines and points such that there are many parallels to the points. For further reading on Smarandache geometries, see: <http://fs.unm.edu/Geometries.htm>). Nonetheless, his theorem of partially deny an axiom can be viewed as a guide, i.e. we can find out what happens if we relax Euclidean axioms one by one. Implications may be found in cosmology model, as we know there is Lindquist-Wheeler model, or Conrad Ranzan's cellular universe [10], and also foam-like model of the Universe [11]. What's more interesting here is that recently one of these authors communicated with Prof. E. Panarella, from Physics Essays journal, where we discuss a paper on discretization [12]. We suggest that it may be possible to extend further our DCS model to be more linked to on-going research in quantum gravity. See for instance Friedel-Livine, who stated which can be paraphrased as follows: "... Refining our depiction of the 3d calculation, we supporter to consider each 3d cells as air pockets, implying that we will portray the 3d math of every cells as the condition of the 2d calculation of its limit. Then, at that point, the 3d cells are stuck along shared limit surfaces and consistency conditions transform into matching imperatives between the two portrayals of the math of the limit according to the viewpoint of the two 3d cells sharing it. This image prompts 3d calculation as an organizations of air pockets." [13] This seems very interesting as well as workable approach, to find connection between DCS hypothesis and such network bubble, related to 3D cellular structure. Moreover, such a model of network bubble can be connected also to Wheeler's foam gravity model, which is composed of crystals, as David T. Crouse remarks: "John Wheeler's quantum foam such that the foam becomes a gravity crystal permeating all space and producing measurable inertial anomalies of astronomical bodies." [13] Nonetheless, allow us to remind fellow physicists to keep working in the above 3D cells, as they lead to direct connection with 3D crystalline structure as we will discuss as follows.

7. Discussion A: Remark on philosophical aspects

In this section, we will discuss several aspects which may be asked by readers. First of all, it is common to assert a finite length of line segment with real numbers only lead us to complicated arguments; it is called "real number line." (see for instance Scott [27]). But as we all know, that is only perceived by human cognition, in particular in a mathematician's cognitive process. As Lakoff and Nunez put it in preface of their book: "We discovered that it did: What is called the real-number line is not a line as most people understand it. What is called the continuum is not continuous in the ordinary sense of the term." [23] Nunez also wrote on definition of point, which can be paraphrased as follows: "... a point, which is the most straightforward substance in Euclidean math can't be really seen. A point, as characterized by Euclid is a dimensionless element, a substance that has just area however no expansion. No super-magnifying instrument can at any point permit us to see a point in fact. A point, with its accuracy and clear character, is a romanticized conceptual element." [24, 25] Therefore, the aforementioned arguments are essentially to alter the notion of "real number line" into a natural meaning of a line segment, composed of circles with small but finite cells. Now, let us discuss on method, we use a direct method by redefining the meaning of point, because that approach has nearest correspondence with our daily experience, as we argue in [28]. That particular direct approach may be favorable to physicists. While

we do not wish to compare with others, we can mention difference between Landau and de Gennes, which can be paraphrased as follows: "The style of Landau was to go to the core of the issue, make not many yet significant suppositions, and infer apparently by wizardry a few vigorous outcomes. de Gennes' methodology bore in excess of a passing likeness to that of Landau." [29] And one more note, we can mention that there are other quite similar hypothesis with ours, for instance by Y. Breck, who argue for several postulates: "Postulate 1. (Discreteness): Space is discrete and composed of the underlying elementary units. The resulting discrete structure can be geometrically represented as a graph, network, or lattice (see Figure 1). The graph does not exist in space; rather, the graph itself is space." See Breck [30]. While it seems to correspond with our DCS, Breck does not consider the cellular structure of 3D space itself.

8. Discussion B: Remark on a few mathematical aspects

A German mathematician/Physicist Riemann in the mid 19th century managed to articulate the concept of limit using what is now called "- method" and manage to articulate the concept of $\lim_{x \rightarrow a} f(x)$ as :

$$\lim_{x \rightarrow a} f(x) = b \text{ (} > 0 \text{)} \text{ (} > \ddot{0} \text{)} \text{ (} [|x - a| < |f(x) - b| < \text{)]} \tag{4}$$

With this limit concept Riemann obtained the instantaneous change of rate of a function $f(x)$ as follows:

$$f'(x) = \lim_{h \rightarrow 0} ((f(x+h) - f(x))/h) \tag{5}$$

In physics, we represent a motion as a function $f(t)$ from time t to locations. Then clearly by $f'(t)$ we mean the instantaneous speed at t . We can define the acceleration of $f(t)$ at t as $f''(t)$. This well understood definition of the speed of $f(x)$ at time x as $f'(x)$ has been rather thoughtlessly accepted. Mathematics and physics are very different disciplines and we can not just adopt mathematics to describe physical reality. This is to say there is a little more going on in physics than in mathematics which is philosophically obvious because mathematics is a generalization of physics. Lack of philosophical understanding everywhere in physics has been slowing down the development of physics in many places. We know that "time" never reverses, it is an autonomous process which advances "without" any interferes, we must have very different mathematics for physics. Mathematics can not handle physics. Mathematics and physics are based upon totally different philosophies despite apparent similarity. Few physicists understand this difference. This is how mathematics was wrongly used in physics creating serious problems. Many mathematicians rightly think that as mathematics is more general than physics, we must be more careful when we use mathematics to describe physics. It is unfortunate that the pride of the King of Science is so high that there is little hope in communicating with physicists on these serious issues. Let us be more specific on this issue. the ϵ - δ definition of $f'(x)$ has nothing to do with physics. This definition came from Cauchy-Riemann. Neither of them are philosophers nor physicists. They are just bloody articulate mathematicians who did not understand real world. For physicists,

$$f'(x) = \lim_{h \rightarrow 0} ((f(x+h) - f(x))/h) \tag{6}$$

does not mean

$$\lim_{x \rightarrow a} f(x) = b \text{ (} > 0 \text{)} \text{ (} > \ddot{0} \text{)} \text{ (} [|x - a| < |f(x) - b| < \text{)]} \tag{7}$$

at all. For physicists $\lim_{x \rightarrow a}$ is a physical process of x approaching a on a real line where x and a are geometric points. It was the grandeur complex of grand mathematicians like Cauchy and Riemann that they "improved" (or "articulate") the limit concept of $\lim_{x \rightarrow a} f(x)$. Certainly it was "improved" conceptually up in the air and we still have no idea how this abstract concept of $\lim_{x \rightarrow a}$ has anything to do with physics. All of this conflict created a troubled dichotomy of pure mathematics and mathematics for real world. Certainly this abstract mathematics produced many fancy "deep results" most of which were never ever used in real life. This grandeur-complex driven abstract mathematics in the end reached the grandest set theory of Cantor, which Cantor himself proved inconsistent. Recently a book was published entitled "Lost in Mathematics" [45]. This book was the complain on the role pure mathematics played in the modern development of physics. Starting with Maxwell's EM field theory, Einstein's relativity theory and Heisenberg- Schrödinger's quantum mechanics which produced the grandest fallacy of the "Ultimate Physics, most empirically verified theory in, namely Quantum Mechanics". It is unfortunate that the author (i.e. S. Hossenfelder) was not aware of the fatal errors of these legendary ultimate theories of physics which dominated physics world for almost 1.5 centuries. She was just complaining about the oppressive usage of these "advanced mathematics" in theoretical physics. As we said just above the situation is much worse. Basically none of these figures of fame of the last 1.5 century of theoretical physics understood the mathematics they used. All of it turned out to be just embarrassing mathematical jokes. Contrary and almost amusingly, none of these pure mathematicians who promoted this irrelevant mathematization of physics understood physics at all. So the comedy and the tragedy is that physicists did not understand mathematics they use and mathematicians who promote their highly questionable mathematical theories did not understand physics at all. Going back to mathematics and science: The problem we mentioned just above about, the concept of limit, mathematical v.s. physical, has a lot to do with what happened to pure mathematics at the turn of the 20th century where Cantorian set theory destroying the grand hope by many prominent mathematicians such as Russell, Frege etc. motivated some determined mathematicians to abandon the over generality of set theory and pure mathematics in general which is based upon the fake empire of set theory. In one end, determined constructivism mathematicians such as Kronecker and Barwise concluded that only under the restriction on mathematical constructions to comply with the Principle of Constructivity, rejecting any fancy abstract metaphysical constructions, we can build trustable consistent mathematical theories. This idea was purified in the form of what we mathematicians call Recursion Theory and its generalization in the form of "Numeration Theory" which was started and developed by Soviet Mathematicians such as Malcev and Ershov at The Academy of Science Novosibirsk. In the limited context of theoretical computer science, this theory was discussed among constructivism mathematicians. It is our current view that the only mathematics which is solidly grounded and trust worthy is this theory. The rest are rather up in the air fantasy dreaming world. We are proposing that a restriction similar to this is badly needed in theoretical physics too. The situation this field was in up until recently was as seriously confused as the pure mathematics of the late 19th century, if not more. The only difference is that thanks to the academic honesty of mathematicians, in mathematics these issues were openly discussed without any suppression.

9. Application 1. What is space? A new hypothesis of super-crystalline vacua

In this section, allow us to extend ideas in the aforementioned section on possibility that the space consists of discrete cells, to become cells composed of superconductor quasi-crystalline. We discuss some features of this model. It is known that continuum problem is a fundamental question in pure mathematics and also theoretical physics field: whether the space is discrete or continuous. As we argued before how plausible it is discrete cellular space (DCS) to solve CH problem. Now, we can extend further by assuming that the 3D space is composed

of network of dense-packed cells. That way the space system looks both as graph network as well as discrete cellular pattern. In this section, allow us to put forth a new hypothesis that the discrete cellular structure of space consists of cells of superconductor quasi-crystalline. That proposition can be viewed as an alternative to Finkelstein's old hypothesis of hypercrystalline vacua [15]. There are furthermore (cautiously aperiodic) quasiperiodic jewels for which a depiction in regards to a change of a central design or a course of action of no less than two establishments is either inappropriate or unfathomable. We fight that one should insinuate all such valuable stones as quasicrystals, paying little brain to their point-pack equity. The most notable model for such jewels is a quasiperiodic tiling, for instance, the prestigious Penrose tiling. One consumes space with "unit cells" or "tiles" such that keeps up long-range demand without periodicity, and produces an essentially discrete diffraction diagram. Unquestionably, quasiperiodic diamonds having balances that are unlawful for discontinuous jewels, for instance, the watched icosahedral, octagonal, decagonal, and dodecagonal valuable stones—can't be outlined by changing a secret periodic design with a comparable equilibrium, and are along these lines all quasicrystals. Quasiperiodic pearls with no-no equilibriums can be formed as a difference in a discontinuous design, yet that need not be what is going on.[16] Ongoing discovery proposes that semi translucent has superconductive stage in exceptionally low temperature.[17] Consider the possibility that the quasicrystalline model isn't in semiconductor solid...but a superconductor quasicrystalline. Maybe, we might refer to it as: "super-glasslike vacua speculation." Quasi-translucent strong is additionally great since it gets multiple aspects, which might be exceptionally important. This likewise would bring into an amicable view among Finkelstein and Penrose and some of Frank Tony Smith's examinations. The following thing to consider is a super-semi crystalline strong (SQC). In view of its "fractal properties," we can expect that the Superconductor Quasi-Crystalline (SQC) can stretch out down to the construction of room, like what Finkelstein visualized. The semi precious stone design of room might be made out of strong matter or delicate matter, of which its overall elements has been illustrated by Fan et al. [18] See also several discussions on new findings of natural quasicrystals in Nature [19–22]. It is worth to remark here, that the proposed super-crystalline model of 3D space resembles the dense-packed spheron model of the late Prof. Linus Pauling. Such a dense-packed spheres have been discussed by many mathematicians. Australian mathematician, Mahler, also once wrote on dense-packed sphere. The difference here is, the dense-packed crystalline model now to be hypothesised to form the 3D space itself.

It is also possible to consider 'crystalline symmetry' within those real-space; see for instance Song et al. [31–32]. While this extended hypothesis of super-quasi-crystal structure of 3D space seems rather weird, we are sure that this is one of the most plausible direction toward description of what the space is made of. More research is of course recommended.

10. Application 2: Direct Discrete Formulation of Field Laws

There are other applications on such discrete cell model, for instance Finite Cell Method has been suggested by Parvizian et al. [33]. But it seems the most promising application is the so-called "The Cell method for Direct Discrete Formulation of Field Laws" [34, 35]. See also a recent publication describing application of the Cell method in finite formulation of parallel computation. As Tonti wrote, which can be para-phrased as follows: "The quintessence of the technique is to straightforwardly give a discrete formulation of field laws, without utilizing and requiring a differential detailing. It is demonstrated that, for direct interjection, the firmness grid so got coincides with the one of the Finite Element Method" [34]. Moreover, Tonti describes: "On managing differential definitions, it is very regular to utilize coordinate frameworks. Despite what might be expected, a

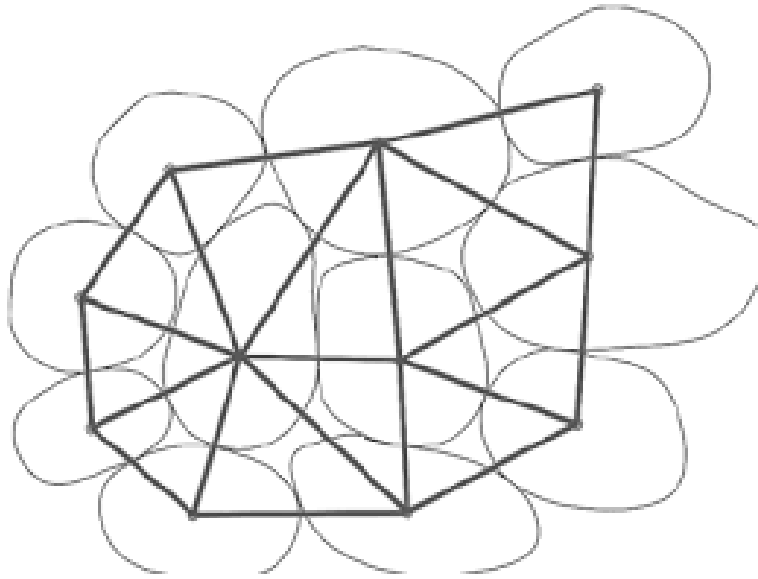


Figure 1. Discrete cellular model of 3D space

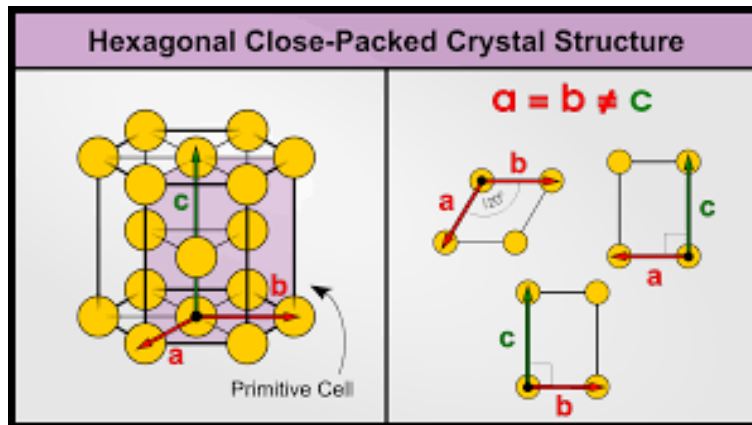


Figure 2. Hexagonal cellular close-packed crystal structure.

direct discrete definition manages worldwide factors, that are normally associated with limited sizes of spaces, and limited time spans, for example volumes, surfaces, lines, time spans just as focuses what's more moments. We will signify them as spatial and transient elements. Following the act of arithmetical geography, a branch of geography that utilizes cell buildings, the vertices, edges, faces what's more cells are considered as "cells" of aspect zero, one, two and three individually. In short they are signified as 0-cells, 1-cells, 2-cells and 3-cells. Likewise a cell complex isn't imagined as a bunch of little volumes yet as an assortment of cells of different aspects." [33] It can be expected that the Cell Method can be applied to various problems in sciences, given more availability of fast computers.

11. Concluding remarks

In this review article, we revisit our previous hypothesis called Discrete Cellular Space (Octogon, 2018), in order to answer the known unsolved problem, called Continuum Hypothesis. We believe that a tenable solution to this problem shall be found in close connection with empirical science, i.e. the notion of discrete cellular space, which can be attributed more to discrete mathematics, such as cellular automata modeling. In the last section, we gave an outline of extension of DCS hypothesis toward super-quasi-crystalline model of 3D space. While this extended hypothesis of super-quasi-crystal structure of 3D space seems rather weird, we are sure that this is one of the most plausible direction toward description of what the space is made of. All in all, allow us to close this article with a quote from Karl Popper: "For me, both philosophy and science lose all their attraction when they give up that pursuit [of knowledge and understanding of the world] – when they become specialisms and cease to see, and to wonder at, the riddles of our world. Specialization maybe a great temptation for the scientist. For the philosopher it is the mortal sin." (cf. Karl Popper, "The World of Parmenides.")

12. Acknowledgment

These authors wish to extend sincere gratitude to Prof. Akira Kanda, Robert Neil Boyd PhD. and Prof The Houw Liong PhD., for many insightful discussions. One of these authors (VC) found this old book by E. Kamke, particularly useful and recommended as an introduction to set theory, see E. Kamke, Theory of Sets, Dover Publ., 1950, url: <https://www.maa.org/press/maa-reviews/theory-of-sets>. Document history: version 1.0: 14th Dec. 2021.

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Interlude –

joint articles with Prof Florentin Smarandache, Robert Neil Boyd, etc.



Exploring the Historical Debates on Irrational Numbers Using Neutrosophic Logic as a Balance between Intuition and Rational

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Received: March 27, 2021; **Published:** May 25, 2021

Abstract

A short book by Dennis P. Allen, Jr, a senior mathematician, inspires this article, and henceforth it is dedicated to him. A good movie about S. Ramanujan, *The Man who knew Infinity*, also triggers this work. As a note, this is not a conventional math paper. Instead, its purpose is to dig deeper into how a mathematician or a scientist should deal with intuition and balance it with a logical thinking process. Literature exploration on important inventions in mathematics becomes the method of this study combined with analysis of Iain McGilchrist's theory and Wittgenstein's Philosophy of Language added with the Cognitive Language Theory. The findings show the absolutistic view of rationality or rational number will not suffice to give a holistic insight into reality. Such finding serves as a reminder concerning whom should be the Master and who should be the emissary in the path toward knowledge. Based on Neutrosophic Logic, the "intuilytics" which combines both parts of brain hemispheres might become the best contribute a holistic approach, something that hints that further exploration on the capacity of human brain or the essence of human beings is needed.

Keywords: *Irrational Numbers; Intuition; Mathematics; Right-Left Brain; Logico Philosophico; Cognitive Linguistics Analysis; Neutrosophic Logic; Philosophical-Theological View of Human Beings, Intuilytic*

Introduction

In the writing of Krishnaswami Alladi, he commented movie *The Man who knew Infinity*, which depicts a story on how Ramanujan, a great mathematician from India met with another great mathematician in Cambridge, Prof G. Hardy¹. The movie is more than just an exciting introduction to Ramanujan's remarkable invention of partition theorem, and also the number 1729 (discovery inspired by a taxi-cab number in London). It sharpens the contrasts between two significant figures in mathematics at their time. First is G. Hardy, who used a rigorous math-proving method, while the second, Ramanujan was intuitive in his approach.

While one can believe how things should work based on discovering new science and mathematics ideas from G. Hardy's famous book: *A Mathematician's Apology*, a more recent book by a psychiatrist Iain McGilchrist yields something fresh that might significantly shed light more holistically.

¹Krishnaswami Alladi, review of the movie on the mathematical genius ramanujan (unknown date).

Hardy's account on Hippasus story

A book was written by mathematician Dennis Allen, Jr, as a memoir of his long career in various diverse areas in science serves as this article point of departure [1]. Allen opens Chapter One of his book by quoting Thomas Phipp, Jr.'s remark on G. Hardy's book *A Mathematician's Apology*: "People like G.H. Hardy ('*A Mathematician's Apology*, Cambridge, 1969), who forms the chief role models for modern pure mathematicians, have charted just this regrettable course - with a cost to mathematics that can never be reckoned. Hardy incidentally uses the word 'significance' where I use 'fruitfulness'. His 'mathematician's apology' consists of dividing mathematics into two disjoint halves, one 'trivial' or 'useful' that he consigns to perdition, the other 'real', useless, and ...on both aesthetic and moral grounds. Writing in 1940, he says that 'No one has yet discovered any warlike purpose to be served by the theory of numbers or relativity', and by such reasoning placessubjects on the moral plane of the angels along with all 'real' mathematicians".

With those statements, such as the usefulness and real, beauty mathematics which serve for nothing, the 26-dimensional bosonic superstring theories or something to serve people in doing better to improve their life apparently, it is not just a problem of fancy mathematics is at stake. Those judgmental statements need deeper analysis as it brings forward absolute rationalism.

Succinctly, this article posits the following questions: which is real mathematics? Is it "something with all glory and fanciness," or those which is "closer to realism?" If one call "realism" helpful in doing mathematics, does it mean that intuition in developing new ideas can play roles in the equations? Then, the main question is whether logical processes are the only method that humans should rely on or another possibility co-exists. Those questions could be related to the exploration of the essence of human beings and their capacity in perceiving reality. The hypothesis of this article is that the absolutistic logical or rational approach is insufficient to depict reality as it needs an intuitive approach to yield a holistic result together. The hypothesis roots in view concerning the essence of human beings with the complex features in their brain capacities.

The method of this explorative study is literature exploration. Thus it belongs to a qualitative methodology. This short article's foci are as follows: first of all, the discussion will be on the classic story of Hippasus' invention: irrational numbers versus the famous Pythagoreans' approach. Then, the exploration of McGilchrist's concept of the Right and left brain will follow [3,14]. The last is the analysis on Logico Philosophico of Wittgenstein and Lakoff's Cognitive Linguistic Theory to shed light on the issues.

Literature analysis

What happened between hippasus and pythagoreans rationalism

In discussing G. Hardy's discovery of irrational numbers, Allen continues: "Further, Hardy's philosophy as set forth in his above mentioned book is fanciful in other ways too, as for example in his (with Wright) "*An Introduction to the Theory of Numbers*" (fourth edition) on page 39, he ascribes the proof that the square root of two is irrational-this being the first irrational number to be discovered - to Pythagoras".

Peter Gainsford also wrote: "There is a widespread notion that the discovery of irrational numbers was a thing of horror to the ancient Greeks, especially for the school of Pythagoras. Pythagoras is best known today for a famous theorem about right-angled triangles, but in antiquity, his significant contribution lies in the fact that he was a semi-legendary guru who founded a philosophical-religious sect in southern Italy. No writings by Pythagoras himself survive (and it is unlikely he ever wrote any). The records about the sect sound bizarre at times such as the Pythagoreans conveyed their teachings only in a cave or they had weirdly specific beliefs about reincarnation, and they venerated unexpected plants like fava beans and mallow. The vast majority of this information is reported very late and is almost certainly false; the bits that are true (whichever ones they are) are difficult to understand out of context".

Gainsford went on with a quote from Kleine's book, discussing Hippasus: "In 1972, the mathematician Morris Kline wrote in his book *Mathematical Thought from Ancient to Modern times* (vol. 1, p. 32): Numbers to the Pythagoreans meant whole numbers only....Actual fractions... were employed in commerce, but such commercial uses of arithmetic were outside the pale of Greek mathematics proper. Hence, the Pythagoreans were startled and disturbed by the discovery that some ratios -- for example, the ratio of the hypotenuse of an

isosceles right triangle to an arm or the ratio of a diagonal to a side of a square -- cannot be expressed by whole numbers....The discovery of incommensurable ratios is attributed to Hippasus of Metapontum (5th cent. B.C.). The Pythagoreans were supposed to have thrown Hippasus overboard for having produced an element in the universe which denied the Pythagorean doctrine that all phenomena in the universe can be reduced to whole numbers or their ratios".

In short, this bitter denial of irrational numbers for centuries can be attributed to a conviction or belief that all things should be rational, something that may be called Pythagoreanistic rationalism. Only in the last centuries that Georg Cantor and others investigated irrational numbers.

Weierstrass discussed the real numbers' completeness publicly in the lectures he gave at Berlin University in 1865. Weierstrass's construction of irrational numbers used infinite sets of positive rationals with bounded partial sums. In 1872, Kossak publicized this construction. Later, Pincherle in 1883 and Biermann in 1997 further expounded it. Weierstrass insisted on the foundational importance of the property that an infinite bounded set has a cluster point. Further, he added that a continuous function on a closed interval was bounded and attained its bounds. This statement is his invention.

The students of Weierstrass, notably H. A. Schwarz, who was a student in Berlin 1859-1861, and G. Cantor, a student in Berlin 1863-1866, recognized the importance of Weierstrass's ideas and sought to present a more accessible construction of irrational numbers. In 1872, both Cantor and Heine (to whom Schwarz had been and whom Cantor was, an assistant at Halle) published constructions of irrational numbers as rational Cauchy sequences.

Referring back to the question posed earlier in this article whether similar debate concerning intuition and logical processes in these modern days continue, regretfully, the answer is affirmative. The underlying reason behind such continuous debate brings this study to the concept of McGilchrist that might shed light on it.

Contribution of Iain McGilchrist's concept

After discussing the historical origin of the irrational number, the contribution of Iain McGilchrist needs attention. As a psychiatrist, his arguments on the Left and Right (divided) brain function mean that the left hemisphere, which usually processes in detailed manner any problem (logically), should not predominate the right brain, capturing holistic and spiritual process. McGilchrist might echo the words of Blaise Pascal, a great mathematician from 16th century: "The heart has its Logic, which reason cannot understand".

In that sense, the left brain function should and could not rule over the right brain. In other words, for example, in the spirituality, especially in worshipping God, the emissary who is the logical process should not predominate the human's heart as its Master. It should be the other way around.

This problem of choosing between Logic or going beyond Logic or rationality to go beyond rational thinking (intuition) can be traced back even to the classical history of mathematics. As discussed in the preceding section, Pythagoreans overly worshiped rationality and Logic in mathematics up to the point they could not absorb the shock when one of their disciples found an irrational number. The shock caused Pythagoreans to let the disciple get drowned in the sea. In short, the Pythagoreans cannot fathom the contribution of the human brain's right-sphere in pursuing truth.

Similarly, in history, people cannot easily accept several mathematics inventions, such as transcendental numbers, complex numbers, transfinite set, Cantor sets, or non-Diophantine arithmetics.

Philosophy of language and cognitive linguistic theory

In 1918, the Austrian philosopher Ludwig Wittgenstein wrote the *Tractatus Logico Philosophicus*. Its content identified the relationship between language and reality, even to formulate the boundaries of science. This work emerged because he was concerned about seeing the many languages of philosophy and science collide and confuse people.

In this first work, Wittgenstein makes seven propositions. One of which is: A proposition is a picture of reality: for if I understand a proposition, I know the situation that it represents. And I understand the proposition without having had its sense explained to me. A proposition shows its sense. A proposition shows how things stand if it is true. And says that they do so stand².

Thus, Wittgenstein stressed that the world is not an accumulation of things but facts. To clarify his proposition, he described the differences between fact, forms, and substance³. Further, deviating from Immanuel Kant, for Wittgenstein, the substance only exists in the space of the world. The world consists of interrelated facts. Thus, humans make an effort to map or depict it. Language, whether it is oral, mathematical, artistic, or other kinds of symbols, are a human's effort to make such maps or pictures, but it needs roles as it only serves as a projection of reality or the world⁴.

Wittgenstein also emphasizes that reality is complicated and ever-changing. Therefore, the effort to depict or map it needs more than the rational approach as human logic can be paradoxical⁵. Thus, mathematical language or symbol only serves essentially as symbols that interact and needs structure.

In the second phase of his thought, Wittgenstein realized that all language as the projection of reality exists in societal contexts. In his second work, *Philosophical Investigation*, he formulated a Language Game Theory. His work is often multi-interpretable. His concept is pervasive and all inclusive.

Some analysts view that Wittgenstein stayed away from any epistemological, metaphysical or theological discourse while other state that he included those dimensions in his writings implicitly, especially the essence of human beings which philosophically or theologically is loaded with the ability to create language⁶. Thus, he included theology which he coins as the grammar of God. Nevertheless, Wittgenstein often signified that he opened a room of intuition or irrationality in the process of language creation. It is the capacity of human beings rooted in their existence. The name Language Game indicates that there are rational rules in the game and intuitive ways and spontaneity. Later, in 1970, a further and applicable concept emerges with the philosophy of language from Wittgenstein as backbone.

The spread of the Cognitive Linguistics theory shows dynamic energy that contributes to various frameworks for studying a natural language. This theory explores the meaning side of language. Thus, linguistic form and later symbols in their various forms become the focus to delve as the expressions of meaning⁷. According to the framework, meaning is not something that exists in isolation, but it connects and integrates with the full spectrum of human experience-something that Wittgenstein has stated before.

The basic concepts of Cognitive Linguistics encompass conceptual metaphor, image schemas, mental spaces, construction grammar, prototypicality and radial sets. The founding fathers of this theory are George Lakoff and Mark Johnson⁸. Basically, the theory states that there are the concrete domain of a language and an abstract concept that the concrete domain signifies. Whatever aspects one purposely emphasizes or downplays in the concrete form indicate the abstract concepts. Thus, if one states that reality is like a dance, the dance as a concrete experience that most people know means there are aspects of movement, beauty, and artistic sense in that concrete domain. Dance as such will indicate that life also has movement, beauty, and artistic dimension. Therefore, mathematical language and logic is insufficient to describe the complexities and dynamic of the abstract concepts.

²Vsevolod Ladov, "Wittgenstein's Tractatus Logico-Philosophicus and a Hierarchical Approach to Solving Logical Paradoxes," *Filosofija, Sociologija* 30, no. 1 (2019): 4.021-4022, doi:10.6001/fil-soc.v30i1.3914.

³DAVID MILLER, "The Uniqueness of Atomic Facts in Wittgenstein's Tractatus," *Theoria* 43, no. 3 (1977): 174-85, doi:10.1111/j.1755-2567.1977.tb00786.x.

⁴Antonio Manuel Liz Gutiérrez, "ZALABARDO, José Luis (2015): Representation and Reality in Wittgenstein's Tractatus. Oxford: Oxford University Press," *Daímon*, no. 75 (2018), doi:10.6018/daimon/346951.

⁵Ladov, "Wittgenstein's Tractatus Logico-Philosophicus and a Hierarchical Approach to Solving Logical Paradoxes".

⁶Tim Labron, *Wittgenstein and Theology*, Continuum, 2009 <https://ndpr.nd.edu/reviews/wittgenstein-and-theology/>

⁷Dirk Geeraerts, *Cognitive Linguistics: Basic Readings*, Cognitive Linguistics: Basic Readings, 2008.

⁸G. Lakoff and M. Johnson, "Conceptual Metaphor in Everyday Language," in *Shaping Entrepreneurship Research* (Eds, Saras D. Sarasvathy, Nicholas Dew, Sankaran Venkatarama) (Abingdon on the Thames: Routledge, 2020), 475-504, doi:10.4324/9781315161921-21.

The role of neutrosophic logic

Any effort to depict or map life or reality as an abstract substance needs to use real life or concrete experience to arrive at such an understanding. To choose the concrete experience and to connect it with the abstract domain, one needs intuition.

As this work emphasizes [8]: “More “right brain” activity, based on direct experiences, leads to direct experiences of the Divine. Your “inner vision” (the “mind’s eye”) can help readers in this, and in many other ways. The inner vision is also the seat of many of the intuitive faculties, which are experientiable facts, not imaginings. That means the information obtained by the intuitive faculty is verifiable and reproducibly observable.

In order to do that, the Balanced Brain is the most efficacious way to function, as well as the most efficient, and the most comfortable.

To obtain the Balanced Brain, the person usually needs to spend a great deal of their spare time being receptive, being the “receiver”, being accepting and exploring, and not using the analytical intellect, but instead, spending time in the Now and in the Senses and Sensitivities. This is best enjoyed in Natural settings”.

Therefore, to reply to the question concerning how we can rectify the problem of overemphasizing rationality in mathematics and beyond, McGilchrist’s concept and Conceptual Linguistics theory can shed light. From Neutrosophic Logic viewpoint, this article recommends that a combination of both the intuitive aspect of the right hemisphere and the analytical or logical thinking processes of the human’s left brain will be more adequate in creating a holistic approach. The article proposes a term: intuilytics to capture the essence of the Balanced Brain [8].

With regards to scientific discovery processes, the proposed scheme as outlined above hint toward a slightly different approach compared to Popperian method or Kuhnian concept of paradigm change. See figure 1 below.

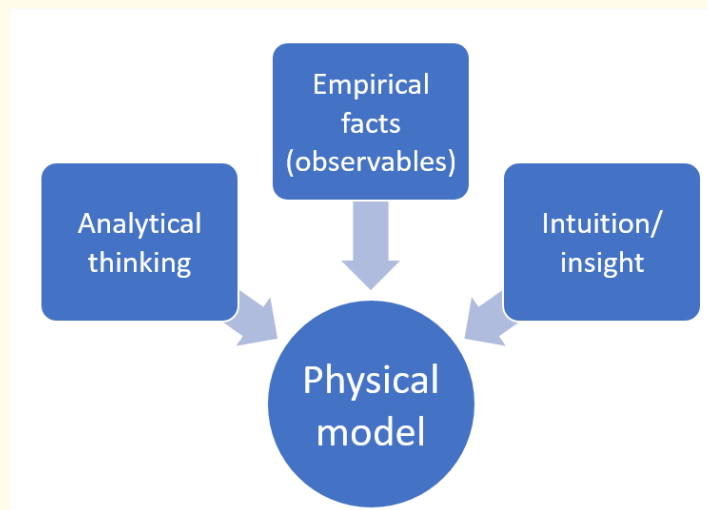


Figure 1: The role of intuition, analytical thinking, and empirical facts.

In other words, McGilchrist’s theme: the Master (right brain) governs the direction, and then the logical process keeps on finding the detailed answer or path indeed sheds light to the problem that this article struggles with.

Discussion: A few implications for definition of reality and consciousness

The aforementioned explanations concern how balanced brain functions are required for a realistic mathematics and sciences (may be called “evidence-based mathematics”).

Then, what is reality in this context? Yes, it seems that this is a simple question, but a complex topic to discuss. For some philosophers, there are real objects out there, but for others there are only perceived senses. Berkeley put it to the extreme that objective reality per se does not exist, everything can exist because of the mind which perceive it. This conviction has been put into succinct fiction story for instance by J.L. Borges, in his story: *Tlon, Uqbar, Orbis Tertius*⁹.

From Neutrosophic Logic perspective, whenever there are two opposite stances, then one can consider a middle ground or it can be called “dynamics of neutralities”. In the same way, between A= “everything are real objects” and B= “everything is perception,” we can find a middle ground, i.e. reality can be viewed as perceived objects, i.e. something which does exist independent of the observer, yet it must be perceived through human senses. In this way, this article rejects Mermin’s interpretation of quantum mechanics that “the moon is not there if nobody sees it”.

Such a discussion on the meaning of reality seems to be put aside into obscurity by recent trend in neuroscience. For instance it is known: “Modern neuroscience research generally shies away from such discussions, concentrating on what are called the neuronal correlates of consciousness, and actually their minimal number. All available evidence implicates neocortical tissue in generating feelings. On the other hand, brain activity originates in a broad set of cortical regions (parietal, occipital and temporal regions), the so-called posterior “hot zone””.

First of all, sensory perception needs consciousness, therefore, a rather pragmatic definition of what constitutes consciousness is needed. For instance: “The origin and nature of these experiences, sometimes referred to as qualia, have been a mystery from the earliest days of antiquity right up to the present. Many modern analytic philosophers of mind, most prominently perhaps Daniel Dennett of Tufts University, find the existence of consciousness such an intolerable affront to what they believe should be a meaningless universe of matter and the void that they declare it to be an illusion. That is, they either deny that qualia exist or argue that they can never be meaningfully studied by science”¹⁰.

Apart from such a qualia debate, a more “clinical” approach based on experiments has been presented as follows: “It has been speculated that frontal cortex and the extrastriate play a significant role in the expression of conscious awareness. The significance is not only because higher cognitive processing requires effective communication between frontal cortex and the posterior cortical areas that store domain specific information, but also because awareness requires construction of a multilevel symbolic interpretation of the information”¹¹.

Others argue that most aspects of self-awareness happens in cerebral cortex, although in some cases that may be not true: “Numerous neuroimaging studies have suggested that thinking about ourselves, recognizing images of ourselves, and reflecting on our thoughts and feelings-that is, different forms of self-awareness-all involve the cerebral cortex, the outermost, intricately wrinkled part of the brain. The fact that humans have a particularly large and wrinkly cerebral cortex relative to body size supposedly explains why we seem to be more self-aware than most other animals. But new evidence is casting doubt on this idea”¹².

⁹Jorge Luis Borges. *Tlon, Uqbar, Orbis Tertius*. Url: https://www.tlonprojects.org/content/6-about/_tuot-jorgeluisborges.pdf.

¹⁰Christof Koch, What is consciousness. *Nature*, May 2018. url: <https://www.nature.com/articles/d41586-018-05097-x>

¹¹R.D. Badgaiyan. Conscious Awareness and Brain processing. *Elements (Que)*. 2005; 3(3): 8-12. url: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3007594/>

¹²Ferris Jabr. Self-awareness with simple brain. *Scientific American*. Url: <https://www.scientificamerican.com/article/self-awareness-with-a-simple-brain/>

However, Ortinski and Meador argue of neuronal mechanism behind self-awareness¹³. Other emphasizes the role of thalamus in human consciousness¹⁴.

Last but not least, scientists from Max Planck Institute seem to figure out the seat of consciousness: “Scientists from the Max Planck Institute in Tübingen measured the activity of neurons in the brains of macaques while the animals observed images on a screen. The results show that neurons in one part of the frontal lobe of the cerebral cortex are active when the monkeys are aware of what they have seen. Therefore, this region of the brain appears to play a role in deciding which impressions reach our consciousness. Thus the content of consciousness is based in two different brain regions. The decision as to which sensory impressions will reach our consciousness is not made by a single region. Instead, neurons from different regions must cooperate for this purpose. With the help of the tests on the monkeys, it is possible to establish how consciousness arises. This knowledge could benefit people with impaired consciousness in the future”¹⁵.

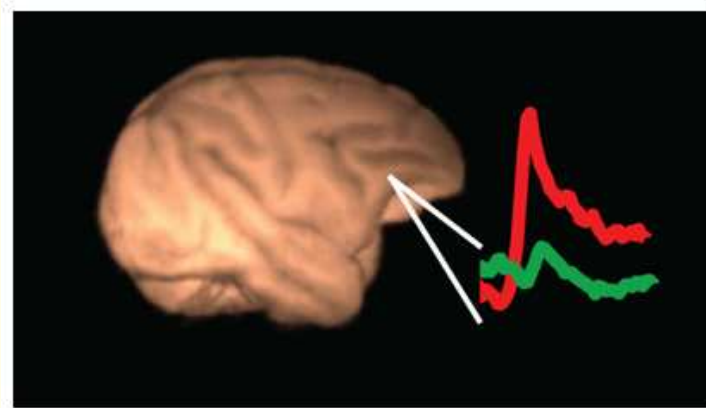


Figure 2: Neurons in the lateral prefrontal cortex represent the content of consciousness. The red trace depicts neural activity (source: MPI for Biological Cybernetics)*.

Concluding Remarks

Returning to the "Man Who Knew Infinity" movie, the lesson learned is as follow: Ramanujan led the discovery of the partition theorem, then he tried to find the proof with his logical processes. The four analyses yield a result that the rational number, symbol, or approach is insufficient by itself. Human beings need a space for intuition (something parallel to irrational numbers in the frame of Pythagorean's rationality doctrine) to pursue reality or truth without underestimating rational language contribution in mathematics or other domain of sciences. In the essence of human being lies richness and complexities that language and logics by itself cannot describe, especially by merely using rational number, symbol, or approach.

¹³P. Ortinski & K.J. Meador. Neuronal mechanism behind self-awareness. Neurological Review, 2004. url: <https://jamanetwork.com/journals/jamaneurology/fullarticle/786070>

¹⁴https://www.college-de-france.fr/media/en-stanislas-dehaene/UPL753837796513926252_Ward_4.pdf

¹⁵Original publication: Theofanis I. Panagiotaropoulos, Gustavo Deco, Vishal Kapoor & Nikos K. Logothetis Visual Consciousness in the Lateral Prefrontal Cortex, Neuron, Volume 74, Issue 5, 924-935, June 7th, 2012, 10.1016/j.neuron.2012.04.013

*Source: <https://www.mpg.de/8425992/seat-of-consciousness>; see also : https://www.mpg.de/5839948/conscious_perception

Therefore, to rectify the overemphasizing rationality in mathematics and beyond, four concepts in agreement propose a significant contribution. The McGilchrist's concept, Wittgenstein's view and the Conceptual Linguistics theory with the Neutrosophic approach recommend that a combination of both the intuitive aspect of the right hemisphere and the analytic or logical thinking processes of the left brain to create a holistic approach. The term can be: intuilytics. In other words, the Master (right brain) governs the direction, and then the logical process keeps on finding the detailed answer or paths.

Those theories implicitly signify the need of further journey to explore the essence of human beings with their brain capacities in dealing with reality that they perceive as mathematicians, philosophers, and theologians have been studying continuously.

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Version 4.0. 30th March 2020. 22:04

Version 5.0: 11th May 2021, pk. 20:48

Version 6.0 12th May 2021, pk. 8:38

VC, FS.

Acknowledgements

This article was partly inspired in particular by a short book by Dennis P. Allen, Jr, a senior mathematician, and henceforth it is dedicated to him, and partly a continuation of our previous article in this journal [8]. These authors also wish to extend sincere gratitude to Robert Neil Boyd, PhD, who always emphasizes the role of intuition and direct experience in understanding Nature. Special thanks go to Prof. Iwan Pranoto, a senior mathematics professor, to discuss G. Hardy's book. Special thanks also go to an anonymous reviewer for suggesting improvement.

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Volume 13 Issue 6 June 2021

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An Expanded Model of Unmatter from Neutrosophic Logic perspective: Towards Matter-Spirit Unity View

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Abstract

In Neutrosophic Logic, a basic assertion is that there are variations of about everything that we can measure; the variations surround three parameters called T, I, F (truth, indeterminacy, falsehood) which can take a range of values. A previous paper in IJNS, 2020 shortly reviews the links among aether and matter creation from the perspective of Neutrosophic Logic. In any case, matter creation process in nature stays a major puzzle for physicists, scientists and other science analysts. To this issue neutrosophic logic offers an answer: "unmatter." This paper examines an extended model of unmatter, to incorporate issue soul solidarity. So, neutrosophic logic may demonstrate helpful in offering goal to long standing clashes.

Keywords: Neutrosophic Logic, Physical Neutrosophy, aether, matter creation, unmatter, unparticle

1.Introduction

In accordance with the quick improvement of new part of basic science, for example neutrosophic logic, here we talk about possible use of NL hypothesis in the field of media transmission. See for ongoing papers: [31-35].

It is known that *matter creation* processes in nature remains a big mystery for physicists, biologists and other science researchers. To this problem neutrosophic logic offers a solution, i.e. *unmatter and unparticle*. See also previous papers on unmatter [21-27].

To put it plainly, neutrosophic logic may demonstrate helpful in offering goal to long standing clashes. See likewise our past papers on this issue. [1-2].

2. Matter creation processes and Grusenick experiment

Physicists all through numerous hundreds of years have bantered over the physical presence of aether medium. Since its origin by Isaac Newton, many accepted that it is required in light of the fact that in any case it is highly unlikely to clarify communication a good ways off in a vacuum space. We need mechanism of connection, of which has been called by different names, for example, quantum vacuum, zero point field, and so forth.

The celebrated Michelson-Morley tests were thought to give invalid outcome to aether speculation, and truly it was the premise of Einstein's STR. In any case, more up to date conversations demonstrated that the proof was fairly equivocal, from MM information itself. Particularly after Dayton Miller examinations of aether float were accounted for, an ever increasing number of information came to help aether speculation, albeit numerous physicists would lean toward another terms, for example, physical vacuum or superfluid vacuum. See [9-13].

In this regards, an experiment which is worthy to mention here is by Grusenick. Actually, his method is quite similar to Michelson-Morley experiment, except that he puts the interferometer *vertically*, which makes him able to detect the vertical aether inflow perpendicularly toward the surface of the Earth. Because only few papers discuss his result, let us give him space to tell in his own words, which can be paraphrased as follows:

"I have perused your information with much intrigue. Numerous individuals state that my development is precisely excessively flimsy, and that gravity impacts my contraption. So I assembled another. A man named Norbert Feist gave me better optical hardware to utilize. The new interferometer is just a steel plate with 189mm width and 8mm thick. The mirrors and the mirror holders are fabricated by Edmund, USA. Their shaft splitter anyway is precisely excessively insecure, so I utilized the one I made myself. The obstruction design is anticipated on a little bit of paper. During a 180° pivot with the new Interferometer, I can see on normal 1.5 impedance periphery shifts during the night and 2.0 during daytime. With the more established one, which you can find in the YouTube film, there are 11.0 movements around evening time and 11.5 if the trial is performed during daytime. In this way, the two Interferometers (the more seasoned and the more up to date one) show a distinction of 0.5 obstruction periphery shifts among day and night. I additionally might want to make reference to that a slight variety in the quality of the periphery design development happens during various days of the month. On Thursday 16.10.2009 at 24.00 o'clock, I could see a full 3.0 obstruction periphery shifts per 180° pivot (with the new interferometer). The zero point, where a stop of the example development occurs, is for the two interferometers at a similar position. There are two zero focuses in a 360° turn of the two interferometers when the shaft splitter is situated evenly to the world's surface. To all individuals who state that the main impact on the interferometer is gravity, I have a straightforward inquiry. Why would that be no zero point or stop of the periphery design development when the shaft splitter is in the vertical position? In the pillar splitter's vertical position, the mirrors and the mirror holders are evenly pushed by gravity. In any case, there is no zero point." [19]

According to Paul LaViolette, Grusenick's experiment proves the existence of ether and also his G-ons theory:

"Subquantum Kinetics requires that G etherons (G-ons) reliably diffuse into the Earth, driven by the incline in the Earth's 1/r gravitational conceivable field. The low G-on center inside the Earth, as differentiated and the Earth's space condition, develops considering the way that G-ons are foreseen to be conveyed at an all the more moderate rate in the unbiased issue inside the Earth as differentiated and enveloping space. ... Later

he built up an improved adjustment of the interferometer, showed as follows, and found a total fringe move of 1.5 to 2.0 as the mechanical gathering was turned in the vertical bearing. This value comes closer to that of U.S. investigator Frank Pearce who has played out a type of the Grusenick break down using a 1 inch thick stone square, as opposed to an aluminum board, for mounting the interferometer mirrors and who found a move of just around one half to one outskirts when the mechanical get together was turned in the vertical bearing.”[20]

Alternatively, let us assume that under certain conditions that aether can transform using Bose condensation process to become “*unmatter*”, a transition phase of material, which then it sublimates into matter (solid, gas, liquid). Unmatter can also be considered as “*pre-physical matter*.”

Summarizing our idea, it is depicted in the following block diagram [1]:

Aether → bose condensation → “unmatter” (pre-physical matter) → sublimation → ordinary matter/particle

Diagram 1. How aether becomes ordinary matter

Actually the term “unmatter” can be viewed as a solution from perspective of Neutrosophic Logic. A bit of history of unmatter term may be useful here:

“The word 'Unmatter' was instituted by one of us (F. Smarandache) and distributed in 2004 of every three papers regarding the matter. Unmatter is framed by mixes of issue and antimatter that bound together, or by long-extend blend of issue and antimatter shaping a pitifully coupled stage. The possibility of unparticle was first considered by F. Smarandache in 2004, 2005 and 2006, when he transferred a paper on CERN site and he distributed three papers about what he called 'unmatter', which is another type of issue framed by issue and antimatter that quandary together. Unmatter was presented with regards to 'neutrosophy' (Smarandache, 1995) and 'paradoxism' (Smarandache, 1980), which depend on blends of inverse substances 'An' and 'antiA' along with their neutralities 'neutA' that are in the middle.”¹ See also Christiano & Smarandache [17]. See also F. Smarandache et al.'s papers and books, [21-27].

In any case, in this paper, unmatter is considered as a progress state (pre-physical) from aether to get common particles, see also [1]. Moreover, superfluid model of dark matter has been discussed by some authors [6-7].

3. An expanded model of *unmatter*

In other side, it is known that astronomers find that only 1% of matter in the universe is observed, while 99% is undetected. That is why they call it the Hidden Universe.

¹ <http://fs.unm.edu/unmatter.htm>

Could it be that aether (may be in form of superfluid medium, a ka Mishin phase state) can be intermediate entity in neutrosophic sense?

In this line of thought, it is possible to come up with an expanded model of unmatter, as follows:

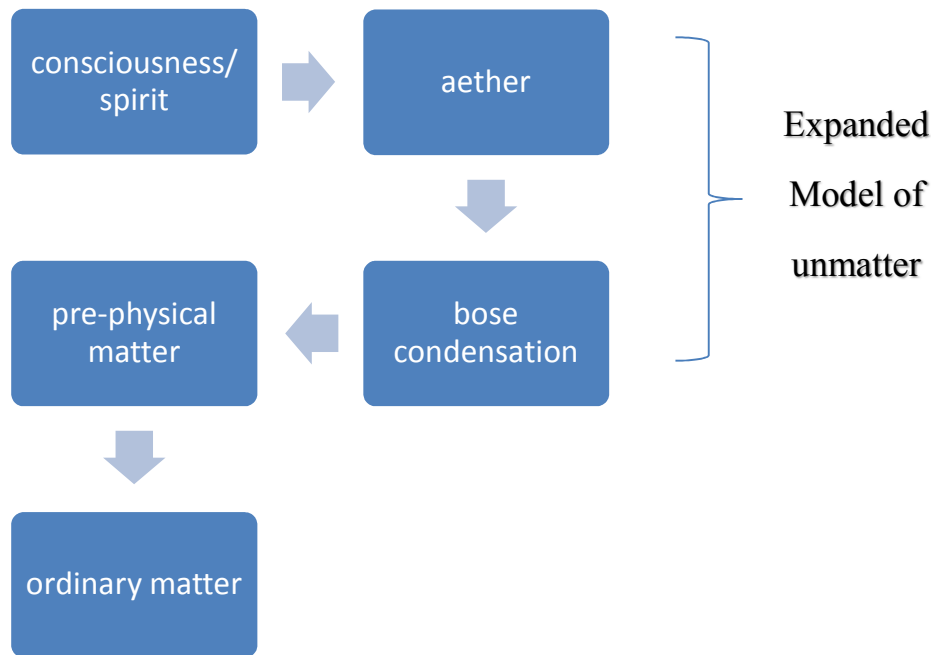


Diagram 2. An *expanded model of unmatter*

May be it is because the remaining entities are in the form of consciousness, aether and pre-physical matter. That is what can be called as “*expanded model of unmatter.*”

4. Remark on grid cells, bhutatmas, and consciousness

May be it is possible to come up with a model of how spirit affect matter and vice versa, which reminds us to papers by Ervard Moser et al. on grid cells, space cells etc.

We can add some remark as follows:

“Space cells and grid cells were first discussed by Alfvén (Nobel Prize in Physics) regarding plasma behaviors. I brought it out that these cells have, and evoke, personality traits in all who occupy the given cell, over large spans of time. Which means each star and each cell in the spaces between stars, has a unique personality.

The Russians did a research project that covered most of Asia, and all of Europe, and determined that each cell contains life forms plants animals birds insects fish, and so on, that are unique to that specific cell, and that the people who are native to a given cell have similar personality traits and behaviors unlike the inhabitants of other cells.

The personality of the land of a given cell produces an ambient "personality field" and a unique "magic" that can be learned and used by the inhabitants as a source of benefits which are specific to that cell.

These personality cells are produced by the aether energy-information contents of the plasmas which originate the personality of the given cell. These cell have distinct boundaries and are directly involved with creating life-forms which are perfectly suited to life in the given cell. Some life forms are able to cross over into other cells without undue stresses. Others do not live long when they are removed from their native information-energy habitat.

For life forms which are able to transit and occupy various cells, if the given Being spends a large amount of time in a specific cell, they start to change physically and psychologically in alignment with the qualities of the personality of the land they are spending large amounts of time in.

The Bhutatmas are conveyed by plasmas and "stick to" every material form. Aether clings to matter at all scales, interpenetrating it and forming an atmosphere, similar to the photographs taken by Krasnoholovets of the "atmosphere" of "inertons" which surround electrons. Inertons are much larger than Bhutatmas, however. There are many layers of behaviors related to the smallness of the entities involved which form thresholds of altered physical behaviors, as seen in Pendry structures and other metamaterials.

Air currents, water currents, electrical flows, plasma flows, and all wave forms in all media, regardless of phase state, convey aether and information energy between end points and all along the lines of the flows. Aether circuits are always bi-directional between end-points, while plasma and electrical flows are one-directional. Gravitation and time aether flows also carry information-energy and can alter the given local energetic informational environment fairly rapidly, or over large spans of time.

Marjanovic's model does not cover any of this, as he has no attention for the physics of information-energy, Consciousness, nor studies of the activities of Divinity. Bhutatmas cover all the bases."

Moreover we can add...

"Personality cells are determinant in what kinds of matter are formed, and in where and when they are formed. Stars each have a unique personality, a unique chemistry, and a unique radiation spectrum, exactly because they are formed in different cells with different personalities, which personality cells act as environmental factors during star formation and planet formation.

This is related to the Telluric Intelligence (inhabiting aether rivers) which is endemic to and inherent in each star and each planet. Probably, each Telluric Intelligence is unique, as well as being involved with the unique star and the unique planets associated with the given star.

According to Wal Thornhill and Steven Smith, with whom we agree on this, planets are formed internal to stars by precipitation processes resulting from the creation of atomic elements in the outer-most layers of stars, due to charge separation in stellar plasmas creating enormous gradients in the stellar electric field, thus urging the aether involved with the given star to create new atoms, as put into evidence in the SAFIRE Project. The newly formed atoms tend to precipitate and drift towards the central regions of the given star. Each planet will be unique, but have some traits in common with its parent star.

Uniqueness is partly due to non-local influences being imposed on stellar systems by infinite velocity infinitesimals which carry and convey information to the given stellar system which influence the personality and material composition of the given star. This is a process due to the 5th phase state in Mishin's 5 phase-state aether. (Tesla talks about non-local influences imparting information and various forms of organization to local systems.) This is in addition to the Personality information inherent to the given aether-plasma space-cell, which can modify the local personality over time, and in response to superluminal activities of quantized red-shifts resulting in local variations in the laws of physics in the region, and local variations in the fine structure "constant", leaving leaving the galaxy-core aether-plasmoid in superluminal 3D shells, modifying the physics in the volume of the given out-bound shell."

Hopefully many more approaches can be developed in the direction as mentioned above.

5. Concluding remarks

In this paper, we discussed three possible applications of Neutrosophic Logic in the field of matter creation processes etc. For instance, a redefinition of term "unmatter" is proposed here, where under certain conditions, aether can transform using Bose condensation process to become "*unmatter*", a transition phase of material, which then it sublimates into matter (solid, gas, liquid). Unmatter can also be considered as "pre-physical matter." Moreover, we can extend it further to include consciousness/spirit, which may explain why the 99% of matter in this Universe is undetected. Further researches are recommended in the above directions.

Acknowledgment

The authors wish to thank to several anonymous reviewers for suggesting improvements to this manuscript.

Funding: “This research received no external funding”

Conflicts of Interest: “The authors declare no conflict of interest.”

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A Review on Superluminal Physics and Superluminal Communication in light of the Neutrosophic Logic perspective

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Abstract

In a recent paper, we describe a model of quantum communication based on combining consciousness experiment and entanglement, which can serve as impetus to stop 5G-network-caused diseases. Therefore, in this paper we consider superluminal physics and superluminal communication as a bridge or intermediate way between subluminal physics and action-at-a-distance (AAAD) physics, especially from neutrosophic logic perspective. Although several ways have been proposed to bring such a superluminal communication into reality, such as Telluric wave or Telepathy analog of Horejev and Baburin, here we also review two possibilities: quaternion communication and also quantum communication based on quantum noise. Further research is recommended in the direction outlined herein. *Aim of this paper:* We discuss possibilities to go beyond 4G and 5G network, and avoid the unnecessary numerous health/diseases problems caused by massive 5G network. *Contribution:* We consider quaternionic communication and quantum communication based on quantum noise, which are largely unnoticed in literature. *Limitation:* We don't provide scheme for operationalization, except what we have provided in other paper.

Keywords: quantum entanglement, quantum communication, consciousness, superluminal communication, action at a distance.

PACS 2010: 02, 03, 41, 98

Quote: “The Hertz wave theory of wireless transmission may be kept up for a while, but I do not hesitate to say that in a short time it will be recognized as one of the most remarkable and inexplicable aberrations of the scientific mind which has ever been recorded in history.”—Nikola Tesla, *The True Wireless*, 1919.

1. Introduction

In line with the rapid development of new branch of foundational mathematics, i.e. Neutrosophic Logic, here we discuss potential application of NL theory in the field of telecommunication. See for recent papers on NL: [31-35]. It is known that nowadays telecommunication systems are predominated by RF systems, including numerous wireless systems, such as 4G Wi-Fi, 4G network etc. And the world is now in transition stage towards 5G network deployment.

A growing number of individuals are coming together in many countries - to attempt to block or stop the current telecoms roll-out of 5G electromagnetic microwave radiation which has proved to be extremely harmful to all sentient life forms, including plant life.¹

It would prove invaluable if some methods could be found to render the 5G millimetre wave transmissions ineffective. In other words, to block or dissolve their ability to irradiate surrounding matter/life. Our concern is not to find a way to 'to protect the individual' but to prevent whole areas from being affected by microwaves via the tens of thousands of transmission bases that 5G requires - and from satellite sources.

In literature, there are known proposals or experiments which were purported to suggest possible ways to develop superluminal communication, to name a few: Telluric wave and also Telepathy analog way. For instance, in biofield site, it is written, which can be paraphrased as follows:

“Torsion fields is one of the names given to the more unpretentious parts of the biofield. Torsion fields have additionally been alluded to as orgone, od, tachyon, aether, Tesla waves, scalar waves, the zero point field and then some. There is no settled upon logical agreement on these increasingly inconspicuous parts of the biofield. Torsion fields are guessed to the moderating mode for separation recuperating, which happens immediately and which research has been demonstrated that to be difficult to be transmitted through exemplary electromagnetic frequencies.”²

See also Horejev and Baburin’s paper [27]. Besides, there are also other suggestions of telepathic analog communications [28-30].

From Neutrosophic Logic perspective, we need to distinguish the subluminal communication from superluminal communication. In fact, Smarandache’s Hypothesis states that there is no speed limit of anything, including light and “particles [16]. One of us (FS) also wrote in this regards:

“In a similar way as passing from Euclidean Geometry to Non-Euclidean Geometry, we can pass from Subluminal Physics to Superluminal Physics, and further to Instantaneous Physics (instantaneous traveling). In the lights of two consecutive successful CERN experiments with superluminal particles in the Fall of 2011, we believe these two new fields of research should begin developing. A physical law has a form in Newtonian physics, another form in the Relativity Theory, and different form at Superluminal theory, or at Instantaneous (infinite) speeds – according to the S-Denying Theory spectrum. First, we extend physical laws and formulas

¹ A brief explanation here: <https://www.5gspaceappeal.org/the-appeal>

² <https://www.biofieldlab.com/whatisthebiofield>

to superluminal traveling and to instantaneous traveling. Afterwards, we should extend existing classical physical theories from subluminal to superluminal and instantaneous traveling.”³

While the idea behind Smarandache hypothesis is quite simple and based on known hypothesis of quantum mechanics, called Einstein-Podolski-Rosen paradox, in reality such a *superluminal physics* seems still hard to accept by majority of physicists.

The background idea and our motivation for suggesting to go beyond RF/subluminal communication towards superluminal communication are two previous papers: (a) there will be more than 720! (factorial) types of new diseases which may arise, if the 5G network is massively implemented – and the present covid-19 pandemic may be just the beginning; (b) in a recent paper [14], we describe a model of quantum communication based on combining consciousness experiment and entanglement, which can serve as impetus to stop 5G-network-caused diseases, and (c) another recent paper that we presented in CTPNP 2019, where we discuss a realistic interpretation of wave mechanics, based on a derivation of Maxwell equations from quaternionic Dirac equation [36]. From these previous papers, we come to conclusion to superluminal communication is not only possible, but it is indeed embedded in quaternionic Maxwell equations, which are close to their original idea by Prof. James Clerk Maxwell.

Therefore, in this paper we consider superluminal physics and superluminal communication as a bridge or intermediate way between subluminal physics and action-at-a-distance (AAAD) physics, especially from *Neutrosophic Logic* perspective. Although several ways have been proposed to bring such a superluminal communication into reality, such as Telluric wave or Telepathy analog of Horejev and Baburin, here we also review two possibilities: quaternion communication and also quantum communication based on quantum noise.

These two choices will be discussed in section 4. But first of all we will discuss what is the difference between subluminal communication and superluminal communication.

2. What is the difference between subluminal communication and superluminal communication?

According to Belrose, which can be paraphrased as follows:

“The extremely plausibility of remote correspondences was established on the investigations of James Clerk Maxwell, and his conditions structure the premise of computational electromagnetics. Their accuracy was built up by Heinrich Hertz, when in 1887 he found EM radiation at UHF frequencies as anticipated by Maxwell. Since the spearheading work of Maxwell starting in the center 1850s, and of his adherents, a little gathering that got known as Maxwellians, which incorporated UK's Poynting and Heaviside, Maxwell's conditions have been read for longer than a century, and have demonstrated to be one of the best speculations in the historical backdrop of radioscience. For instance, when Einstein saw that Newtonian elements had as changed to be good with his exceptional hypothesis of relativity, he found that Maxwell's conditions were at

³ See Florentin Smarandache. url: <http://fs.unm.edu/SuperluminalPhysics.htm>

that point relativistically right. EM field impacts are created by the increasing speed of charges, thus Maxwell had naturally incorporated relativity with his conditions.” [25]

History also told us that around a century ago, there was proponents of wireless telegraphy, including Marconi, and opponents of it, including Tesla. And there were records of conflict between Tesla and Marconi. History also told us that around the same months after wireless telegraphy networks were installed everywhere, there was a flu pandemic, just like we observed now. It is also known, that wireless telegraphy was based on RF technology, which is actually a subluminal physics, while Tesla preferred a superluminal technology beyond Radio Frequency (sometimes he referred to as *non-Hertzian* waves). See also [18-26].

For instance, Paul Brenner wrote:

“Marconi's work is based on copies of patents of many other inventors without their permission. His so called original "*two-circuit*" device, a spark-gap transmitter plus a coherer-receiver, was similar to those used by Oliver Lodge in a series of worldwide reported tests in 1894. Tesla disputed that Marconi was able to signal for greater distances than anyone else when using the spark-gap and coherer combination. In 1900 Alexander Stepanovich Popov declared to the Congress of Russian Electrical Engineers: "[...] *the emission and reception of signals by Marconi by means of electric oscillations [was] nothing new. In America, the famous engineer Nikola Tesla carried the same experiments in 1893.*" [20]

It is also known from history books, that in the last century, the understanding of the nature of electromagnetic phenomena was proceeding with a constant rivalry between two concepts of interaction: namely, Newton instantaneous *action at a distance* (IAAAD) and Faraday-Maxwell *short-range interaction*. Finally, the discovery of Faraday's law of induction (explicit time dependence of electromagnetic phenomena) and the experimental observation of electromagnetic waves seemed to confirm the short-range interaction. Nevertheless, the idea of IAAAD still has many supporters. Among the physicists who have developed some theories based, in any case, on this concept, we can find names such as Tetrode and Fokker, Frenkel and Dirac, Wheeler and Feynman, and Hoyle and Narlikar. This interest in the concept of IAAAD is explained by the fact that classical theory of electromagnetism is an unsatisfactory theory all by itself, and so there have been many attempts to modify either the Maxwell equations or the principal ideas of electromagnetism.

As Augusto Garrido wrote in his review to Chubykalo et al's book:

“On the other hand, the famous article “*Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?*” by Einstein, Rosen and Podolsky published in Physical Review in 1935 revived this discussion in a new panorama. In this article Einstein made public his position against the Copenhagen interpretation of the quantum mechanics. The controversy unleashed since then made this article a very popular one for its implications in our physical and philosophical understanding of the physical reality. The main objective of this article was to demonstrate that the quantum mechanics, the same way the Newtonian mechanics was for the relativistic mechanics, is an incomplete theory, and therefore, transitory of reality. For that reason Einstein made evident what is now known as the EPR paradox. According to EPR quantum mechanics is no local theory, that is to say, it permits action at a distance and, that is forbidden by the relativity theory, instantaneous action at a distance. Unfortunately for Einstein, and for common sense the experiment performed by Aspect seems to indicate that the IAAAD following from quantum mechanics exists. As a consequence of this confusion, physicists

are divided in two big groups according their position about IAAAD. These disputants are the quantum physicists and the relativists, who, almost after a century, have not been able to answer the old question whether the subject of their studies is a complete and integrated Universe – a physical Universe in its own right – or simply a assemblage of locally interacting parts.”[15]

Therefore, to summarize the above paragraph, it seems we can distinguish among few technologies for communication:

- Subluminal RF physics → subluminal wave → subluminal communication
- Close to light speed physics → relativistic wave
- Superluminal physics → superluminal wave → superluminal communication
- Action at a distance physics → AAAD/quantum communication

From *Neutrosophic Logic* perspective, we can see that superluminal physics and superluminal communication are an intermediate way between the subluminal physics and AAAD physics, because in NL theory there is always a possibility to find a third way or intermediate state.

Summarizing:

Standpoint A (subluminal) → Intermediate (*superluminal*) → Standpoint B (AAAD)

In the next sections, we will discuss shortly quantum entanglement and how it can be used in developing new telecommunication technologies.

3. What is quantum entanglement?

In its simplest form the quantum theory’s features can be reduced to: (a) wave function description of microscopic entities and (b) entanglement. Entanglement is a key property that makes quantum information theory different from its classical counterpart.[14]

According to Sclarici and Solombrino [5]:

The essential difference in the concept of state in classical and quantum mechanics is clearly pointed out by the phenomenon of entanglement, which may occur whenever the product states of a compound quantum system are superposed. Entangled states play a key role in all controversial features of QM; moreover, the recent developments in quantum information theory have shown that entanglement can be considered a concrete physical resource that it is important to identify, quantify and classify.

Nonetheless, they concluded: “our research has pointed out a puzzling situation, in which the same state of a physical system is entangled in CQM, while it seems to be separable in QQM.”

While entanglement is usually considered as purely quantum effect, it by no means excludes possibility to describe it in a classical way.

In this regards, from history of QM we learn that there were many efforts to describe QM features in more or less classical picture. For example: Einstein in 1927 presented his version of hidden variable theory of QM, starting from Schrödinger's picture, which seems to influence his later insistence that "*God does not play dice*" philosophy.[6][7]

Efforts have also been made to extend QM to QQM (quaternionic Quantum Mechanics), for instance by Stephen Adler from IAS.[8]

But in recent decades, another route began to appear, what may be called as Maxwell-Dirac isomorphism route, where it can be shown that there is close link between Maxwell equations of classical electromagnetism and Dirac equations of electron. Intuitively, this may suggest that there is one-to-one correspondence between electromagnetic wave and quantum wave function.

4. Two possible ways of superluminal communications

4.a. Maxwell-Dirac isomorphism through Quaternion algebra

Textbook quantum theory is based on complex numbers of the form $a_0 + a_1i$, with i the imaginary unit $i^2 = -1$. It has long been known that an alternative quantum mechanics can be based on the quaternion or hyper-complex numbers of the form $a_0 + a_1i + a_2j + a_3k$, with i, j, k three non-commuting imaginary units.[8]

On the other hand, recognizing that the Maxwell's equations were originally formulated in terms of quaternionic language, some authors investigate formal correspondence between Maxwell and Dirac equations. To name a few who worked on this problem: Kravchenko and Arbab. These authors have arrived to a similar conclusion, although with a different procedures based on Gersten decomposition of Dirac equation.[4]

This MD isomorphism can also be extended further to classical description of boson mass which was usually called Higgs boson[3], so it may be a simpler option compared to scale symmetry theory.

4.b. Quaternionic QM and Entanglement

Having convinced ourselves that Maxwell-Dirac isomorphism has sufficient reasoning to consider seriously in order to come up with realistic interpretation of quantum wave function, now let us discuss QQM and entanglement.

Singh & Prabakaran are motivated to examine the geometry of a two qubit quantum state using the formalism of the Hopf map. However, when addressing multiple qubit states, one needs to carefully consider the issue of quantum entanglement. The "quaternions" again come in handy in studying the two qubit state. [10]

In his exposition of Quaternionic Quantum Mechanics, J.P. Singh concluded that [9]:

"Having established the compatibility of the Hopf fibration representation with the conventional theory for unentangled states, let us, now, address the issue of measurability of entanglement in this formalism. In the

context, “Wootters’ Concurrence” and the related “Entanglement of Formation” constitute well accepted measures of entanglement, particularly so, for pure states. ...

It follows that any real linear combination of the “magic basis” would result in a fully entangled state with unit concurrence. Conversely, any completely entangled state can be written as a linear combination in the “magic basis” with real components, up to an overall phase factor. In fact, these properties are not unique to a state description in the “magic basis” and hold in any other basis that is obtained from the “magic basis” by an orthogonal transformation...”

Singh & Prabakaran also suggest that this quaternionic QM may be useful for exploring quaternionic computing.[10]

Therefore, it shall be clear that entanglement and quantum communication have a sound theoretical basis.

4.c. Basic principles of quantum communication based on quantum noise

Our proposed communication method can provide an infinite number of infinite bandwidth communications channels for each user. See our recent paper describing one of plausible way to do quantum communication [14].

Communication using this method travels much faster than light. It does not use radio waves and does not need wires. It cannot be monitored nor tracked nor interfered with. It cannot be regulated due to the infinities involved, and due to the fact that it is unmonitorable. Each user benefits personally from the perfect information security provided by quantum communications.

Quantum communication does not harm any form of life, nor the environment, in any way, as quantum events are, and always have been, constantly a part of the Natural Environment. This method is not related to “Q-bits” nor “quantum teleportation” nor “quantum amplification” approaches, in any way. It is based on the Schrödinger equations of Quantum Mechanics. One of the features of the Schrödinger equations is a descriptive prediction of what is called “*quantum noise*”. This is the constant “hiss” that one hears when using an FM radio, and setting the frequency selector in between active broadcast channels. The sound is called “quantum noise”

Quantum noise is observable at every location in the infinite volume universe. Quantum noise is the result of non-local Subquantum processes which cause apparently random quantum behaviors in physical systems, particularly those which involve electric, magnetic, or electromagnetic fields.

The situation is described by the quantum observable A of the system. This boils down to the fact that there is an expectation value in situations which involve quantum noise, which should normally appear as perfect randomness in the quantum system we are observing. Perfect randomness is called 3rd Order randomness and is completely unpredictable.

3rd Order randomness then represents the normal behavior of our quantum system as it interacts with Subquantum entities which are interacting with the system from up to infinity away and with up to an infinite velocity. 3rd Order randomness is the quantum expectation value of all Natural systems, in all locations and at all times.

There are ways to detect and predict quantum noise and the physical changes produced by quantum noise in quantum systems (These methods will not be discussed at this time). When we detect the quantum noise, for example, in the form of “white noise” between radio stations, we expect the quantum spectrum centered on the channel of our receiver to exhibit 3rd Order randomness in both electromagnetic frequency and magnitude domains, in our selected channel. However, environmental factors such as the presence of physical or non-physical forms of Consciousness can act on the 3rd Order randomness so as to bring predictability and order to the stream of random number which our E/M detector array passes on to our discriminator system.

Related to this, it was proved by instrumented experiments in the USA and in France during the 1990s that the Attention, Intentions, and Emotional State of operators of symplectic, complex, and standard electromagnetic transmission facilities, resulted in instantaneous changes in the radiation patterns of the transmission antennas.

All of the above mentioned facts can be useful for developing a working quantum communication device, see for further exposition of our method in [14].

5. Concluding remarks

Despite its enormous practical success, many physicists and philosophers alike agree that the quantum theory is so full of contradictions and paradoxes which are difficult to solve consistently. Even after 90 years, the experts themselves still do not all agree what to make of it. In this paper, we review the most puzzling feature of QM, i.e. entanglement.

In the meantime, the problem of the dangers of 5G creates a potential to develop new solutions of telecommunications, without having to use 5G/RF technologies. Therefore, in this paper we consider superluminal physics and superluminal communication as a bridge or intermediate way between subluminal physics and action-at-a-distance (AAAD) physics, especially from Neutrosophic Logic perspective. Although several ways have been proposed to bring such a superluminal communication into reality, such as Telluric wave or Telepathy analog of Horejev and Baburin, here we also review two possibilities: quaternion communication and also quantum communication based on quantum noise.

From *Neutrosophic Logic* perspective, we discuss on superluminal physics and superluminal communication as an intermediate way between the subluminal physics and AAAD physics, because in NL theory there is always a possibility to find a third way or intermediate state.

Summarizing:

Standpoint A (*subluminal*) \rightarrow Intermediate (*superluminal*) \rightarrow Standpoint B (*AAAD*)

This paper was inspired by an old question: Is there an alternate way to communication beyond RF method?

Further research is recommended for future implementation.

Acknowledgment

These authors gratefully appreciate four anonymous reviewers for their suggestions to improve this manuscript. Discussions with Robert N. Boyd PhD., are also appreciated.

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How we can extend the standard deviation notion with neutrosophic interval and quadruple neutrosophic numbers

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Abstract

During scientific demonstrating of genuine specialized framework we can meet any sort and rate model vulnerability. Its reasons can be incognizance of modelers or information mistake. In this way, characterization of vulnerabilities, as for their sources, recognizes aleatory and epistemic ones. The aleatory vulnerability is an inalienable information variety related with the researched framework or its condition. Epistemic one is a vulnerability that is because of an absence of information on amounts or procedures of the framework or the earth [7]. Right now, we examine fourfold neutrosophic numbers and their potential application for practical displaying of physical frameworks, particularly in the unwavering quality evaluation of engineering structures. Contribution: we propose to extend the notion of standard deviation to by using symbolic quadruple operator.

Keywords: Standard deviation, Neutrosophic Interval, Quadruple Neutrosophic Numbers.

1. Introduction

We all know about uncertainty modelling of various systems, which usually is represented by:

$$X = x' + 1.64s \quad (1)$$

Or

$$X = x' + 1.96s \quad (2)$$

Here, the constants 1.64 or 1.96 can be replaced with k . What we mean is a constant corresponding to bell curve, the number is usually assumed to be 1.96 for 95% acceptance, or 1.64 for 90% acceptance, respectively.

But since s only takes account statistical uncertainty, there is lack of measure for indeterminacy. That is why we suggest to extend from

$$X = x' + k. s \quad (3)$$

To become neutrosophic quadruple numbers.

Before we move to next section, first we would mention other possibility, i.e. by expressing the relation as follow

$$(X_L + X_U I_N) = k. (\sigma_L + \sigma_U I_N), \text{ where } I_N \text{ is a measure of indeterminacy} \quad (4)$$

Actually, we we need to add some results for various I_N , for example $I_N=0,0.1,0.2,0.3,0.4$ etc. Nonetheless, because this paper is merely suggesting a conceptual framework, we don't explore it further here. Interested readers are suggested to consult ref. [1-2].

2. A short review on quaternions

We all know the quaternions, but quadruple neutrosophic numbers are different. In quaternions, $a+bi + cj + dk$ you have $i^2 = j^2 = k^2 = -1 = ijk$, while on quadruple neutrosophic numbers we have:[3]

$$N = a + bT + cI + dF \text{ one has: } T^2 = T, I^2 = I, F^2 = F, \quad (5)$$

where $a =$ known part of N , $bT+cI+dF =$ unknown part of N , with $T =$ degree of truth-membership, $I =$ degree of indeterminate-membership, and $F =$ degree of false-membership, and a, b, c, d are real (or complex) numbers, and an absorption law defined depending on expert and on application (so it varies); if we consider for example the neutrosophic order $T > I > F$, then the stronger absorbs the weaker, i.e.

$$TI = T, TF = T, \text{ and } IF = I, TIF = T. \quad (6)$$

Other orders can also be employed, for example $T < I < F$: (see book [1], at page 186.) Other interpretations can be given to T, I, F upon each application.

3. Application: statistical uncertainty and beyond

Designers must arrangement with dangers and vulnerabilities as a piece of their expert work and, specifically, vulnerabilities are intrinsic to building models. Models assume a focal job in designing. Models regularly speak to a dynamic and admired rendition of the scientific properties of an objective. Utilizing models, specialists can explore and gain comprehension of how an article or wonder will perform under specified conditions.[8]

Furthermore, according to Murphy & Gardoni & Harris Jr, which can be rephrased as follows: "For engineers, managing danger and vulnerability is a significant piece of their expert work. Vulnerabilities are associated with understanding the normal world, for example, knowing whether a specific occasion will happen, and in knowing the presentation of building works, for example, the conduct and reaction of a structure or foundation, the fluctuation in material properties (e.g., attributes of soil, steel, or solid), geometry, and outer limit conditions (e.g., loads or physical

limitations). Such vulnerabilities produce dangers. In the standard record chance is the result of a lot of potential outcomes and their related probabilities of event (Kaplan and Gerrick 1981), where the probabilities measure the probability of event of the potential outcomes considering the hidden vulnerabilities. One significant utilization of models in designing danger investigation is to measure the probability or likelihood of the event of specific occasions or a lot of outcomes. Such models are regularly alluded to as probabilistic models to feature their specific capacity to represent and measure vulnerabilities.”[8]

Uncertainties come in many forms, for example:

“The uncertainties in developing a model are:

- **Model Inexactness.** This kind of vulnerability emerges when approximations are presented in the plan of a model. There are two basic issues that may emerge: blunder as the model (e.g., a straight articulation is utilized when the real connection is nonlinear), and missing factors (i.e., the model contains just a subset of the factors that influence the amount of intrigue). ...
- **Mistaken Assumptions.** Models depend on a series of expectations. Vulnerabilities may be related with the legitimacy of such suspicions (e.g., issues emerge when a model accept typicality or homoskedasticity when these suppositions are disregarded).
- **Measurement Error.** The parameters in a model are commonly aligned utilizing an example of the deliberate amounts of intrigue and the fundamental factors considered in the model. These watched qualities, in any case, could be inaccurate because of blunders in the estimation gadgets or systems, which at that point prompts mistakes in the alignment procedure. ...
- **Statistical Uncertainty.** Factual vulnerability emerges from the scantiness of information used to align a model. Specifically, the exactness of one's derivations relies upon the perception test size. The littler the example size, the bigger is the vulnerability in the evaluated estimations of the parameters. ... However, the confidence in the model would probably increment on the off chance that it was adjusted utilizing one thousand examples. The factual vulnerability catches our level of confidence in a model considering the information used to adjust the model.”[8]

With regards to statistical uncertainty, according to Ditlevsen and Madsen, which can rephrased as follows: “It is the reason for any estimating technique to produce data about an amount identified with the object of estimation. In the event that the amount is of a fluctuating nature with the goal that it requires a probabilistic model for its depiction, the estimating technique must make it conceivable to define quantitative data about the parameters of the picked probabilistic model. Clearly a deliberate estimation of a solitary result of a non-degenerate arbitrary variable X just is sufficient for giving a rough gauge of the mean estimation of X and is insufficient for giving any data about the standard deviation of X . In any case, if an example of X is given, that is, whenever estimated estimations of a specific number of freely produced results of X are given, these qualities can be utilized for figuring gauges for all parameters of the model. The reasons that such an estimation from an example of X is conceivable and bodes well are to be found in the numerical likelihood hypothesis. The most rudimentary ideas and rules of the hypothesis of insights are thought to be known to the peruser. To delineate the job of the measurable ideas in the unwavering quality examination it is beneficial to rehash the most fundamental highlights of the depiction of the data that an example of X of size n contains

about the mean worth $E[X]$. It is sufficient for our motivation to make the streamlining supposition that X has a known standard deviation $D[X] = \sigma$.”[5]

Now, it seems possible to extend it further to include not only statistical uncertainty but also modelling error etc. It can be a good application of Quadruple Neutrosophic Numbers.

4. Towards an improved model of standard deviation

Few days ago, we just got an idea regarding application of symbolic Neutrosophic quadruple numbers, where we can use it to extend the notion of *standard deviation*.

As we know usually people wrote:

$$X' = x + k.\sigma \quad (7)$$

Where X mean observation, σ standard deviation, and k is usually a constant to be determined by statistical bell curve, for example 1.64 for 95% accuracy.

We can extend it by using symbolic quadruple operator:

$$X' = x \pm (k.\sigma + m.i + n.f) \quad (8)$$

Where X' stands for actual prediction from a set of observed x data, σ is standard deviation, i is indeterminacy and f falsehood. That way modelling error (falsehood) and indeterminacy can be accounted for.

Alternatively, one can write a better expression:

$$X' = x \pm (T.\sigma + I.\sigma + F.\sigma) \quad (9)$$

where T = the truth degree of s (standard deviation), I = degree of indeterminacy about s , and F = degree of falsehood about s .

A slightly more general expression is the following:

$$X' = x \pm a (T.\sigma + I.\sigma + F.\sigma) \quad (10)$$

where T = the truth degree of s (standard deviation), I = degree of indeterminacy about s , and F = degree of falsehood about s .

Or

$$X' = x \pm (a.T.\sigma + b.I.\sigma + c.F.\sigma) \quad (11)$$

where T = the truth degree of s (standard deviation), I = degree of indeterminacy about s , and F = degree of falsehood about s , and a, b, c are constants to be determined.

That way we reintroduce quadruple Neutrosophic numbers into the whole of statistics estimate.

For further use in engineering fields especially in reliability methods, readers can consult [5-7].

5. Conclusion

In this paper, we reviewed existing use of standard deviation in various fields of science including engineering, and then we consider a plausible extension of standard deviation based on the notion of quadruple neutrosophic numbers. More investigation is recommended.

Acknowledgment

The authors wish to thank to three anonymous reviewers for suggesting improvement to this manuscript.

Funding: “This research received no external funding”

Conflicts of Interest: “The authors declare no conflict of interest.”

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A short remark on Gödel incompleteness theorem and its self-referential paradox from Neutrosophic Logic perspective

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Abstract

It is known from history of mathematics, that Gödel submitted his two incompleteness theorems, which can be considered as one of hallmarks of modern mathematics in 20th century. Here we argue that Gödel incompleteness theorem and its self-referential paradox have not only put Hilbert's axiomatic program into question, but he also opened up the problem deep inside the then popular Aristotelian Logic. Although there were some attempts to go beyond Aristotelian binary logic, including by Lukasiewicz's *three-valued logic*, here we argue that the problem of self-referential paradox can be seen as reconcilable and solvable from *Neutrosophic Logic* perspective. **Motivation of this paper:** These authors are motivated to re-describe the self-referential paradox inherent in Godel incompleteness theorem. **Contribution:** This paper will show how Neutrosophic Logic offers a unique perspective and solution to Godel incompleteness theorem.

Keywords: Gödel incompleteness theorem; unprovability; undecidability; Neutrosophic Logic; Aristotelian Logic

1.Introduction

“*This statement is unprovable.*” You can try to prove or disprove that particular statement, but indeed the statement is unprovable. That is how Gödel's incompleteness theorem began, see also [1], as in neutrosophic triplet: *proved, disproved, unprovable (indeterminate)*. Try also another statement: “*This statement is undecidable.*” Sounds

interesting? It is in the particular logic of our language, the problem of unprovability and undecidability belong to true problems of Hilbert's axiomatic program.

According to Padula, which can be rephrased as follows [6]:

“Bertrand Russell and A. N. Whitehead's **Principia Mathematica** (1910–1913), in the future assigned as PM, contained a proof that the entire of arithmetic can be created based on set hypothesis. With it they wanted to demonstrate that all arithmetic is established on rationale. Kurt Gödel's confirmation (1931) of the '*inadequacy*' of formal frameworks, for example, PM is significant for some reasons. It is significant throughout the entire existence of arithmetic and for additional improvements in science, for example, the hypothesis of calculations and the hypothesis of formal frameworks which has prompted the advancement of PCs and scripting languages, and advances towards man-made consciousness; for the development of scientific evidence and confirmation hypothesis; and for the improvement of rationale as it is educated today. It is fascinating in light of the fact that to ace it a comprehension of language is as significant as information on science.”

In literature, there are expository works on that theorem, which is dubbed as one of the hallmarks of 20th century mathematics. Rebecca Goldstein [2], wrote which can be paraphrased as follows:

The verification that was to turn into the "well known Incompleteness Proof" had clearly been cultivated the prior year, when Gödel was 23, and it was to be submitted in 1932 as his *Habilitationsschrift*, the last stage in the drawn out procedure of turning into an Austrian or German Dozent. It is one of the most surprising bits of numerical thinking at any point created, shocking both in the straightforwardness of its fundamental system and in the unpredictability of its subtleties, the meticulous making an interpretation of metamathematics into science by method of what has come to be called Gödel numbering. It is a completely requested mixing of a few layers of "voices," both scientific and metamathematical, contrast converging into symphonious harmonies at no other time heard. Music seems to give an especially adept similitude, which is the reason Ernest Nagel and James R. Newman in their great explicatory work, Gödel's Proof, portrayed the evidence as an "amazing intellectual symphony.”

It is known, that the Neutrosophic Logic [8] is the only logic that can deal with the paradoxes, since a paradox P is a proposition that is true (its truth degree $T = 1$) and false (its false degree $F = 1$) in the same time, and as a consequence the paradox is also completely indeterminate (its indeterminate degree $I = 1$). Therefore, the Neutrosophic truth-values of the paradox is $P(1, 1, 1)$, where $1+1+1 = 3 > 1$.

This paper will discuss, albeit shortly, on how Neutrosophic Logic can offer resolution to Gödel incompleteness theorem and its self-referential paradox.

2. Background: what is formal axiomatic program?

According to Steinmetz [3], which can be rephrased as follows:

“A formal system is, basically, a framework that has been expressly and totally characterized. At its most fundamental level a proper framework comprises of a plainly characterized language. The language is involved an assortment of images that speak to the most crude components of the language and are utilized to build the equations of the framework alongside a rundown of decides that characterize what comprises a grammatically all around shaped or semantically important recipe. In this way, the depiction of the conventional framework is distinctive relying upon whether the proper framework is built from a proof-hypothetical or a model-hypothetical point of view. ...

A proverbial framework is a framework that takes at least one recipes to be the maxims of the framework, which may possibly be a boundless number of equations if an adage diagram is utilized. The aphorisms of the framework are an assortment of recipes that are declared to be all around evident and from which the various genuine equations or hypotheses of the framework are gathered. In a proof-hypothetical framework the hypotheses of the framework are deductively demonstrated from the aphorisms of the framework or from recently demonstrated hypotheses. In a model-hypothetical framework the maxims of the framework characterize the substantial connections that exist between the articles that comprise the model of the framework and consequently the hypotheses of the framework are demonstrated dependent on what is valid for the items inside the model.”

Into such a formal axiomatic program of Hilbert in early 1900, then came the young mathematician Gödel (see also [2][3][5]). What he did was to put the entire Hilbert’s axiomatic program into question.

3. Discussion on *self-referential paradox* and a principle of *included middle*

Now, it is also possible to ask: how does Godel’s incompleteness theorem give us a hint into what many physicists try to find: *The Ultimate Theory* or often dubbed as “TOE”? Ben-Yaacov wrote in his abstract, which can be rephrased as follows :

“An extreme Universal hypothesis – a total hypothesis that accounts, by means of not many and basic first standards, for all the marvels previously watched and that will ever be watched – has been, and still is, the desire of most physicists and researchers. However, an essential rule that is encapsulated in the aftereffects of Gödel's deficiency hypotheses is that self-referencing prompts consistent conflict or disappointment, as in the liar oddity or Russell's conundrum. In physical speculations self-referencing essentially happens when it is understood that the eyewitness is likewise a member in the accomplished marvels – *we, people, are a piece of the Universe while watching it*. In this manner self-referencing, and thusly intelligent conflicts, are unavoidable, and any hypothesis claiming to be Universal will undoubtedly be inadequate.”[4]

He also puts forth argument :

“Does Gödel’s theorem apply to physics ? A common argument in favour of applying Gödel’s theorem to physics, is, more or less, that “Gödel’s theorem applies to arithmetics which is the basis of mathematics, physics uses mathematics, therefore Gödel’s theorem applies to physics.”

Although there are counterarguments of the above statement, many problems with the advanced theoretical physics in the last 30-40 years seem to suggest that such is true for Gödel’s theorem. With overreliance on heavy abstraction and sophisticated higher-mathematics, it became so hard to get our feet back to *grounded (observed) realities* - as proponents of grounded approach would say [7].

Now, after admitting this problem, then what is the resolution?

At this point, the following section will cite on how Neutrosophic Logic provides solution to the excluded middle principle in Aristotelian logic. According to one of us (FS):

“FS extended the *Law of Included Middle* [$\langle A \rangle$, $\langle \text{non}A \rangle$, and a third value $\langle T \rangle$ which resolves their contradiction at another level of reality] to the *Law of Included Multiple-Middle* [$\langle A \rangle$, $\langle \text{anti}A \rangle$, and $\langle \text{neut}A \rangle$, where $\langle \text{neut}A \rangle$ is split into a multitude of neutralities between $\langle A \rangle$ and $\langle \text{anti}A \rangle$, such as $\langle \text{neut}_1A \rangle$, $\langle \text{neut}_2A \rangle$, etc.]. The $\langle \text{neut}A \rangle$ value (i.e. neutrality or indeterminacy related to $\langle A \rangle$) actually comprises the included middle value. Also, he extended the *Principle of Dynamic Opposition* [opposition between $\langle A \rangle$ and $\langle \text{anti}A \rangle$] to the *Principle of Dynamic Neutrosophic Opposition* [which means oppositions among $\langle A \rangle$, $\langle \text{anti}A \rangle$, and $\langle \text{neut}A \rangle$].¹

Therefore there are more possibilities, beyond just excluded middle principle.

To summarize this discussion:

Gödel incompleteness theorem actually exposes the fundamental problem in Aristotelian logic. That is excluded middle principle. As we may know, there are certain cases where paradoxes and even self-referential paradoxes exist.

So, in NL theory, it is always possible to find intermediate or third way::

(Standpoint A) -- intermediate/paradox – (Standpoint B)

But in NL theory we see those paradoxes in a new way, without rejecting it outright.

For example:

"This statement is unprovable."

¹ See FS’s bio: <http://fs.unm.edu/FlorentinSmarandache.htm>, also url: <http://fs.unm.edu/LawIncludedMultiple-Middle.pdf>

Or

"How do you decide between undecidability and unprovable?"

These two statements make Aristotelian logic defunct, but not Neutrosophic logic.

The Neutrosophic Logic is the only logic that can deal with the paradoxes, since a paradox P is a proposition that is true (its truth degree $T = 1$) and false (its false degree $F = 1$) in the same time, and as a consequence the paradox is also completely indeterminate (its indeterminate degree $I = 1$). Therefore, the Neutrosophic truth-values of the paradox is $P(1, 1, 1)$, where $1+1+1 = 3 > 1$. No other logics allow the sum of its components to go over 1. *Self-Referential Paradoxes* have the same neutrosophic representation: $T = 1$, $F = 1$, and $I = 1$.

4. Concluding remarks

This paper argues that Gödel incompleteness theorem and its self-referential paradox have not only put Hilbert's axiomatic program into question, but he also opened up the problem deep inside the then popular Aristotelian Logic. Although there were some attempts to go beyond Aristotelian binary logic, including Lukasiewicz's three-valued logic, here it is argued that the problem of self-referential paradox can be seen as reconcilable and solvable from Neutrosophic Logic perspective.

Summarizing, in Neutrosophic Logic, the Neutrosophic truth-values of the paradox is $P(1, 1, 1)$, where $1+1+1 = 3 > 1$. No other logics allow the sum of its components to go over 1. *Self-Referential Paradoxes* have the same neutrosophic representation: $T = 1$, $F = 1$, and $I = 1$.

Hopefully this article will inspire further investigations.

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There is No Constant in Physics: a Neutrosophic Explanation

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Abstract

In Neutrosophic Logic, a basic assertion is that there are variations of about everything that we can measure; the variations surround three parameters called T,I,F (truth, indeterminacy, falsehood) which can take a range of values. Similarly, in this paper, we consider NL applications in physics constants. Those constants actually all have a window of plus and minus values, relative to the average value of the constant. For example, the *speed of light, c, can vary in a window up to +/- 3000 m/s*. Therefore it should be written: 300000 km/s +/- 3 km/s. We also discuss some implications of this new perspective of physics constants, including gravitation physics, etc.

Keywords: Neutrosophic Logic; Physical Neutrosophy; gravitation; physics constants; Michelson-Morley experiment

1. Introduction

For the majority of physicists, constants play a fundamental role. Like an anchor for a ship, they allow physicists to build theories on the ground of those constants as basic “known” quantities. However, in real experiments, there are always variations of those constants. Moreover, from a Neutrosophic Logic perspective, those constants always fluctuate depending on various circumstances.

In Neutrosophic Logic, a basic assertion is that there are variations of about everything that we can measure, the variations surround three parameters called T,I,F (truth, indeterminacy, falsehood) which can take a range of values. Similarly, in this paper, we consider NL applications in physics constants. Those constants actually all have a window of plus and minus values, relative to the average value of the constant. For example, *speed of light, c, can vary in a window up to +/- 3000 m/s*.¹ Therefore it should be written: 300000 km/s +/- 3 km/s.

¹ Note by one of us (RNB): “The data from the experiment was recorded in the actual handwritten log books from the actual M-M experiments as **up to** plus and minus 3000 meters per second variation in the measured speed of light. I closely examined all the handwritten logs and lab notes personally. Most of the light speed excursions recorded in the actual log books were smaller

We also discuss some implications of this new perspective of physics constants, including in gravitation physics etc.

It is our hope that this new perspective on physics constants will point to a more substantial and evidence-based approach to physics sciences.

2. Definition

Neutrosophic Logic, as developed by one of us (FS), is generalization of fuzzy logic based on Neutrosophy. A proposition is t true, i indeterminate, and f false, where t , i , and f are real values from the ranges T , I , F , with no restriction on T , I , F , or the sum $n=t+i+f$. Neutrosophic logic thus generalises:

- intuitionistic logic, which supports incomplete theories (for $0 < n < 100$ and $i = 0$, $0 \leq t, i, f \leq 100$);
- fuzzy logic (for $n = 100$ and $i = 0$, and $0 \leq t, i, f \leq 100$);
- Boolean logic (for $n = 100$ and $i = 0$, with t, f either 0 or 100);
- multi-valued logic (for $0 \leq t, i, f \leq 100$);
- paraconsistent logic (for $n > 100$ and $i = 0$, with both $t, f < 100$);
- dialetheism, which says that some contradictions are true (for $t = f = 100$ and $i = 0$; some paradoxes can be denoted this way).

Compared with all other logics, neutrosophic logic introduces a percentage of "indeterminacy" - due to unexpected parameters hidden in some propositions. It also allows each component t, i, f to "boil over" 100 or "freeze" under 0. For example, in some tautologies $t > 100$, is called "overtrue"[1].

Neutrosophic Logic allows one to develop new approaches in many fields of science, including a redefinition of physics constants, as will be discussed in the next section.

3. Neutrosophic reasoning: There is no Physics Constant

In accordance with Neutrosophic Logic, actually all physics constants have a window of plus and minus values, relative to the average value of the constant. For example, variation of c is approximately within the range of plus or minus 3000 meters/second.

There may be larger excursions, but we would not expect larger excursions to happen very often. Probability considerations are thus also involved in determining the average value and the statistical extremes for the given constant.

There are also curves that vary according to the materials involved and the environment. For example, most recently and most importantly, it has been realized that h and h_{bar} cannot be used for any material other than carbon black (soot).

than this. I recall calculating the average speed of light excursion to be in the vicinity of 300 meters per second. The apparatus was capable of measuring c to an accuracy of 0.00025 meters per second, as I recall.

Both periodic and stochastic measurements of *speed of light variances* are recorded in the handwritten log books from the M-M experiments. Should be as listed: "variation of c is approximately within the range of plus or minus 3000 meters/second." No larger excursions were recorded." See also [10][11].

All other materials must have their thermal emissions curve instrumented. Then the h and h_{bar} for that material can be calculated. But the values calculated are subject to modifications by the local environment. Unless the aether environment can be considered and measured, the calculated values of h and h_{bar} for the given material will not be as reliable as we might prefer. (It depends on the specific application which requires instrumented measurements of the thermal emissions curve of the given material.)

So there should be a way to produce an accurate thermal emissions curve using a neutrosophic approach. Because all thermal emissions curves have extremes from absolute zero to very high heat values. Neutrosophic modifications of Kirchoff's law of "blackbody radiation", and Planck's "constant" would be very useful. (See, for instance, a report by Robitaille and Crothers on the flaws of Kirchoff law, [2-4]). It is worth noting here, that from a dynamical perspective, Shpenkov argues for a redefinition of Planck constant: "The Planck constant h is the quantity the value of which is equal to the orbital action of the electron on the Bohr first orbit in the hydrogen atom, namely to its orbital moment of momentum P_{orb} multiplied by 2π , or it can be rewritten as: $h=2\pi \cdot P_{\text{orb}}$." According to him, Planck constant also has an acoustic origin [5].

There are also physical situations where the variations of the value of one constant, directly alters the values of physically-related constants. The fine structure "constant" is an example of this kind of mutual influence. If the fine structure value changes, it changes the value of e , the charge of the electron. (Which informs us that the charge on the electron is an environmentally influenced Neutrosophic window.) Going the other way, if the value of e changes, it changes the value of the fine structure constant.

Another aspect of this to consider is that some constants-windows may not be perfectly symmetrical, but large on one side of the center value, and small on the other side, and exhibit dependence on the environment, such that under most conditions the value of the given "constant" would live inside the window, while there could be large asymmetrical extremes at other times, depending on the local and non-local environmental parameters of the aether, at the location where we are examining the measured value of the constant.

4. A few applications

At this point, some readers may ask: Can we get an example when a so-called constant has a value, while in another example the same so-called constant gets another value?

Answer: Gravitation is a good example. g changes depending on where and when it is measured. This is used in gravitational prospecting and by the GRACE experiment (NASA) which maps the gravitation variations of the Earth, over time. [6] In ref [6], they show many more data sets and graphical images showing gravitational variations on the Earth.

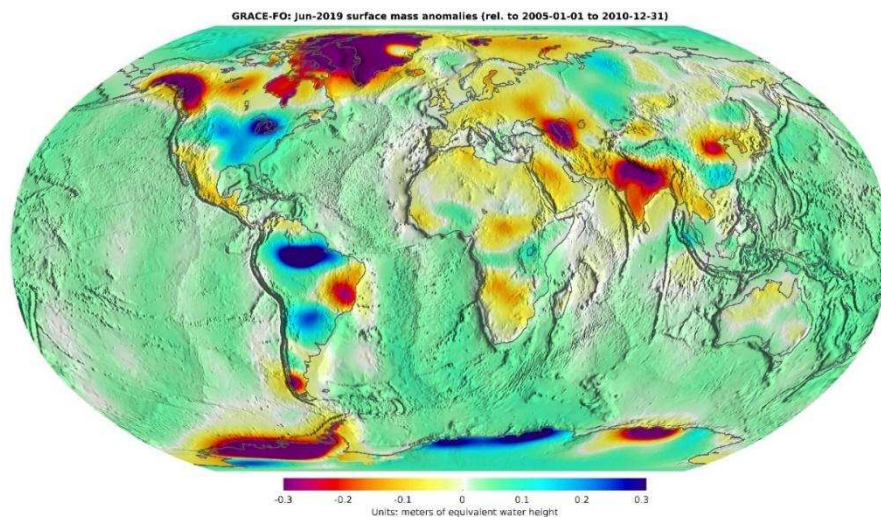


Figure 1: gravitational variations on the Earth. Source: [6]

Another article contains a good table of measurements of gravitation from 1798, until 2004 [7].

There is also a discussion of the increase in the force due to the gravitation of the Earth, showing the dinosaurs would be crushed by their own weight if they were subjected to the gravitational force of the Earth today.

The *gravitational "constant"* is a good one to start with since the variations can't be denied.

The next best one would be the speed of light variations, although these days they refuse to allow one-way measurements of light velocity, because vast numbers of variations show up, depending on the time and place of the measurement. The mainstream insists that the speed of light can only be measured by round-trip measurements. This is because the light going back and forth along the same line results in many of the measured one-way variations in the velocity, being averaged out.

Typically, speed of light experiments cook their books and throw out any large deviations in measured light velocity. This tactic is similar to even more egregious cheating methods which are used by "global warming" and "climate change" advocates, paid for by the oil companies.

The next best one would be variations in Planck's "constant". h and \hbar are only valid for carbon black (soot). Every different material has different thermal radiation when plotted on a thermal radiation curve. Some examples are displayed by Robitaille and Crothers in some of their presentations on the original "black body" thermal radiation constant known as Kirchoff's law, which was never measured by instrumented experiments, and was accepted as universally valid by Planck, who never did experiments to measure the thermal radiation curves of anything.[2-4]

5. Conclusions

In this article, we discussed how physics constants can vary in a wide range of values, in particular from the Neutrosophic Logic perspective. We also discussed some examples, including variation in Earth gravitation measurements, speed of light measurement, and also Planck constant. It is our hope that this short discussion will be found as a good impetus for a new direction in physics, more corresponding to experimental data, toward: "*evidence-based physics*." This new direction is in direct contrast to the unfortunate development of theoretical physics in the last 30-40 years with their over-reliance on too much abstraction, over-sophisticated mathematics, and other fantasies, which often have less and less to do with the actual physics as an empirical science. Two books can be mentioned here in relation to the present situation of physics science, see [8][9].

Funding: "This research received no external funding"

Conflicts of Interest: "The authors declare no conflict of interest."

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Three possible applications of Neutrosophic Logic in Fundamental and Applied Sciences

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Abstract

In Neutrosophic Logic, a basic assertion is that there are variations of about everything that we can measure; the variations surround three parameters called T,I,F (truth, indeterminacy, falsehood) which can take a range of values. This paper shortly reviews the links among aether and matter creation from the perspective of Neutrosophic Logic. Once we accept the existence of aether as physical medium, then we can start to ask on what causes matter ejection, as observed in various findings related to quasars etc. One particular cosmology model known as VMH (variable mass hypothesis) has been suggested by notable astrophysicists like Halton Arp and Narlikar, and the essence of VMH model is matter creation processes in various physical phenomena. Nonetheless, matter creation process in Nature remains a big mystery for physicists, biologists and other science researchers. To this problem Neutrosophic Logic offers a solution. We also discuss two other possible applications of Neutrosophic Logic. In short, Neutrosophic Logic may prove useful in offering resolution to long standing conflicts.

Keywords: Neutrosophic Logic, Physical Neutrosophy, aether, matter creation, integrative medicine

1.Introduction

Matter creation process in Nature remains a big mystery for physicists, biologists and other science researchers. To this problem Neutrosophic Logic offers a solution, along solutions to two other problems, namely the point particle assumption in Quantum Electrodynamics and also in resolving the old paradigm conflict between Western approach to medicine and Eastern approach.

In short, Neutrosophic Logic may prove useful in offering resolution to long standing conflicts. See also our previous papers on this matter. [29-30]

2. Matter creation processes

Physicists throughout many centuries have debated over the physical existence of aether medium. Since its inception by Isaac Newton and later on Anton Mesmer (Franz Anton Mesmer 1734 – 1815), many believed that it is needed because otherwise there is no way to explain interaction at a distance in a vacuum space. We need medium of interaction, of which has been called by various names, such as: quantum vacuum, zero point field, etc.

Nonetheless, modern physicists would answer: no, it is not needed, especially after Special Relativity theory. Some would even say that aether has been removed even since Maxwell's theory, but it is not true : James Clark Maxwell initially suggested a mechanical model of aether vortices in his theory [26-28]. Regardless of those debates, both approaches (with or without assuming aether) are actually resulting in the same empirical results [9].

The famous Michelson-Morley experiments were thought to give null result to aether hypothesis, and historically it was the basis of Einstein's STR. Nonetheless, newer discussions proved that the evidence was rather ambiguous, from MM data itself. Especially after Dayton Miller experiments of aether drift were reported, more and more data came to support aether hypothesis, although many physicists would prefer a new terms such as physical vacuum or superfluid vacuum. See [21]-[25].

Once we accept the existence of aether as physical medium, then we can start to ask on what causes matter ejection, as observed in various findings related to quasars etc. One particular cosmology model known as VMH (variable mass hypothesis) has been suggested by notable astrophysicists like Halton Arp and Narlikar, and the essence of VMH model is matter creation processes in various physical phenomena. Nonetheless, matter creation process in Nature remains a big mystery for physicists, biologists and other science researchers. To this problem Neutrosophic Logic offers a solution.

Although we can start with an assumption of aether medium is composed of particle-antiparticle pairs, which can be considered as a model based on Dirac's new aether by considering vacuum fluctuation (see Sinha, Sivaram, Sudharsan.) [5][6] Nonetheless, we would prefer to do a simpler assumption as follows:

Let us assume that under certain conditions that aether can transform using Bose condensation process to become "unmatter", a transition phase of material, which then it sublimates into matter (solid, gas, liquid). Unmatter can also be considered as "pre-physical matter."

Summarizing our idea, it is depicted in the following block diagram:¹

¹ The matter creation scheme as outlined here is different from Norman & Dunning-Davies's argument: "Energy may be derived at a quantum of 0.78 MeV to artificially create the resonant oscillatory condensations of a neutroid, then functioning as a Poynting vortex to induce a directionalized scalar wave of that quantum toward that vortical receptive surface." See R.L. Norman & J. Dunning-Davies, Energy and matter creation: The Poynting Vortex, 2019, vixra.org/1910.0241

Aether → bose condensation → “unmatter” (pre-physical matter) → sublimation → ordinary matter/particle

Diagram 1. How aether becomes ordinary matter

Actually the term “unmatter” can be viewed as a solution from perspective of Neutrosophic Logic. A bit of history of unmatter term may be useful here:

“The word ‘Unmatter’ was coined by one of us (F. Smarandache) and published in 2004 in three papers on the subject. Unmatter is formed by combinations of matter and antimatter that bound together, or by long-range mixture of matter and antimatter forming a weakly-coupled phase. The idea of unparticle was first considered by F. Smarandache in 2004, 2005 and 2006, when he uploaded a paper on CERN web site and he published three papers about what he called ‘unmatter’, which is a new form of matter formed by matter and antimatter that bind together. Unmatter was introduced in the context of ‘neutrosophy’ (Smarandache, 1995) and ‘paradoxism’ (Smarandache, 1980), which are based on combinations of opposite entities ‘A’ and ‘antiA’ together with their neutralities ‘neutA’ that are in between.”² See also Smarandache [13].

Nonetheless, in this paper, unmatter is considered as a transition state (pre-physical) from aether to become ordinary matter/particle, see also [14].

Moreover, superfluid model of dark matter has been discussed by some authors [7].

As one more example/case of our proposed scheme of transition from aether to matter, see a recent paper [18]. See the illustrations at pages 5 and 6 of [18] regarding the physically observed properties of the Galactic Center (GC), which are obviously completely different from the imaginary "black hole" model.

The mapping of the magnetic field structures of the Core is a profile of a torus, as we have previously suggested. Page 5 also illustrates the relation between Sag A and Sag B and the space in between them.

These illustrations are also relevant to *matter creation* at the galactic scale. Also note the gamma ray distributions in [18], which are relevant to matter destruction processes. Electrical discharges such as lightning, stars, and galaxies, all produce gamma rays. Gamma ray resonance dissociates atomic matter back into the aether at the rate of 6,800,000,000 **horsepower** of energy liberated per gram of matter dissociated per second. And where does all that energy go? Back into creating new matter. It's a never-ending cycle, and infinitely Universe-wide.

3. Towards QED without renormalization

² <http://fs.unm.edu/unmatter.htm>

One problem in theoretical physics is how to do away with infinity and divergence in QED without renormalization. As we know, renormalization group theory was hailed as cure in order to solve infinity problem in QED theory.

For instance, a quote from Richard Feynman goes as follows:

“What the three Nobel Prize winners did, in the words of Feynman, was “to get rid of the infinities in the calculations. The infinities are still there, but now they can be skirted around . . . We have designed a method for sweeping them under the rug.”[19]

And Paul Dirac himself also wrote with similar tune:

“Hence most physicists are very satisfied with the situation. They say: “Quantum electrodynamics is a good theory, and we do not have to worry about it any more.” I must say that I am very dissatisfied with the situation, because this so-called “good theory” does involve neglecting infinities which appear in its equations, neglecting them in an arbitrary way. This is just not sensible mathematics. Sensible mathematics involves neglecting a quantity when it turns out to be small—not neglecting it just because it is infinitely great and you do not want it!”[20]

Here we submit a viewpoint that the problem begins with assumption of point particle in classical and quantum electrodynamics. Therefore, a solution shall be sought in developing fluidic Electrodynamics [10], i.e. by using fluid particle, or perhaps we can call it “*fluidicle*.” It is hoped that a fluidicle can remove the infinity problem caused by divergence. And fluidicle can be viewed as a solution from perspective of Neutrosophic Logic.

4. Another application: Resolution to conflicting paradigms in medicine

It is well known by most medicine practitioners, that Western approach to medicine is based on “*curing*” or “*attacking*” a disease, one by one. This is called germ theory: one cure for one disease (Pasteur). On the opposite side, Eastern medicine is based in particular on ancient wisdom of returning the balance of the body, in other words: to *harmonize* our body and our live with nature. Although those two approaches in medicine and healthcare have caused so many conflicts and misunderstandings, actually it is possible to do a dialogue between them.

From Neutrosophic Logic perspective, a resolution to the above conflicting paradigms can be found in developing novel approaches which appreciate both traditions in medicine, or we may call such an approach: “*curemony*,” i.e. by at the same time curing a disease and restoring balance and returning harmony in one’s *body-mind-spirit as a whole*.

Although we don’t mention here specific case example, in general speaking we can mention:

- a. in HGH therapy, it is known that nutrition can affect the well-being of body [12],
- b. in the same way *Epigenetics* admits the role of external factors into the genes.
- c. We can also mention that psoriasis –a skin problem- can be related to stress and other emotions, which suggests a plausible new term: *psychodermatology*. [11]

All of these examples seem to suggest relational aspect within human being, among *mind-body-spirit*, just like what Eastern medicine emphasizes all along. In some literature, such a dialogue between Western and Eastern medicine approaches can be considered as *integrative medicine*, but actually it goes far deeper that just “*integrative*”, it is more like rethinking the “*isolate and solve*” attitude of Western scientists, toward more “*relational biology*.” And the

concept of systems biology or relational biology have become new terms in recent years. See also recent literatures in this subject [15][16][17].

Hopefully many more approaches can be developed in the direction as mentioned above.

5. Conclusions

In this paper, we discussed three possible applications of Neutrosophic Logic in the field of matter creation processes etc. For instance, a redefinition of term “unmatter” is proposed here, where under certain conditions, aether can transform using Bose condensation process to become “*unmatter*”, a transition phase of material, which then it sublimates into matter (solid, gas, liquid). Unmatter can also be considered as “pre-physical matter.” Moreover, a transition phase between fluid and particle (or fluidicle) is considered necessary in order to solve the “point particle” assumption which cause the divergence problem in QED. And for the third application of NL, we consider a dialogue is possible between Eastern and Western approaches to medicine.

Further researches are recommended in the above directions.

Acknowledgment

The authors wish to thank to many scholars, especially to four anonymous reviewers for suggesting improvement to this manuscript.

Funding: “This research received no external funding”

Conflicts of Interest: “The authors declare no conflict of interest.”

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Remark on Artificial Intelligence, *humanoid* and *Terminator* scenario: A Neutrosophic way to futurology

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Abstract

This article is an update of our previous article in this SGJ journal, titled: *On Gödel's Incompleteness Theorem, Artificial Intelligence & Human Mind* [7]. We provide some commentary on the latest developments around AI, humanoid robotics, and future scenarios. Basically, we argue that a more thoughtful approach to the future is "*techno-realism*."

Keywords: Neutrosophic Logic; Neutrosophic Futurology; artificial intelligence

1. Introduction

Indeed among the futurists, there are people who are so optimistic about the future of mankind with its various technologies, such as Peter Diamandis with his "*Abundance*." But there are also skeptics, who predict "*dystopia*," like George Orwell's 1984, etc [4].

At my best, our response is: that we must develop a view of technology that is not very optimistic but also not pessimistic, perhaps the right term is: "*Techno-realism*." [3]

We mean this: with a lot of research on robotics, humanoids, etc., then emerged developments in the direction of *transhumanism and human perfection* [6].

There is already fortune-telling that AI will be established with psychological and spiritual science, so as to bring up the AI/robotic consciousness [7].

But lest we become forgetting our past, and building the tower of Babylon.

For example, last year the world's robotics experts were made yammer because there was a "tactical-robot" report developed in one of the labs on campus in South Korea. It means this tactical robot is a robot designed to kill. Then Elon Musk and more than 2000 AI researchers raised petitions to the UN to stop all research on tactical robotics [2].

Roughly it's a true story that we can recall, although it is not our intention here to give foretelling that the world would be heading for the *Terminator* movie scenario, there's a chance we're heading there.

A Neutrosophic perspective

As an alternative to the above term of "techno-realism", our problem of predicting future technology that is not very optimistic but also not pessimistic, is indeed a Neutrosophic problem.

First, let us discuss a commonly asked question: what is Neutrosophic Logic? Here, we offer a short answer. Vern Poythress argues that sometimes we need a modification of the basic philosophy of mathematics, in order to re-define and redeem mathematics [8]. In this context, allow us to argue in favor of Neutrosophic logic as a starting point, in lieu of the Aristotelian logic that creates so many problems in the real world.

In Neutrosophy, we can connect an idea with its opposite and with its neutral and get common parts, i.e. $\langle A \rangle \wedge \langle \text{non-}A \rangle = \text{nonempty set}$. This constitutes the common part of the uncommon things! It is a true/real—paradox. From neutrosophy, it all began: neutrosophic logic, neutrosophic set, neutrosophic probability, neutrosophic statistics, neutrosophic measures, neutrosophic physics, and neutrosophic algebraic structures [9].

It is true in a restricted case, i.e. Hegelian dialectics considers only the dynamics of opposites ($\langle A \rangle$ and $\langle \text{anti-}A \rangle$), but in our everyday life, not only do the opposites interact, but the neutrals $\langle \text{neut-}A \rangle$ between them too. For example, if you fight with a man (so you both are the opposites to each other), but neutral people around both of you (especially the police) interfere to reconcile both of you. Neutrosophy considers the dynamics of opposites and their neutrals.

So, neutrosophy means that: $\langle A \rangle$, $\langle \text{anti-}A \rangle$ (the opposite of $\langle A \rangle$), and $\langle \text{neut-}A \rangle$ (the neutrals between $\langle A \rangle$ and $\langle \text{anti-}A \rangle$) interact among themselves. A neutrosophic set is characterized by a truth-membership function (T), an indeterminacy-membership function (I), and a falsity-membership function (F), where T, I, F are subsets of the unit interval [0, 1].

In particular cases we have a single-valued neutrosophic set {when T, I, F are crisp numbers in [0, 1]}, and an interval-valued neutrosophic set {when T, I, F are intervals included in [0, 1]}.

From a different perspective, we can also say that neutrosophic logic is (or "Smarandache logic") a generalization of fuzzy logic based on Neutrosophy (<http://fs.unm.edu/NeutLog.txt>). A proposition is t true, i indeterminate, and f false, where t, i, and f are real values from the ranges T, I, F, with no restriction on T, I, F, or the sum $n = t + i + f$. Neutrosophic logic thus generalizes:

- Intuitionistic logic, which supports incomplete theories (for $0 < n < 100$ and $i = 0$, $0 < = t, i, f < = 100$);
- Fuzzy logic (for $n = 100$ and $i = 0$, and $0 < = t, i, f < = 100$);
- Boolean logic (for $n = 100$ and $i = 0$, with t, f either 0 or 100);
- Multi-valued logic (for $0 < = t, i, f < = 100$);
- Paraconsistent logic (for $n > 100$ and $i = 0$, with both $t, f < 100$);
- Dialetheism, which says that some contradictions are true (for $t = f = 100$ and $i = 0$; some paradoxes can be denoted this way).

Compared with all other logics, neutrosophic logic introduces a percentage of "indeterminacy"—due to unexpected parameters hidden in some propositions. It also allows each component t, i, f to "boil over" 100 or "freeze" under 0. For example, in some tautologies, $t > 100$, is called "overtrue." Neutrosophic Set is a powerful structure for expressing indeterminate, vague, incomplete, and inconsistent information.

Therefore, from the Neutrosophic Logic perspective, "our problem of predicting future technology that is not very optimistic but also not pessimistic" can be rephrased as follows:

(Opposite 1) pessimism – pess-optimism — optimism (Opposite 2)

While the term pess-optimism may be originated in engineering (perhaps in geotechnical engineering), but it has become one term in urban dictionaries, see:

"A philosophy that encourages forward-thinking optimism with an educated acceptance of a basic level of **pessimism**. **Optimism's** fault is its *naïveté*, while **pessimism's** fault is its *blind jadedness*. We live on Earth and are human. There is, was, and will be good and bad." [10].

That would mean a more balanced view of the future (futuresology), something between a too optimistic view and a too pessimistic view. It is our hope that the Neutrosophic perspective may shed more light on this wise term of pess-optimism, although for us "*techno-realism*" term may bring more clarity with respect to technology foretelling.

Alternatively, we can also consider a few new terms, such as:

- a. *Less-optimism*: somewhat less than optimal, although it is not pessimism.
- b. Merging optimism and realism: *opti-realism*. It can be a somewhat better term compared to pess-optimism because *realism* brings a more pragmatic view into the conventional dialogue between pessimism and optimism.

Then maybe we can call this new approach: Neutrosophic Futuresology.

What about AI fever?

In line with it, a Canadian mathematics professor wrote the following message a few days ago:

*"I am appalled by the way how computer science damaged humanity. It has
Been even worse than nuclear bombs. It destroyed the soul of humanity and
I have less than 0% interest in doing anything in this evil field.
Now, something more destructive than data mining is coming up. Yes AI,
Probabilistic AI. It says we don't know why but somehow it works. So we
Started to have airplane malfunction because of the AI program failure. "*

Of course, you can agree or not with the expression of that mathematics professor, but reportedly the employees of Google also demanded strict rules for AI to be freed from weaponry purposes or called "weaponized AI" [1].

Meanwhile, it is known that the development of science and technology has a positive and negative facets as well as the Robotics & AI. Although positive contributions are obvious, the side effects are spiritual and mental aspects; and it needs to be prepared so that people can still take the positives, for example, the planner of robotic Intelligence must have a code of ethics: *Intelligence robotics should not harm or kill humans, rob banks, etc.* For other ethical issues of AI, see for example [5].

Are there practical examples of the realism attitude in technology?

If you got free time, read the periodicals about the industry in Japan. There are at least 2 interesting phrases that are worth a study: *Ikigai and Monozukuri*.

The ikigai may be a bit often heard, meaning: The reason we wake up early, consisting of a balance between passion, work, profession, etc.

Then what is Monozukuri? According to a source:

"Monozukuri is a Japanese word derived from the word "mono "means product or item and "Zukuri "means the creation, creation, or production process. However, this concept has far broader implications than its literal meaning, where there is a creative spirit in delivering superior products as well as the ability to continuously improve the process... "

What is the implementation? Let's look at 2 simple examples:

A. Sushi: Though simple at a glance, sushi is carefully designed so that the size is a one-stop meal. No more and no less. That is the advantage of many innovations that are typical of the Japanese because they think carefully about the usefulness, size, and artistic value of the product. And so on.

B. Shinkansen: The uniqueness of this train is not only about speed, but also on time (punctual). Even reportedly, the time lag between train sets is less than 5 minutes. And everything is designed by Japanese railway engineers even before there is a personal computer or AI. Then how did they design such an intricate system? Answer: They use dynamic control theory ("*Dynamic control Theory*").

Concluding remarks

Of course, this is just a brief comment on a complicated topic that needs to be carefully examined and cautiously thought of.

Let the authors close this article by quoting the sentence of a wise man in the past centuries:

"Lo, this only has I found, that God hath made man upright; but they have sought out many inventions."

Wishing you all a happy new year 2020. Hopefully next year there will be not a robot to greet you. Yes, it is indeed a great paradox in the 21st century: "*Robots are increasingly proficient at imitating humans, but many humans live like robots.*"- personal quote.

Acknowledgment

One of these authors (VC) is really grateful to Prof. Iwan Pranoto and Prof Liek Wilardjo for starting this discussion and to Prof. The Houw Liong who has been willing to read and give valuable advice.

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Main course –

joint articles with Robert Neil Boyd, Yunita Umniyati, etc.





Remark on creation and dis-creation processes related to origination of charge and matter

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Abstract

The ubiquitous creation process of the electron-positron pairs is brought out as being due to resonant von Karman vortex streets caused by local aether flows, as related to the Kelvin-Helmholtz vortex model of the electron and positron from fluid dynamics. The origination of electric charge is discussed as being caused by the bending and slowing of infinite velocity vortex lines, where electrons and positrons exhibit continuous charge because vortex lines are captured, always bent away from a perfectly straight line, and constantly circulate internal to these particles. The ubiquitous *dis-creation* (dissociation) of atomic matter due to gamma ray resonance with the given atom, can be controlled, and can produce any manner of force desired, arising from the vicinity of the atomic dissociation site. Both processes, creation and dis-creation, can produce excess electrical energy, so we think these investigations are valuable, in this regard. As these useful matter creation processes are more deeply investigated and new technologies arise from these studies, we will be able to make any amount of any kinds of atoms we like. We will also will be able to make "designer atoms" which will have physical properties, as desired by us, perfectly suited for the selected application.

Keywords: Creation Process; Dis-creation Process; Origination of charge

Introduction

The origination of charge is a creation process. Infra-atomic reactors (cf. G. Le Bon) are based on *dis-creation processes*. Both these things are happening all the time, everywhere. Matter is both created and destroyed all the time, everywhere. This has already been proved by experiments and instrumented observations. Therefore, now it appears worthy to discuss how these processes may be related to origination of charge and matter. That is the topic of this short communication.

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Doi : <https://doi.org/10.54216/JCFA.010105>

Received: January 23, 2022 Accepted: May 25, 2022

Section 1. KH electron vortex and turbulence theory

Turbulence origination of Kelvin-Helmholtz electron vortex from classical perspective (see also ref. [1])

For a non-viscous fluid, pressure exerts a force of $-\text{grad } p$ per unit volume. (There is also a gravitational aether force, ρg per unit volume.) The aether fluid obeys Newton's law of motion, so $\rho dv/dt = -\text{grad } p$, as the equation of motion. (This is used to determine fluid pressure when the flow is known.)

A vorticity field is $\omega(x,y,z,t)$ in magnitude and direction, at any point. Lines drawn parallel to ω are called vortex lines, and their density can express the strength of the rotation, just as streamlines define the velocity field, and magnetic field lines define a magnetic field. (Such lines are not real, but greatly aid in visualization).

The line integral of the component of velocity, tangent to a closed curve, is called "*circulation*", and clearly measures the amount of rotation in the vortex. Let's take a small circle surrounding an area $A = \pi r^2$ as the path of integration. If the angular velocity is ω , then the circulation will be $2\pi r \times \omega r = 2\pi \omega r^2 = 2\omega A$. Thus, the circulation of the fluid, per unit area, is directly proportional to the angular velocity of rotation.

Stokes's Theorem states that the circulation of a vector about any curve C, is the surface integral of the curl (del cross) of the vector over the area enclosed by C. If this is applied to the present case, we find that $\text{curl } v = 2\omega$, so that the rotation of the vortex is half the curl of the velocity. Since the divergence of the curl of a vector is identically zero, $\text{div } \omega = 0$.

This means that if we consider a tube whose walls are parallel to ω , called a vortex tube, then this tube has the same "strength" (the product of the area and ω), at any point. This means that the vortex tube cannot end within the fluid, and must either close into a ring, or go to a boundary.

The Kelvin-Helmholtz theorem, states that the substantial derivative of the circulation about any curve C, in a fluid of zero viscosity, vanishes. This applies to any curve C on the walls of a vortex tube, or in any surface parallel to the vorticity, and implies that vortex lines are carried with the fluid, and that the "strength" at any point remains constant.

If the initial state of a fluid to which the KH theorem applies, has no rotation, that is, $\text{curl } v = 0$ everywhere, the fluid will remain irrotational as it moves. This also means that if rotation exists in the vortex, it will persist for all time.

The stream function in a fluid or gas is analogous to the use of the vector potential of the magnetic fields of electric currents. From this, *the foundational basis of electromagnetism is actually a description of fluidic flows in the aether.*

Consider a vector field

$$A = kA(x,y), \quad (1)$$

where $A(x,y)$ may also vary with the time, but we will consider that later. Suppose that v is derived from A by the rule $v = \text{curl } A$. Writing this out:

$$v = i(\partial A/\partial y) - j(\partial A/\partial x), \quad (2)$$

so that $v_x = \partial A/\partial y$ and $v_y = -\partial A/\partial x$. Now, writing out the continuity equation of

$$\text{div } v = 0, \quad (3)$$

it is automatically satisfied for any function A . To find the relationship between A and the vorticity, we write out the z-component of $\text{curl } v$, to find that

$$2\omega = \partial v_y / \partial x - \partial v_x / \partial y - \text{div grad } A. \quad (4)$$

In considering two-dimensional motions, the vorticity of the aether fluid can only be parallel to the z-axis, since the velocity must lie in the x y-plane and is independent of z. (The vector potential of a magnetic field satisfies the same equation, where the current takes the place of fluidic vorticity.) The above, is *Helmholtz's equation*. The one scalar function A, thus allows us to find two interrelated components of the fluid velocity.

If the aether flow is irrotational, then A will satisfy Laplace's equation, and solve the problem as well as the velocity potential ϕ . In fact, A and ϕ are conjugate functions. In two dimensions, they are the real and imaginary parts of a complex analytic function. The streamlines $A = \text{constant}$, are orthogonal to the equipotentials $\phi = \text{constant}$, again *pointing to the direct relation between fluidic aether flows and the Maxwell equations*.

Vortex lines have been postulated to study fluid dynamics. A vortex line has a finite strength (vorticity times area), but zero area, similar to the understanding that a dipole has zero length. The resulting vortex lines tend to propagate at infinite velocity, as long as the lines remain absolutely straight. This would be the 5th aether phase state in *Mishin's 5-phase aetherdynamics*.¹ See figure 1 below.²

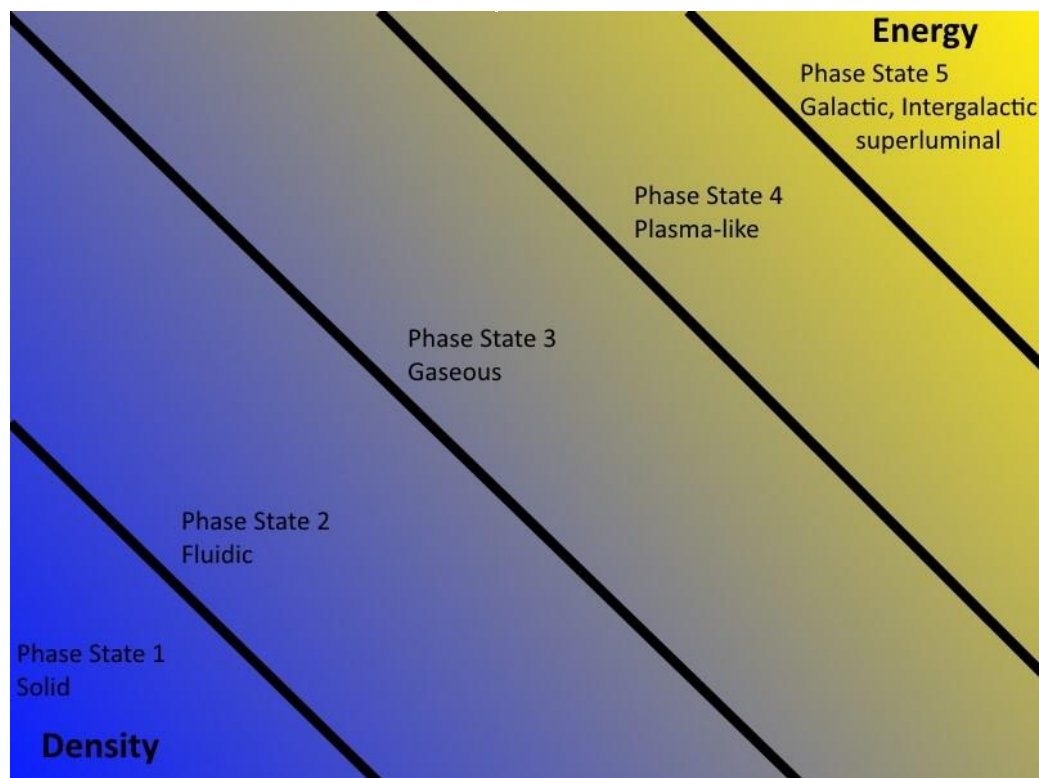


Figure 1: *Mishin's 5-phase aetherdynamics*.

1

¹ https://www.researchgate.net/figure/Mishins-5-phase-aetherdynamics_fig7_329072312

2

² In Figure 1, there is reference to phase 5: Intergalactic superluminal. A few additional note: Based on a 1972 manuscript, when he (FS) was a student in Rm. Valcea, he published in 1982 the hypothesis that 'there is no speed barrier in the universe and one can construct any speed', (<http://scienceworld.wolfram.com/physics/SmarandacheHypothesis.html>). This hypothesis was partially validated on September 22, 2011, when researchers at CERN experimentally proved that the muon neutrino particles travel with a speed greater than the speed of light. We will discuss this superluminal hypothesis in the next paper submitted to this journal.

The aether flows around an already existing, but non-motional, electron vortex in a streaming aether fluid flow, sheds vortex pairs which are rotating in opposite directions, alternately from the two sides of the KH vortex, resulting in lines made of vortices, called a "vortex street" (also called a "*von Kármán street*"), behind it. These "streets" are seen on all scales, from flows in brooks, to clouds in the atmosphere, to the fluidic aether in which KH electron vortices eventually come into existence.

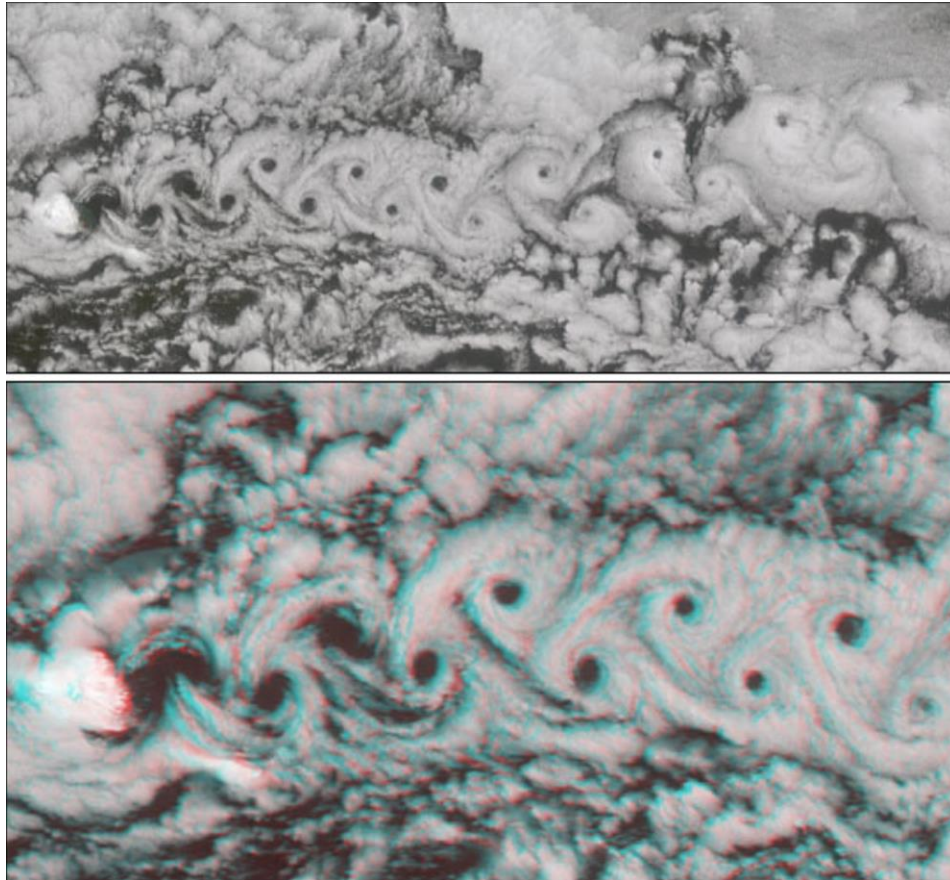


Figure 2: Photographs of von Karman streets in clouds (see also ref. [1])

Alternating transverse forces can act on a cylinder, for example a telephone wire, which can make it vibrate. This is the reason why wires "sing" in the wind. The wire cylinder is stationary in a stream of moving media. Behind the cylinder is a turbulent wake of slowed air. Two vortex sheets are formed on each side of the wake, and their instability results in the vortex streets (streams of vortices). Vortices are formed in a Kelvin-Helmholtz instability in the same way. Analogous effects occur in aether flows which pass around an existing electron sphere, but in this situation the resulting "street" of vortices form into rings, which are exactly many newly formed KH vortices.

Vortex "shedding" produces resonances with the object that impeded the flow. In this case, the vortices are resonant with the existing electron. This means the positron could be viewed as an "anti-resonant" particle. Resonance at this level will constrain the vortices in the "street" to form duplicates that are the same as the original forms, in terms of "aether mass" (constrained aether infinitesimals). This also implies that positrons can be the basis for the

formation of new electrons, in the parallel aether stream. See figure 3.

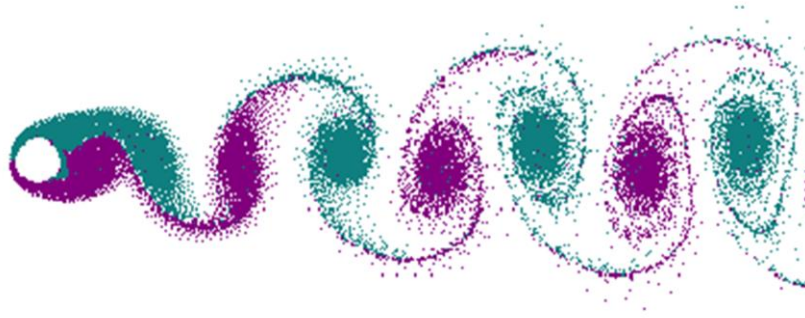


Figure 3: alternating electron-positron, alternating rotation directions (Wikipedia gif)

This raises a number of questions: Does this imply that both positive and negative charges already both exist, internal to the aether which comprises the aether winds? This implies that behaviors of obstructed aether flows are the origination of the **cause** of the distinct charges of electrons and positrons, and of electrons and protons.

The KH vortex model of the electron is simultaneously a sphere, surrounding a nest of concentric smaller vortices, which have a vortex ring at the middle of the concentric aether flows which comprise the particle. (So the ring model is only partially valid).

Section 2: KH electron vortex and origination of charge and matter

Vortex lines have been postulated to study fluid dynamics. A vortex line has a finite "strength" (vorticity times area), but a zero area, similar to the understanding that a dipole has zero length. Vortex lines tend to propagate at infinite velocity, as long as the lines remain absolutely straight. (This would be the 5th aether phase state in Mishin's 5-phase aether dynamics. See Figure 1.)

Importantly, the instant a vortex line departs from an absolutely straight line of propagation, **charge develops** in all the vortex lines that are bent. According to the direction of the bend, away from a perfectly straight line, a positive or a negative charge develops. In addition, with every bend in the propagation line, the vortex line is slowed to below an infinite velocity. Eventually vortex lines are moving slowly enough to comprise the 5 phase-state aether and can produce new matter through interacting with existing matter by way of "von Karman streets", where there is an "aether wind" in the vicinity of the existing matter.

Parity (handedness) is directly involved in the development of charge. Parity determines the sign of the charge. The internal quantum numbers of electrons are opposite to those of positrons, which is just a restatement of the handedness (parity) of the internal aether circulation directions. The involvement of superluminal SQ infinitesimals in the formation of electrons and positrons, and superluminal internal circulations of the aether constituents of electrons and positrons, eliminates Lorentz "invariance" from consideration.

Lorentz "invariance" is only valid for the **single absolute value of c**, which value has been experimentally proven to vary by as much as plus and minus 3000 meters per second, as recorded in the handwritten log-books associated with the hundreds of repetitions of the Michelson-Moreley experiments during the last century; see ref. [7]. In addition, Lorentz "invariance" has nothing to do with electrons, positrons, and so on, due to the fact that "invariance" is only valid for exact specific-velocity photons, which are **not identical** to electrons, contrary to the expressions of Heisenberg in his first book on quantum theory.

Vortex lines circulating internal to electrons or positrons are **always** bent away from a straight line, so the vortex lines circulating internal to electrons and positrons are **always creating charge**. This is **the origination of charge** and the reason charge never ceases, as long as the charged particle exists.

In addition, the electron-positron pairs are forming in aether-connected chains, which chains are responsible for the creations of atoms, as well as protons and neutrons, in a manner which depends on how long is the “street” of connected electron-positron pairs, which in turn, become parts of the nucleus of the new atom, in terms of the atomic number of the nucleus of the atom, in an *e-p* pair model of the composition of, and the construction of, the protons and neutrons which comprise the nuclear particles of atoms.

If the parallel aether flows which are forming chains of *e-p* pairs are short-lived, we will only see hydrogen, or perhaps the occasional helium atom being generated. Longer *e-p* chains result in larger atoms. The local density of types of atoms and alignments of atoms, may give an indication of the frequency of aether wind streamlines, in that region. Proper instrumentation of vortex-line (SQ infinitesimals) resultant behaviors can be used to map astronomical space, comprising an infinite range observation capability, due to the fact that vortex lines propagate with infinite velocity.

Section 3: Creation and dis-creation processes

As we wrote above, the origination of charge is a creation process. Infra-atomic reactors (cf G. Le Bon) are based on dis-creation processes. Both these things are happening all the time, everywhere. Matter is both created and destroyed all the time, everywhere. This has already been proved by experiments and instrumented observations. The infinite volume universe has creation and dis-creation events going on everywhere all the time. Creation is ubiquitous and unending. Everything and everybody participates in creation processes.

Thermodynamics is not valid, in general, except that topological thermodynamics has some important merit. The late Prof. R.M. Kiehn made excursions into the topological thermodynamics of Pfaff Dimension 4, which is highly commended.³ Kiehn proved that volumes which topologically occupy Pfaff Dimension 4, can gain or lose energy and/or mass. Thus topological Pfaff Dimension 4 activities can involve both creation and dis-creation of both matter and energy.

The KH electron creation process described above, makes perfect sense from the von Karman “vortex street” perspective, which results in electron-positron chains, which can form larger nuclear particles if the chain is long enough, and then entire atoms, if the chain of alternating electrons and protons is long enough.

The physical extent of subatomic particles such as the electron, proton, and neutron, have been measured by experiments. The stability and longevity of subatomic particles are fairly well documented. The life span of subatomic particles is incorrect though, as the proton is calculated, without physical evidence, to live for billions of years. They do not. The universal proton life-span is considerably shorter than that, on average, when universally ubiquitous gamma ray dissociations of atoms are included in considerations of the average life of a proton.

It is conjectured that when an electron captures a photon, the mass and the size of the electron increase for a short time.

This helical form of EM ties into the KH electron, during photon capture events, The captured photon causes an energetic imbalance in the desired and required stability of the electron, which causes the photon to be ejected in a short while.

3

³ See for instance R.M. Kiehn. *The Universal Effectiveness of Topological Thermodynamics*. April 2014. url: <https://www.amazon.com/Effectiveness-Topological-Thermodynamics-Non-Equilibrium-Irreversible/dp/1304702928>

Perhaps the formation of the electron during a creation incident causes the aether which is involved in the electron, to change its phase-state towards being a "solid". This might account somewhat for the physical properties and behaviors of the electron. Does the electron change form in any way, while it is involved with an atom? Atoms are all about aether motion, ultimately.

The fact that some atoms are the same sizes as some gamma rays, can cause a resonance-breakdown, when a gamma ray, exactly the same size as the given atom, passes somewhere close to that atom, causing the entire of the atom to dissociate into the aether from whence it came. *Poof!* Gone. No other particles arise. Now liberated from participating in the particles that used to exist there, large numbers of infinite velocity vortex lines radiate from the dissociation site, starting matter creation processes anew.

If the gamma ray which causes atomic dissociation is not exactly the perfect wavelength for the given atom, the atom will break down in showers of multitudes of subatomic particles, rushing away from the former location of the atom.

Some of these particles cannot be observed during collider experiments, which are as primitive as throwing rocks at other rocks from a large distance, and then studying the small bits of rock and dust, resulting from the collision. ("Look! This bit has some red in it!", all excited about the discovery.) *There is a limit to what can be produced by colliders*, based on the angles of intersection during the occasional collisions, and according to what is colliding with what.

There have been very few collider experiments involving atoms, by the way. We wonder why? We think it is because they don't want people to know what happens to **atoms** during collider experiments. Nuclear "enrichment" by neutron bombardment is the only collider-type event that they will allow the public to hear about.

T. Henry Moray made apparatus which involved a linear accelerator bombarding gold mine refuse, which was slowly passing through the accelerator output, on a conveyor belt. Moray's apparatus made prolific quantities of gold appear in the mine tailings refuse, as gold "seed atoms", scattered through the tailings, proliferated into larger and larger numbers of gold atoms which appeared near the "seed atoms", eventually forming into gold crystals, which were directly connected to the originating "seed atom". This gold-producing process was quite profitable, even considering the expenses of the equipment.

Infra-atomic interactions (resonant gamma rays and atoms) are interesting. Exact atom-gamma ray resonance will result in the entire of the atom being converted back into aether, and entirely vanishing. By controlling the exact frequency of gamma radiation, relative to a given atom, when the impacting gamma ray has a small frequency deviation, away from exact resonance with the given atom, when the atom-gamma ray interaction occurs, not only are showers of subatomic particles resulting, but specific forces of any selected kind, will arise from the reaction site. Which force arises depends on the exact frequency offset departing from exact gamma ray resonance with the given type of atom.

Heat, light, cold, attractive force, repulsive force, gravity, anti-gravity, magnetism, electric fields, anti-electric fields, propulsive force, indeed, whatever kind of force you would like, will be radiated from the infra-atomic interaction site, directly controlled by the gamma ray frequency offset, relative to the given atomic element. Since this is not exact resonance, some subatomic particle effluvia will result, and must be accounted for, *for safety reasons*, in the local environment surrounding the reactor.

Section 4. Remark on Tesla's magnifying transmitter

Telsa's "magnifying transmitter" produces streams of aether which radiate from the electrical explosion point at the rate of $1/r$. This apparatus is what is required to produce prolonged streams of aether, with close to parallel emanations of aether, to create matter in the von Karman vortex aether creation model of matter production. The strength and duration and duty cycle of the magnifying transmitter operation determine how many e-p pairs are created in a string, which determines what kinds of atoms will be created. Thus kinds of atoms created can be directly controlled through controlling the operational parameters of the magnifying transmitter.

This is vastly superior to destructive and limited collider techniques, which are only able to make isolated pairs. The magnifying transmitter approach can make strings of selected numbers of e-p pairs, thus producing selected types of atoms.

Tesla's magnifying transmitter technology needs to be re-awoken to make this available. Many additional capabilities are available from Tesla's magnifying transmitter apparatus, such as wireless and safe transmission of electrical power and wireless communications which do not cause any hazards to life-forms.

Section 5. Concluding note: Practical and potential implications of the proposed view

In this article, we discuss shortly on creation and dis-creation processes related to origination of charge and matter by the production of any force you like, especially from Kelvin-Helmholtz electron vortex theory. Both processes, creation and dis-creation, can produce excess electrical energy, so we think such an investigation is worthy to continue.

When the matter creation process is deeply investigated and technologies arise from the studies, we will be able to make any amount of any kinds of atoms we like.

Later, after deeper investigations, we will be able to make "*designer atoms*" which will have physical properties, as desired by us, perfectly suited for the selected specific application.

For example, Gustave Le Bon made an "*infra-atomic reactor*", which he designed to produce electricity. Le Bon stated that any kind of atom could be used as fuel. His reactor was so efficient, he stated that after 100 years of continuous operation, at 500 kilowatts, the atomic material he used would be measured to have lost approximately 1 gram of weight, the lost matter having reverted into the aether.[3]

Using the same principles as outlined above, when sufficient control of atom parameters becomes available, we could produce a version of the metal lead with atoms which do not melt until 2000° C temperature is exceeded. (This example was accomplished by *T. Henry Moray*, during the 1950s. Moray sent useful weights of samples of his new form of lead to many Universities, chemical suppliers and chemical manufacturers for them to examine and experiment with. None of them responded. See also Ref. [6])

There will be limits regarding which atomic parameters can be controlled, and to what extent the physical properties of the given atomic element can be changed, which will be specific to that kind of atom.

However, tailored combinations of tailored atoms can manufacture new kinds of materials, and new kinds of custom-tailored alloys, with amazing physical properties.

In the sequence of new technology developments related to *matter-creation processes*, we will eventually be able to make complicated large objects, such as extraordinarily capable automobiles, on an atom-by atom basis.

Soon after that stage is reached, we will be able to mass produce anything we choose, on an atomic basis, at no cost for the materials, and no cost for the automated assembly. The item can be made an integral whole, with no bolts or rivets or welds or adhesives required to assemble the unit on an atom-by-atom basis.

Eventually, making new cars on an atomic basis, will be as easy and convenient as printing a page out of your computer.

Acknowledgement

The authors wish to extend gratitude for discussions with many scholars, including to the late Prof. Robert M. Kiehn (Univ. of Houston, USA). An earlier version of this manuscript has been presented at *Physics Beyond Relativity Conference*, October-November 2019, held at Prague, Czech, host by Prof. Jan Rak. Url: <https://science21.cz/conference/?p=858>

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Document history:

ver. 1.0: 25th Jan. 2019

ver. 1.1: 28th Jan. 2019

ver. 1.2: 3rd Feb. 2019

ver. 1.3: 4th March 2019

ver. 1.4: 4th July 2021

RNB, VC, FS



Remark on Recent Experimental Findings supporting Smarandache's Quantum Sorites Paradoxes, Superluminal Hypothesis, and SubQuantum Kinetic Model of Electron

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Abstract

Statement of the Problem: Smarandache Hypothesis states that there is no speed limit of anything, including light and particles. While the idea is quite simple and based on known hypothesis of quantum mechanics, called Einstein-Podolski-Rosen (EPR) paradox, in reality such a superluminal physics seems still hard to accept by majority of physicists. Here we review some experiments to support superluminal physics and also findings to explain Smarandache Quantum Paradoxes and Quantum Sorites Paradox. We also touch briefly on new experiment on magneton, supporting SubQuantum Kinetic Model of Electron. *Aim of this paper:* We discuss some experimental results which will likely open new directions of research toward evidence-based physics. *Conclusion & Significance:* Multiexperimental findings assessment allows one to verify conjectures by Florentin Smarandache & RNB, namely: Smarandache Hypothesis, Smarandache Quantum Sorites Paradoxes and SubQuantum Kinetic Model of Electron.

Keywords: Smarandache hypothesis; Smarandache Quantum Sorites Paradoxes; and SubQuantum Kinetic model of electron.

1. Introduction

Smarandache's Superluminal Hypothesis states that there is no speed limit of anything, including light and particles [1]. Eric Weisstein also wrote implications of Superluminal Hypothesis: "(i.e., the speed of light c is not a maximum at which information can be transmitted) and that arbitrary speeds of information or mass transfer can occur. These assertions fly in the face of both theory and experiment, as they violate both Einstein's special theory of relativity and causality and lack any experimental support. It is true that modern experiments have demonstrated the existence of certain types of measurable superluminal phenomena. However, none of these experiments are in conflict with causality or special relativity, since no information or physical object actually travels at speeds $v > c$ to produce the observed phenomena." [1a]

While the idea is quite simple and based on known hypothesis of quantum mechanics, called Einstein-Podolski-Rosen paradox, in reality such a superluminal physics seems still hard to accept by majority of physicists. Here we review some experiments to support superluminal physics and also findings to explain Smarandache Quantum Paradoxes and Quantum Sorites Paradoxes [2][3]. We also touch briefly on new experiment on magneton, supporting SubQuantum Kinetic Model of Electron. That is the topic of this short communication.

a. Superluminal Hypothesis and remark on OPERA's failure to detect superluminal neutrino

Superluminal hypothesis actually went back to around 70s, proposed for the first time by Florentin Smarandache. Based on a 1972 manuscript, when he was a high school student in Rm. Valcea, he

published in 1982 the hypothesis that 'there is no speed barrier in the universe and one can construct any speed' in the following way:

- suppose a certain physical process produces a pair of entangled particles A and B (having opposite or complementary characteristics), which fly off into space in the opposite direction and, when they are billions of miles apart, one measures particle A; because B is the opposite, the act of measuring A instantaneously tells B what to be; therefore those instructions would somehow have to travel between A and B faster than the speed of light; hence, one can extend the Einstein-Podolsky-Rosen paradox and Bell's inequality and assert that the light speed is not a speed barrier in the universe;
- even more, one can construct any speed, even greater than the speed of light (c), by measuring particle A at various intervals;
- also, the information from particle A and B is transmitted instantaneously (thus, there is no speed barrier in the universe).

Later on, upon his hypothesis he proposed an Absolute Theory of Relativity [free from: time dilation, space contraction, relativistic simultaneities and relativistic paradoxes which look alike science fiction not fact]. Then he extended his research to a more diversified Parameterized Special Theory of Relativity (1982)¹ and generalized the Lorentz Contraction Factor to the Oblique-Contraction Factor for lengths moving at an oblique angle with respect to the motion direction, then he found the Angle-Distortion Equations (1983).²

He considered that the speed of light in vacuum is variable, depending on the moving reference frame; that space and time are separated entities; also the redshift and blueshift are not entirely due to the Doppler Effect, but also to the Medium Gradient and Refraction Index (which are determined by the medium composition: i.e. its physical elements, fields, density, heterogeneity, properties, etc.); and that the space is not curved and the light near massive cosmic bodies bends not because of the gravity only as the General Theory of Relativity asserts (Gravitational Lensing), but because of the Medium Lensing.

In order to make the distinction between clock and time, he suggested a first experiment with different clock types for the GPS clocks, for proving that the resulted dilation and contraction factors are different from those obtained with the cesium atomic clock; and a second experiment with different medium compositions for proving that different degrees of redshifts/blueshifts and different degrees of medium lensing would result.

He introduced the superluminal and instantaneous physics (domains that study the physical laws at superluminal and respectively instantaneous velocities), and the neutrosophic physics that describes collections of objects or states that are individually characterized by opposite properties, or are characterized neither by a property nor by the opposite of the property. Such objects or states are called neutrosophic entities. [<http://fs.unm.edu/SuperluminalPhysics.htm>]

What's interesting to remark here, is that since 2011, there was an apparent surprising result as announced by OPERA team. Nonetheless, few months later it was renounced, on the ground of errors in handling the measurement.

The story was retold by Lukasz Glinka as follows:

“On September 22, 2011, the human world overloaded throughout the diverse paradigms and dogmas had experienced truly revolutionary excitations. Namely, on this day the OPERA Collaboration, an international experimental project of the European Organization for Nuclear Research - CERN, announced that their results, which arose from the high-statistics experimental data, evidently demonstrate existence of the superluminal neutrinos, Cf. the Refs. [1,2]. During the subsequent five months, the public opinion was a witness of many various speculations about faster-than-light motion, but already on February 22, 2012, OPERA pointed out the two issues, based on the technology of the Global Positioning System whose construction in itself makes use of the arguments of Special Relativity, which could immediately impact on the measurement process, Cf. the Refs. [3,4]. The first problem was linked to the oscillator producing the events time-stamps in between the GPS synchronizations, whereas the second one was the cable of the optical fiber bringing the external GPS signal to the OPERA master clock. Both these possibilities potentially could give the anomaly regarded as an experimental error which led to

¹ <http://fs.unm.edu/ParameterizedSTR.pdf>.

² <http://fs.unm.edu/NewRelativisticParadoxes.pdf>

registration of the faster-than-light neutrino. In February 2012, the second reason was considered more seriously than the first one, and the CERN experimentalists announced that the situation will be verified once again yet in 2012. ...Moreover, it is worth stressing that the superluminal state of affairs is well-known in modern astronomy since the early 1980s, when the faster-than-light motion had been suggested in order to contradict the quasars having the cosmological distances. In the present-day situation, the experimental data show that the superluminal travels are the phenomena which are very often met in radio galaxies, quasars and microquasars.”[5]

Allow us to make few comments on such an apparent failure to detect faster than light speed as follows: Anyway we thought that a more convincing experiment has been done by Alain Aspect etc., showing quantum nonlocal interaction is real. In 1980 Alain Aspect performed the first EPR experiment (Einstein-Podolski-Rosen) which proved the existence of space nonlocality (Aspect 1982). Alain Aspect and his team at Orsay, Paris, conducted three Bell tests using calcium cascade sources. The first and last used the CH74 inequality. The second was the first application of the CHSH inequality. [10] The third (and most famous) was arranged such that the choice between the two settings on each side was made during the flight of the photons (as originally suggested by John Bell). Some experimenters have repeated this experiment and prove similar result until distance of more than 90 km. So the notion of spooky action at a distance is real effect.

Moreover, action at a distance is already in Newton's Principia. Einstein was trying to make all of Newton's expressions into nothings to be "superseded" by E's vastly inferior version of relativity. That is part of how and why that belittling of Newton's faster than light "action at a distance" statement happened.

At one point the mainstream thought that gravitation was limited to c velocity. One of us (RNB) objected to that idea, which resulted in Podkletnov's instrumented experiments which measured gravitation as being at least 2000 times c , where higher velocities could not be measured due to technical limitations of the instrumentation, which results imply an infinite velocity for gravitation. From that, he independently developed a model for gravitation almost identical to LaPlace's model. LaPlace's model for gravitation has been disparaged and destroyed during the past decade, by relativistic lies and irrelevant distractions being inserted into Laplace's original argument that the propagation velocity of gravitation must be at least 100,000,000 time c . As we wrote before, Newton corrects Einstein, not the other way around. As such, the most common velocity in the Universe is infinite velocity. Tesla agrees with us that infinitely remote activities directly influence physical systems, locally.

b. Resolution of Smarandache's Quantum Paradoxes and Quantum Sorites Paradoxes

In 2005 paper, Smarandache wrote :

“There can be generated many paradoxes or quasi-paradoxes that may occur from the combination of quantum and non-quantum worlds in physics. Even the passage from the micro-cosmos to the macro-cosmos, and reciprocally, can generate unsolved questions or counter-intuitive ideas. We define a quasi-paradox as a statement which has a prima facie self-contradictory support or an explicit contradiction, but which is not completely proven as a paradox.”[2]

In a recent, forthcoming paper, RN Boyd discusses resolutions of some of those Smarandache Quantum Paradoxes and Quantum Sorites Paradoxes. The following passage is cited from RN Boyd's paper as follows: [3]

a. (Paradox 1a) Sorites Paradox

Sorites Paradox (associated with Eubulides of Miletus (fourth century B.C.): Our visible world is composed of a totality of invisible particles. a) An invisible particle does not form a visible object, nor do two invisible particles, three invisible particles, etc. However, at some point, the collection of invisible particles becomes large enough to form a visible object, but there is apparently no definite point where this occurs.

[R. N. Boyd]: The statement was true in the 4th century BC, but it is not true now. We can now measure the masses of a vast array of elemental particles. And we now know that there are such ratios as "moles" in chemistry telling us how many atoms are involved in the situation. So today we can make such determinations. There are fabrication processes in the manufacture of integrated circuits that are capable of actually arranging very precisely, each atom in the

fabrication. One example of these techniques is the use of epitaxial deposition, which is a one atom thick deposition of material. Screening and masking techniques allow atom-by-atom structuring to occur. These circuits can be small enough so that Cooper pairing is impossible and quantum phase-slips occur in the energized circuit. However, the problem has now shifted into the domains which are smaller than our presentability to perceive with our instrumentations. Typically colliders are used to attempt to make measurements of the elemental particles, and recent data seems to be pointing strongly to a realm of particles even smaller than quarks, which may indeed comprise quarks, if such creatures exist in the first place. (What we are calling quarks may be something else entirely, perhaps organizations of yet smaller particles.) I hold that there is a vast array of entities smaller than the Planck length, and have developed methods for imaging such entities. I designed 6 methods for imaging SubQuantum particles (smaller than the Planck length). Valentini of Italy wrote a paper describing yet another way to accomplish SQ imaging. The easiest and cheapest to make SQ microscope of my design was publicized, and then tested for proof of principle by Dr. Bernd Binder of Germany. After a 2 years long effort, he verified proof of the principle of operation. The year after that, the design verified by Binder, was constructed at a university in Serbia. One of the Serbian professors sent me an email to inform me that the SQ microscope of my design has imaged entities as small as 10×10^{-95} cm. The infinitely small is an unattainable goal in terms of technological approaches, but we know the infinitely small is there, by inferences.

b.(Paradox 1b) Sorites Paradox

A similar paradox is developed in an opposite direction. It is always possible to remove a particle from an object in such a way that what is left is still a visible object. However, repeating and repeating this process, at some point, the visible object is decomposed so that the left part becomes invisible, but there is no definite point where this occurs.

[R. N. Boyd]: There is, these days. But there may be a lower limit, which can be studied by quantum coherence of objects.

[Paradox1b(continued)]: Generally, between and there is no clear distinction, no exact frontier. Where does really end and begin? One extends Zadeh's "fuzzy set" term to the "neutrosophic set" concept.

[R. N. Boyd]: The boundary conditions are always very interesting. Those conditions which are both A and NOT A, yet neither A nor NOT A. Korzybski referred to these conditions as "NULL A". I call them boundary layers. They are a study in themselves, because boundary layers comprise a third state, and arise often. (Note: for more information on Alfred Korzybski's Null A which inspired fiction story by A/E. Van Vogt, see ref [12][13]).

c.(Paradox 2) Uncertainty Paradox

Large matter, which is under the 'deterministic principle', is formed by a totality of elementary particles, which are under Heisenberg's 'indeterminacy principle'.

[R. N. Boyd]: Uncertainty does not apply to monochromatic coherent photons, nor indeed to any photonic system, by logical extension. [16][17]

Indeterminacy only applies where there are elements of chance involved, most particularly involving systems of particles, which are quite susceptible to Zitterbewegung, while photons remain largely unaffected by it. Hans Dehmelt of Germany was awarded the Nobel Prize in physics for keeping an electron pinned to one spot, so that its momentum and location could be known at the same time, for up to 3 months. [15] Heisenberg uncertainty failed in those circumstances. This experiment is considered by many as evidence that the uncertainty principle fails, except under very limited circumstances. It is easier to deal with this paradox when we consider that the uncertainty principle has failed, under many circumstance. A deterministic version of QM was developed based on experiential information factors, which imply an Intelligent Universe.

d.(Paradox 3) Unstable Paradox

Stable matter is formed by unstable elementary particles.

[R. N. Boyd]: The life time of the proton is calculated (not observed with instrumentation) to be on the order of 10×10^{32} years. But this ignores plasma/aether factors, and more importantly, gamma ray dissociations of atoms, which cause protons to vanish back into the aether from whence they originated. Gamma ray dissociation of atoms also causes SQparticles (vortex lines, Bhutatmas) propagating with an infinite velocity, which are the cause of gravitation and are the

cause of the development of new electrons, positrons, protons, neutrons, and atoms due to aether/plasma events on the surfaces of stars. Instrumented measurements have discovered that every atomic element is found streaming out from the sun in the “solar wind”. SAFIRE has instrumented physical evidence that hydrogen and many other elements are created in plasma double layers (charge separation layers) verified by SEM (scanning electron microscopy) and optical correlation spectroscopy. The creation and dis-creation of elementary particles and atoms is a continuous cycle which occurs at all times in the infinite volume universe. The life span of a proton is much smaller than the calculated standard. The actual life span of the proton is determined by the number of gamma ray dissociation events passing through the given volume, per unit time. (cf. G. Le Bon, see [14]).

The aforementioned paradoxes are just a few examples of Quantum Paradoxes and Quantum Sorites Paradoxes. We only mention a few resolutions of the above paradoxes.

c. New experiment on magneton and the structure of electron

In the past few months, we got in contact with a wonderful experimenters team from Greece, led by Emmanouil Markoulakis. They have published a number of wonderful experiment results, confirming that the structure of electron is deeply related to Kelvin-Helmholtz vortex theory, just as we described earlier last year [6]. For Markoulakis and team’s recent paper, see [4].

In a recent communication, we discuss more on this topic, as follows:

-Relativity is irrelevant to anything physical. It has no business saying anything about an electron, or anything else physical.

-Electron internal spin is superluminal. This is a known fact that has been subjected to relativistic dogma for 25 years. The relativistic dogma of the church of Einstein wants to limit internal spin velocity of the electron to "c".

-The internal spin velocity of the electron is way faster than light speed, based on experimental results and instrumented observations. This is reflected in our paper regarding the KH vortex model of the electron/positron.[6]

-The artwork provided below is a bi-polar system, which could be a model of the magnetic moment of an electron or a positron. It is not a model of electron charge. The magnetic field of the electron cannot exist without electron spin and internally rotating charge, according to the consensus view on this topic.

- Electrons are not bi-polar in terms of charge, even though they produce a magnetic moment, thought to be caused by electrically charged particle spin.

At the most fundamental level, E and B are mutually causational. Each causes the other. This is well known in plasma physics.

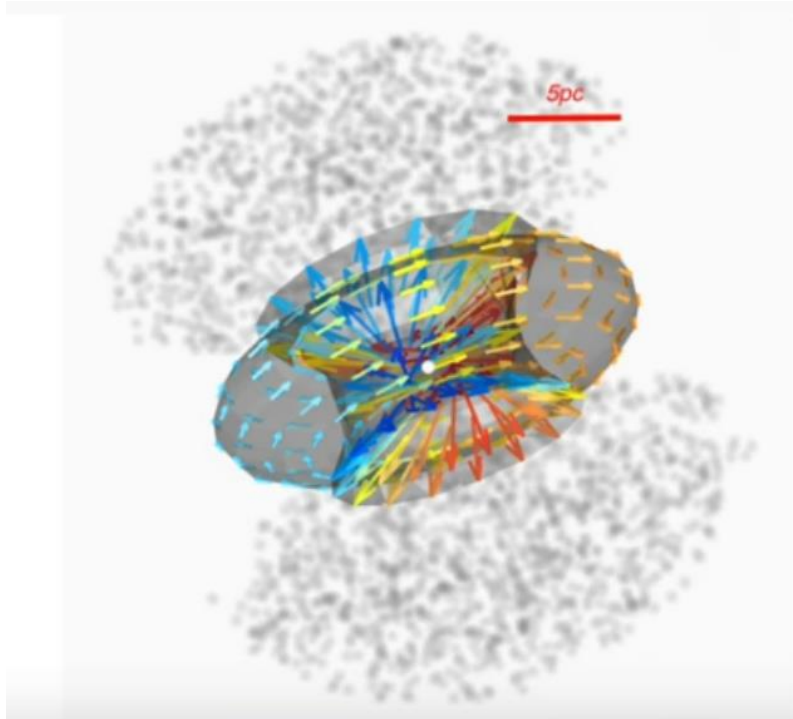


Figure 1: Generation of electric charge of the electron (After Markoulakis)

That looks like the generation of the electric charge of the electron due the horizontally radially spinning magnetosphere.

Vortexing, vertical spiraling magnetic flux on the its poles creates it magnetic moment and magnetic field whereas its radially horizontally spinning around its equator magnetic flux creates its electric charge and electric field.

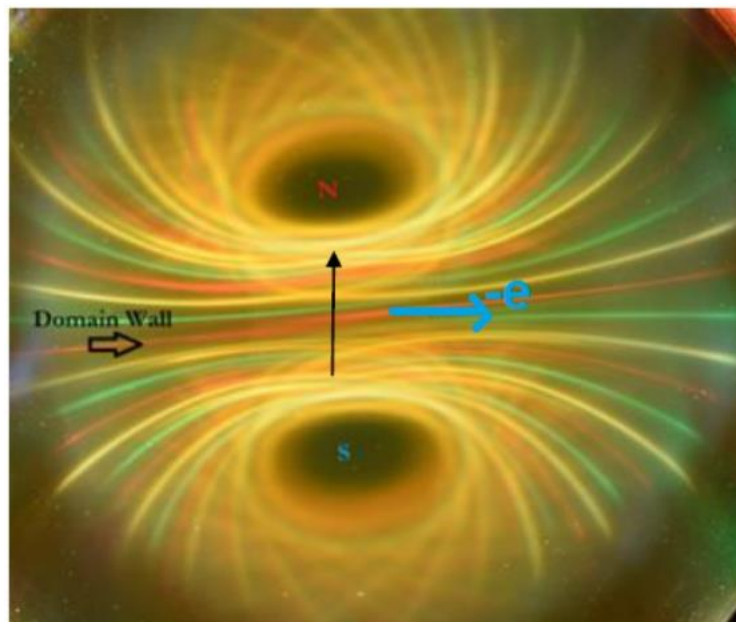
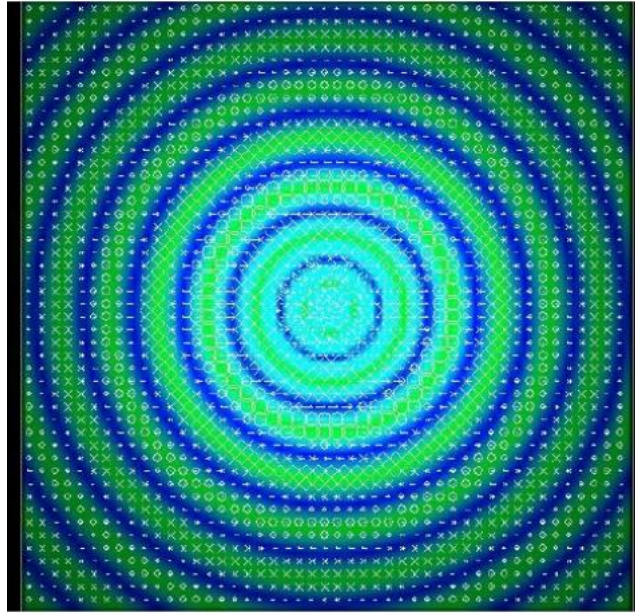


Figure 2: Domain wall inside the electron (After Markoulakis)

Here is its wave function (2D image) of the concentric zero curl, parallel rings of spinning magnetic flux produced responsible for creating its electric charge. Of course due relativistic spin velocity involved and smearing effect the electric charge is uniformly distributed on the electron's sphere:



The electron wave function from the side (the spin axis is vertical).

Figure 3: The electron wave function from the side (After Markoulakis)

6. Conclusion

Multiexperimental findings assessment allows one to verify conjectures by two of us (FS & RNB), namely: Smarandache Hypothesis, Smarandache Quantum Sorites Paradoxes. We have also discussed supporting evidences in favor of SubQuantum Kinetic Model of Electron.

Experimental results discussed here will likely open new directions of research toward evidence-based physics. should be written in this style and it is highly recommended to add future work direction for your research.

Funding: “This research received no external funding”

Conflicts of Interest: “The authors declare no conflict of interest.”

Acknowledgement

We thank to Emmanouil Markoulakis and his team of experimenters for fruitful discussions and wonderful experiments.

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Document history:

ver. 1.0: 5th Dec. 2019, pk. 10:08
 ver. 1.1: 24th May 2020, pk. 15:36
 ver. 1.2: 25th May 2020, pk. 8:18
 ver. 1.3: 22nd June 2021, pk. 15:06
 VC, RNB



A new hypothesis of super-quasi-crystalline vacua

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Abstract

In this short review, we extend ideas in our preceding paper on possibility that the space consists of discrete cells, to become cells composed of superconductor quasi-crystalline. We discuss some features of this model. To our best knowledge, there is not yet similar proposal as we outlined herein.

Keywords: discrete space; discrete cellular space; superconductor quasi-crystalline

1. Introduction

It is known that continuum problem is a fundamental question in theoretical physics: whether the space is discrete or continuous.

In the meantime, in our paper [2], we argue in favor of discrete cellular space to solve this continuum problem.

In our recent article submitted to this journal, we argue that although our model is far from being complete, it can be connected to a recent paper suggesting that the space is composed of graph at its smallest structure – and it is called quantum graphity.[3] The idea is to merge those graphs into a network of dense-packed cells. That way the space system looks both as graph network as well as discrete cellular pattern.[3]

In this article we put forth a new hypothesis that the discrete cellular structure of space consists of cells of superconductor quasi-crystalline.

What is quasiperiodic crystal?

It is argued that the definition of quasicrystals should not include the requirement that they possess an axis of symmetry that is forbidden in periodic crystals. The term “quasicrystal” should simply be regarded as an abbreviation for “quasiperiodic crystal,” possibly with two provisos [8].

Precious stones whose thickness capacities might be extended as a superposition of a countable number of plane waves are called practically intermittent gems. Specifically, if taking necessary direct mixes of a limited number D of wave vectors in this extension can traverse all the rest, at that point the gem is quasiperiodic. Every diffraction top is then ordered by D numbers. Occasional gems are the extraordinary situation where the ordering measurement D is equivalent to the real physical component of the gem. All tentatively watched gems to date are quasiperiodic. Albeit an official classification has not yet been settled upon, one obviously recognizes (at any rate) two exceptional classes among the group of quasiperiodic gems: disproportionately adjusted precious stones and disproportionate composite crystals. [8]

Quasicrystals are a platform of novel electronic properties because of their underlying fractal crystalline structure without periodicity.[1]

What is quasicrystal?

There are additionally (carefully aperiodic) quasiperiodic gems for which a portrayal regarding a tweak of a fundamental structure or an arrangement of at least two foundations is either unseemly or inconceivable. We contend that one ought to allude to all such precious stones as quasicrystals, paying little mind to their point-bunch evenness. The most well-known model for such gems is a quasiperiodic tiling, for example, the renowned Penrose tiling. One occupies space with "unit cells" or "tiles" in a way that keeps up long-range request without periodicity, and produces a basically discrete diffraction chart. Unmistakably, quasiperiodic gems having balances that are illegal for intermittent gems, for example, the watched icosahedral, octagonal, decagonal, and dodecagonal precious stones—can't be framed by adjusting a hidden occasional structure with a similar balance, and are subsequently all quasicrystals. Quasiperiodic gems with no taboo balances can be shaped as a change of an intermittent structure, yet that need not be the situation. [8]

A new hypothesis

To sum up, Quasicrystals display a non-periodic, yet ordered, arrangement of atoms. They contain a small set of local environments which reappear again and again, albeit not in a periodic fashion. Their structure is not random either, since the diffraction pattern shows sharp Bragg peaks, although their symmetry is noncrystallographic, with the n -fold symmetries ($n = 5, 8, 10, \dots$) stemming from the fact that these local environments occur with n equiprobable orientations.[5]

Recent discovery suggests that quasi-crystalline has superconductive phase in very low temperature.[4]

In the context of our recent draft [3] suggesting that the space consists of discrete cellular structures, we may recall that Finkelstein argued in favor of quasicrystalline model of vacuum [6].

What if the quasicrystalline model is not in semiconductor solid...but a superconductor quasicrystalline?

We may call it: super-crystalline.

Quasi-crystalline solid is also good because it brings in more than 3 dimensions, which may be very relevant. This also would bring in Finkelstein and Penrose and some of Frank Tony Smith's investigations. The next item to consider is a super-quasi-crytalline solid (SQC).

Because of its fractal properties, we can expect that the Superconductor Quasi-Crystalline (SQC) can extend down to the structure of space, similar to what Finkelstein envisaged.

The quasi-crystal structure of space may be composed of solid matter or soft-matter, of which its general dynamics has been outlined by Fan et al. [7].

Assembly of soft-matter quasi-crystal is shown as follows:

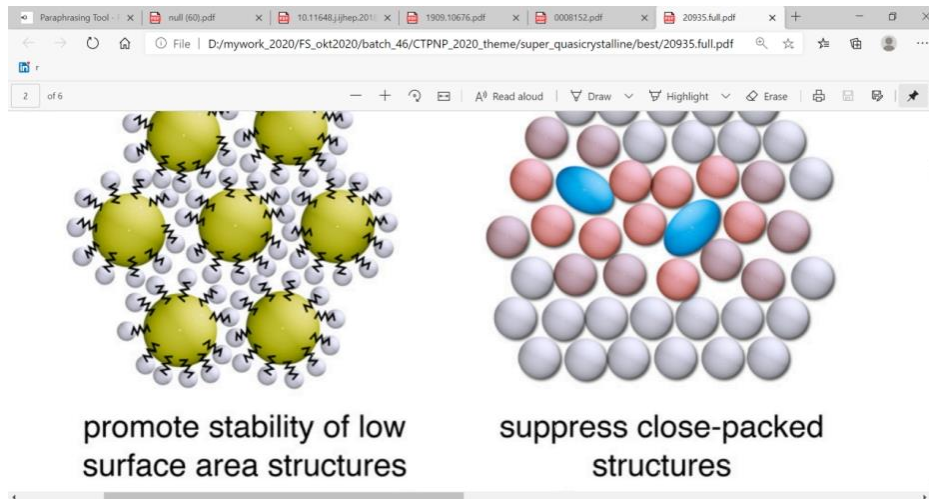


Figure 1: Simplified depiction of soft-matter quasi-crystal

It exhibits a suppressed close-packed structures [9]. This dense-packed structure of space should be verified with experiment.

A few observables

a. Pairing system in outer solar system:

As Sakai and Arita put forth in [1], it is possible that exotic pairing state of superconducting quasi-crystal can take place. It may be possible to extend further to hypothesize that the pair of Pluto-Charon may be originated from such a paired condensate/superconductor phase of quasi-crystalline. We should wait for result of future expedition to Pluto or Charon with sampling. See also discussion on Pluto-Charon pairing from superconductor model of solar system, in our forthcoming paper [16].

b. Natural quasicrystal in rock:

Steinhardt & Bindi [10] argued that original theory suggested that quasicrystals can potentially be as robust and stable as crystals, perhaps even forming naturally. These considerations motivated a decade-long search for a natural quasicrystal culminating in the discovery of icosahedrite ($\text{Al}_{63}\text{Cu}_{24}\text{Fe}_{13}$), an icosahedral quasicrystal found in a rock sample composed mainly of khatyrkite (crystalline $(\text{Cu,Zn})\text{Al}_{12}$) labeled as coming from the Koryak Mountains of far eastern Russia. In their paper, they argued that the analysis shows the sample to be of extraterrestrial origin.



Figure 2: Light image of entire MSNF specimen prior to sampling, Khatyrka CV3 meteorite.[11]

Moreover, some papers argue that such a rock may be of manmade origin, as Bindi et al noted:

“The evidence for the existence of the quasicrystal phase in the rock is therefore overwhelmingly strong. However, the observation of metallic Al in intermetallic compounds with copper and iron, which requires a highly reducing environment, is deeply puzzling. It raises the possibility that the sample originated from slag or another anthropogenic process. However, the sample was found in a remote region very far from any industrial activity.”[13]

While we admit it would need further studies, as we see it such a hypothetical origin of meteorites and rock from extraterrestrial or manmade origin remains puzzling. It may be more possible to argue in favor that the quasicrystalline happens in nature was caused by the structure of space itself is composed of SQC.

c.Natural quasicrystals in solar system:

Luca Bindi and also Matthias Meier et al. seem to suggest that quasicrystals have cosmic origin.[13][14] While such a hypothesis is quite reasonable, allow us to add a possibility that such a cosmic origin might yield from hidden structure of space itself. Such a hypothetical origin may be more “workable” than most of quantum gravity hypotheses [15].

4. Concluding remark

We hope this short remark will lead someday to clearer dense discrete cellular model of space in connection with superconductor-quasi-crystalline model (SQC). Further investigations are of course recommended.

Acknowledgment

Discussions with Robert N. Boyd are gratefully appreciated.

Version 1.0: 22 october 2020

Doi : <https://doi.org/10.54216/JCFA.010103>

Received: January 09, 2022 Accepted: May 08, 2022

Funding: “This research received no external funding”

Conflicts of Interest: “The authors declare no conflict of interest.”

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A frugal experiment on potential cooling effect of potable water irradiated with laser pen

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Abstract

In previous article, we reported initial findings based on small experiment on potential use of salt-water as cheap source of renewable battery with various kind of metals as anode and cathode. The purpose of these experiments is to find out which combination of anode and cathode is capable to generate the best performance in terms of electric voltage. Following that previous reports, we tried to conduct further simple experiments on possible effect of low intensity laser irradiation on potable water's electrical features. Nonetheless, this report is slightly disappointing, because as an effect, there is no increase of water electrical feature, instead it may support initial reports by others such as Cohen Tannoudji, Alain Aspect *et al*, on laser cooling effect to molecules [3][4].

Keywords: salt water system; cheap source of renewable battery; fourth phase of water

1. Introduction

The effective use of electricity from renewable sources requires large-scale stationary electrical energy storage (EES) systems with rechargeable high-energy-density, cheap batteries. While batteries using lithium, cadmium, lead-acid etc. have been widely used, there is an alternative source i.e. salt-water which is quite abundant in nature and known as electrolyte. Therefore, following previous articles [1][2], this writer conduct small experiments to see possible effect of small intensity laser irradiation on electrical features of potable water.

2. Procedures

This writer conducted small experiments with small intensity laser pen (to irradiate), and a glass of potable water. To add a little flavor to this small experiment, we also conduct low intensity laser irradiation to a small portion of non-alcoholic beer.

3. Apparatus

This writer uses simple tools, like multipurpose voltmeter, low intensity laser pen, and potable water. They are as shown below.



Illustration 1.

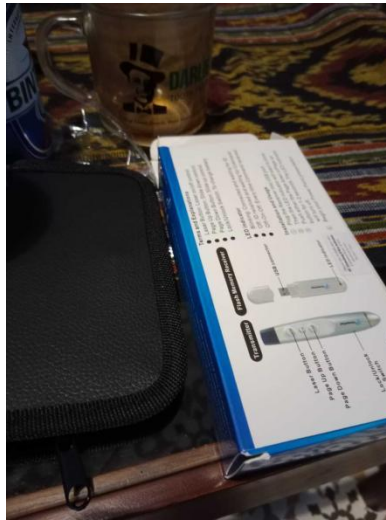


Illustration 2.

Calibration test

Before this writer begins the test, this is reading of voltmeter (on air), it shows 0.00 milli Volt.



Illustration 3

4. Results

Results of our small experiments are as shown in Table 1 below:

Test. No	Condition	Low intensity irradiation with	Registered	Scale of reading
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		laser pen	Voltage (milli V)	
1	Potable water	No	4.50	(200 milli Volt scale)
2	Water irradiated with laser pen	(59 seconds)	3.40	(200 milli Volt scale)
3	Water irradiated with laser pen	(180 seconds)	2.70	(200 milli Volt scale)
4	Salt-Water	No	2.40	(200 milli Volt scale)
5	Salt-Water irradiated with laser pen	(59 seconds)	0.50	(200 milli Volt scale)
6	Beer (non-alcoholic)	No	12.60	(200 milli Volt scale)
7	Beer irradiated with laser pen (59 seconds)	(59 seconds)	12.10	(200 milli Volt scale)



Illustration 4. Potable water irradiated with laser pen (horizontal irradiation). Note the reading at Voltmeter reads 2.7 milli Volt .

5. Discussion

What we can report in the above table is based on small experiments at 7th Dec. 2022. The followings are additional findings:

- The measurements are actually varying, but we read the number registered at Voltmeter around 60 seconds after initial reading.
- It is found that the effect of laser irradiation on potable water and saltwater although quite small, suggests that low intensity irradiation tends to reduce the voltage reading of the system. (The irradiation of laser pen were conducted horizontally through the glass wall).

- The reduction of reading on voltmeter can be interpreted as the system of potable water and salt-water seems to undergo effect known as laser cooling of water molecules. We refer to publication of Ketterlee and Alain Aspect etc.
- As additional finding, on non-alcoholic beer system, registered reading on voltmeter seems higher in significant way, around 12.6 mili Volt, and slightly reduced after low intensity laser irradiation.
- This may suggest that molecular composition of such a non-alcoholic beer can increase voltage, instead of just salt-water system. This may be worthy for further experiments on possible material of small cost electric storage.

What’s interesting here, is that the above series of test indicate the water system can enter into negative electric potential (down to minus 7 milli Volt), which seems to suggest that the system went into EZ water (exclusive zone) or fourth phase of water as argued by Prof G. Pollack. Or else, at least partially it can go to crystallization phase.

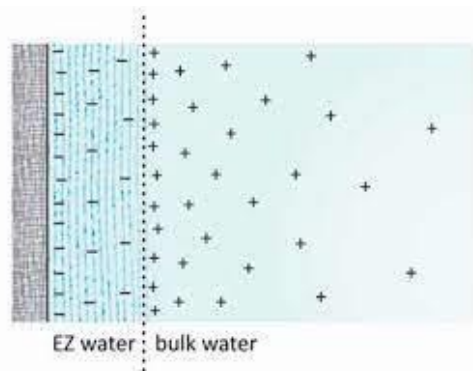


Illustration 5. EZ water in Pollack scheme

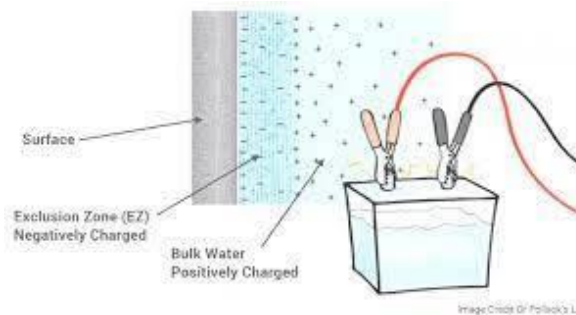


Illustration 6. Negative charge in EZ water (according to fourth phase of Pollack)

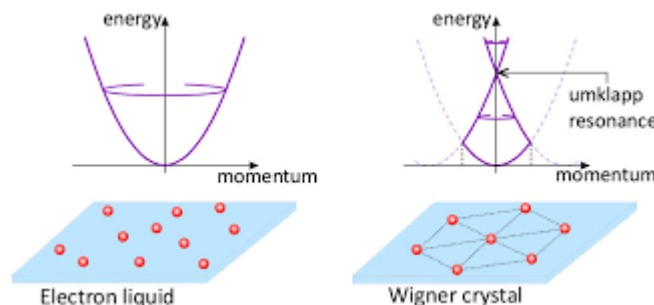


Illustration 7. Crystallization phase of water, or Wigner crystal (although this writer is unsure if the Wigner crystal may or may not correspond to fourth phase of water/Pollack)

6. Concluding remark

While initially we tried to find improvement of salt-water battery performance, nonetheless, this report is slightly disappointing, because as an effect, there is no increase of water electrical feature, instead

it may support initial reports by others such as Ketterle, Alain Aspect etc, on laser cooling effect to molecules.

All in all, this small experiment can be perceived as a step for lab scale verification of laser cooling effect of water molecules, which may be useful for other purposes, such as low temperature physics experiments.

Acknowledgement

This writer would like to express many thanks to Yunita Umniyati and her team of young scientist at SGU, to Prof Florentin Smarandache, to Prof Carlos Castro Perelman, to Robert N. Boyd, etc., for many discussions

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Appendix I. Extended experiment on laser irradiated potable water(12th Dec. 2022)

While the first series of our experiment clearly indicated possible laser cooling effect of low intensity laser irradiation of potable water and salt water, the following extended experiment on low intensity laser irradiation shows a rather mixed result. Initially, laser irradiation with laser pen gave lower electric potential (down to several minus milli Volt to the Voltmeter reading), but later on after more than 180 sec of irradiation, it shows increased positive milli Volt of electric potential of the system.

Results: Results of our small experiments are as shown in Table 2 below:

Test. No	Condition	Low intensity irradiation with laser pen	Registered Voltage (milli V)	Scale of reading
1	No medium (calibrated test)	No	0.00	(200 milli Volt scale)
2	Potable water	No	2.20	(200 milli Volt scale)
3	Water irradiated with laser pen	(59 seconds)	6.10	(200 milli Volt scale)
4	Water irradiated with laser pen	(180 seconds)	- 7.70	(200 milli Volt scale)
5	Water irradiated with laser pen	(270 seconds)	+0.80	(200 milli Volt scale)
6	Water irradiated with laser pen	(450 seconds)	9.70	(200 milli Volt scale)
7	Water irradiated with laser pen	(600 seconds)	10.1	(200 milli Volt scale)

The above extended experiments seem to indicate that there is slight hope that laser irradiation procedures of water or salt water can be expected to increased electric potential of salt water battery.

Concluding, there seems to be discrepancy between this experiment of low intensity laser irradiation of water molecules with theory of laser cooling. More experiments can be expected.

(12th Dec. 2022)

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Appendix II. Our previous book chapter published by Springer (2022)

Our chapter at Springer's book: "Efficient Use of Valuable Resources - Knowledge and Cultural Resources" has been released.

Dear readers,

Here is notification from Springer publisher.

Your chapter entitled "[Towards Energy Efficient Data Centers and Computation: Exploring Some Ideas from Physicist's Perspective](#)" was published online

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Online volume link: <https://link.springer.com/book/10.1007/978-3-031-09928-1>

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Editors team



Remark on ‘The future of mathematical Cosmology’ and “100 years of mathematical cosmology: Models, theories and problems, Part B” by S. Cotsakis and A.P. Yefremov

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Abstract

In this review article, allow us to offer a few remark on “the future of mathematical cosmology” “100 years of mathematical cosmology: Models, theories and problems, Part B” by Cotsakis and Yefremov, which seems to us very interesting piece of review on progress on the last 3 or 4 decades in theoretical cosmology development. In particular, we would emphasize on testability of cosmology models, which seem to us this criterion can only be achieved via correspondence between condensed matter/superfluidity/low temperature physics and cosmology (cf. for instance, Kibble & Pickett, 2008).

Keywords: cosmological theories; low temperature physics; correspondence between condensed matter/superfluidity low temperature physics and cosmology

1. Introduction

This year is quite remarkable, especially for cosmology field, because there is 100 year anniversary of mathematical cosmology studies. And there are 2 volumes published by Philosophical Transactions A, 2022. In particular there are 3 articles by Cotsakis & Yefremov in those volumes. In this review article, allow us to offer a few remark on “100 years of mathematical cosmology: Models, theories and problems, Part B” by Cotsakis and Yefremov, which seems to us very interesting piece of review on progress on the last 3 or 4 decades in theoretical cosmology development. In particular, we would emphasize on testability of cosmology models, which seem to us this criterion can only be achieved via correspondence between condensed matter/superfluidity low temperature physics and cosmology (cf. Kibble & Pickett, 2008).

2. A few remark on implications of correspondence between low temperature physics and cosmology modeling

While these writers appreciate and agree with Cotsakis and Yefremov, on their remark: “The subject of mathematical cosmology plays a fundamental role in theoretical physics today and has deep applications in contemporary astronomy and astrophysics [1],” nevertheless there are few remark that we can offer here. For instance, to begin with, experts know that there are problems of inflationary theories [3], why there is such a rapid inflation in the very first instance in the beginning of the universe (if we accept the scenario of big bang). Similarly, for quantum cosmology such as Wheeler-De Witt equation, it is interesting to remark that John Wheeler himself has retracted from using term such as

*geometrodynamic*s, and even he did not mention his own equation WDW, see his biography a few years before he deceased (Geons ..., 2006). Nonetheless, there is a hope if we try to find correspondence between cosmology models and experiment in labs, and researchers began with COSLAB etc, and article by Kibble and Pickett, seem to be very interesting, because it suggests that the future may be found in *quantum (liquid) and its correspondence with cosmology theories*. Therefore, in particular, we would emphasize on testability of cosmology models, which seem to us this criterion can only be achieved via correspondence between condensed matter/superfluidity low temperature physics and cosmology, cf. Kibble & Pickett [4]. According to Kibble & Pickett, at first sight, low-temperature condensed-matter physics and early Universe cosmology seem worlds apart. Yet, in the last few years a remarkable synergy has developed between the two.

Few comments

A few brief comments from us, considering the close relationship between condensed matter/superfluidity and cosmology (cf. Kibble & Pickett, Zurek *et al*) as well as new findings about nonscale physics such as topology defects. So it is better to propose 2 more realistic approaches to cosmology in the following principles:

- (i) the principle of correspondence between the cosmos and the lab scale experiments, meaning that as far as possible the effects debated in cosmology can be tested in the lab, for example if you want to develop or prove there are deviations from Newton's third law, you probably must test them with the Magnus force in superfluidity. Or other lab experiments. There has been a recent study of Apophis trajectory as part of NEO (near earth objects), however it seems to us such a study needs to be extended to possibility of deviation of trajectory of Apophis due to Magnus or Iordanskii effect corresponding to superfluid physics. Just for reference purpose, there are several studies on trajectory of Apophis and even prediction of its coming to Earth around 2029 (see for instance, our colleague Ershkov's article, and others [6][7][8]). Nonetheless, very few have been done to discuss possible deviation of its course due to Magnus force, although an article can be found studying Magnus effect on a satellite trajectory. In their article, Ramjatan *et al.* wrote: "A spinning body in a flow field generates an aerodynamic lift or Magnus effect that displaces the body in a direction normal to the freestream flow. Earth orbiting satellites with substantial body rotation in appreciable atmospheric densities may generate a Magnus force to perturb orbital dynamics." [9] Meanwhile, Orlov argues that vortex gravity theory supersedes Newton's theory, and we agree with him, with additional comments that we don't agree with his support of old Earth age around 1 billion years or more [10][11], because elsewhere we already show that a computational simulation of Ermakov equation corresponding to cosmology in correspondence with BEC can give a model of nonlinear behavior of the Universe where instantaneous increase of radii of the Universe is possible [12]. And this can be shown without even any other hypothesis such as Guth's inflationary theory. To us, such an approach based on condensed matter correspondence with cosmology may be able to model or replicate in lab someday in the future.
- (ii) the principle that because so far humans can only send probes as far as the edge of the solar system (e.g. Voyager). Then the solar system may be considered as "*our nearest large-scale lab*" to be able to test ideas about the cosmos.

The following diagram may be useful for practical researchers doing cosmology model tests on lab, which seem to us they can be categorized as follows:

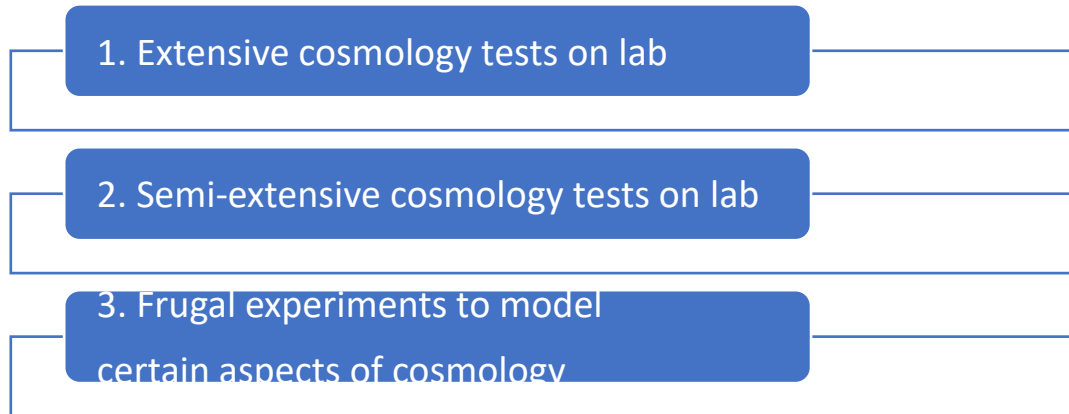


Diagram 1. Category of cosmology model tests on lab

In order to give a more practical insights and also to support the idea of such a correspondence, this writer conducted a number of frugal/small experiments with small intensity laser pen (to irradiate) and a glass of potable water. And then also experiments to irradiate potable water with low intensity laser pen in combination with Solfeggio scale frequencies. We report those experiments in 2 articles in this issue.

3. Concluding remark

In a series of articles this year, Cotsakis & Yefremov have discussed interesting developments of mathematical cosmology. Nonetheless, allow us to emphasize in particular on possible testability criteria of cosmology models, which seem to us this criterion can only be achieved via correspondence between condensed matter/superfluidity low temperature physics and cosmology, cf. Kibble & Pickett [4]. According to Kibble & Pickett, at first sight, low-temperature condensed-matter physics and early Universe cosmology seem worlds apart. Yet, in the last few years a remarkable synergy has developed between the two.

We also suggest 2 more realistic approaches to cosmology in the following principles: the principle of correspondence between the cosmos and the lab scale experiments, (ii) the principle that because so far humans can only send probes as far as the edge of the solar system (e.g. Voyager). Then the solar system may be considered as "our nearest large-scale lab" to be able to test ideas about the cosmos.

Acknowledgement

This writer would like to express special thanks to Prof Florentin Smarandache, to Robert N. Boyd PhD, Prof Alexander Yefremov et al., for many discussions.

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Towards a pathway to realistic tunneling experiment in quantum (liquid) crystalline Cosmology

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Abstract

Following our previous frugal experiments of low-intensity laser irradiation on potable water, allow us to present a few considerations why this writer thinks that these are a pathway towards realistic tunneling experiment especially in the context of quantum (liquid) crystalline Cosmology. First of all, allow us to recall our preceding articles in CTPNP 2019, and also in Octogon Magazine 2022 regarding exact correspondence between Maxwell equations of classical electrodynamics and Dirac equations. What is more interesting is that it can be shown that fine structure of hydrogen spectrum can be described alternatively by classical electromagnetic considerations, therefore it supports our previous conclusion of such correspondence between electromagnetic equations and Dirac equation of quantum mechanics. Secondly, a series of extended experiments on laser irradiated cold water may suggest possible transition from liquid phase of water to be at least partially fourth phase of water, which may be composed of crystalline water (see e.g. Gerald Pollack, and also Harold Aspden on liquid crystalline). If we can imagine laser cooling effect can be done in protracted time, then we can achieve a physical representation of Aspden's liquid crystalline, or in a more mathematical term, Wigner crystal. In that sense, the fourth phase of water can be considered as a quantum system which can undergo quantum tunneling. In that sense, quantum tunneling of 1D Wigner crystal has been already considered. Last but not least, we also consider testimony by certain Admiral that he saw Unidentified Submerged Objects instead of more common term UFO. This makes more sense especially in light of observations of underwater/submerged built structures or pyramids which are thousands years old. All of these seem to suggest a possibility that USO saucers may prefer to keep being in cold underwater or Arctic region because it is much easier for them to go tunneling to extra galactic or other far distance travelling, cf for instance [14]. Nonetheless, we understood that this is merely hypothetical.

Keywords: cosmological theories; low temperature physics; quantum tunneling; Aspden liquid crystalline; Wigner crystal; USO

1. Introduction

In previous articles in this issue (JCFA), we would emphasize on testability of cosmology models, which seem to us this criterion can only be achieved via correspondence between condensed matter/superfluidity low temperature physics and cosmology (cf. Kibble & Pickett, 2008). As these writers discussed in preceding articles, it seems quite reasonable to conduct small scale lab tests on cosmology propositions, although of course with less features compared to vastness of possibilities in the real Universe. Therefore, following our previous frugal experiments of low-intensity laser irradiation on potable water, allow us to present a few

considerations why this writer thinks that these are a pathway towards realistic tunneling experiment especially in the context of quantum (liquid) crystalline Cosmology. [1][2][3]

Such a consideration of liquid crystalline phase of water may be comparable to Wigner crystallization. As we know, the first concrete experimental observation of Wigner crystallization was done in 1979 by a group at the Bell labs. This group, taking up on the proposal of the Crandall group, performed a measurement of a charged surface of liquid helium. What was observed, however, was both vertical and horizontal resonances (coupled plasmon-ripples).

In case of liquid cold water under low-intensity laser irradiation, we submit a view that a small part of it may undergo transition a little bit into liquid crystalline phase. Moreover, at least part of it can further be modelled as Wigner crystal which behaves as quantum entity, therefore such a system is likely to be a good representation for quantum tunneling in lab, which someday can lead to more realistic tunneling scenario for Cosmological modeling.

2. Results and Discussion

Literature survey

First of all, allow us to recall our preceding articles in CTPNP 2019, and also in AsiaMath 2022 regarding exact correspondence between Maxwell equations of classical electrodynamics and Dirac equations. [4][5]

Summarizing, our method is based on Gersten's decomposition of Dirac equation which then we extend them to become quaternionic Dirac equations in order to come up with a derivation of Maxwell equations with complex field expression.

What is more interesting is that it can be shown that fine structure and also Lamb shift of hydrogen can be described alternatively by classical electromagnetic considerations, therefore it supports our previous conclusion of such correspondence between electromagnetic equations and Dirac equation of quantum mechanics. See for instance Simulik & Krivsky etc. [6]

Little further steps on low-intensity laser irradiation of cold potable water

According to Wilson, Wong & Miltzer, water is one of the most prevalent substances in the universe and exists in a large number of phases over a vast range of temperature and pressure conditions. In addition to the liquid, gas, plasma and many solid phases, they suggest that interiors of Uranus and Neptune are in superionic phase of solid ice.[7]

Others suggest that interior of this Earth is also composed of superionic ice. While such a superionic phase can hardly be simulated with simple lab experiments, in the following tables we report low-intensity laser irradiation of cold potable water (i.e. water + ice cubes) in order to simulate the effect of laser irradiation on water molecules, provided we can assume that laser exert pressures on that molecules system. See for instance Yariv [9].

Table 1. Low-intensity laser irradiation of ice cubes and ice cubes plus water

No.	Description	Laser irradiation duration (in sec)	Ice Cubes milli Volt	Ice Cubes + Water milli Volt
1	Ice cubes	0	5.30	-1.2
2	„	59	0.1	-1.1
3	„	120	0.8	-0.6
4	„	180	0.1	-0.6

5	„	240	1.4	-0.7
6	„	300	-4.1	-0.8
7	„	360		-0.9
8	„	420		-0.5
9	„	480		-0.6

Table 2. Low-intensity laser irradiation of ice cubes plus water (using double laser pen)

No.	Description	Laser irradiation duration (in sec)	Measurement milli Volt
1	Ice cubes + water	0	-2.5
2	„	59	-0.8
3	„	120	0.3
4	„	180	1.1
5	„	240	1.4
6	„	300	0.2
7	„	360	0.4

Table 3. Second tests on Low-intensity laser irradiation of ice cubes+water (using double laser pen)

No.	Description	Laser irradiation duration (in sec)	Measurement milli Volt
1	Ice cubes + water	0	-1.7
2	„	59	-0.9
3	„	120	-1.3
4	„	180	-1.7
5	„	240	-1.1
6	„	300	-1.0
7	„	360	-0.7

Discussion

What we can observe from the above data in Table 1, Table 2 and Table 3, especially on last tests (Table 3) suggest that cold water with ice under pressure of double laser pen goes to negative electric potential. At the time, we don't measure its thermal condition (except it is in room temperature), nonetheless we consider it possible that at least partially the liquid cold water has been transitioned into liquid crystalline phase (consider Wigner crystal, or Harold Aspden, liquid crystalline ether.) Therefore in the following section we discuss shortly on how to model quantum tunneling in 1D Wigner crystalline liquid.

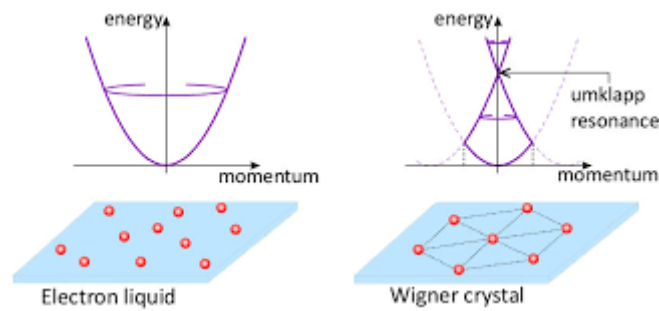


Figure 1. Wigner crystalline

How we can do modeling quantum tunneling of 1D Wigner crystalline liquid: According to Méndez-Camacho & E. Cruz-Hernández, by considering the collective nature of electrons using a Yukawa-like effective potential, they explore the electron interaction between closely spaced, parallel nanowires while varying the electron density and geometrical parameters. They find that, at a low-density Wigner crystal regime, the tunneling can take place between adjacent localized states along and transversal to the wires axis.

3. Concluding remark

Previously, we argued for 2 more realistic approaches to cosmology in the following principles: the principle of correspondence between the cosmos and the lab scale experiments, (ii) the principle that because so far humans can only send probes as far as the edge of the solar system (e.g. Voyager). Then the solar system may be considered as "our nearest large-scale lab" to be able to test ideas about the cosmos.

According to Wilson, Wong & Militzer, water is one of the most prevalent substances in the universe and exists in a large number of phases over a vast range of temperature and pressure conditions. In this regard, this writer reported a series of extended experiments of low-intensity laser irradiation on potable water plus ice cubes.

The results show the cold water with ice undergo negative electric potential, albeit the measurement of electric potential varies.

Nonetheless we consider it possible that at least partially the liquid cold water has been transitioned into liquid crystalline phase (consider Wigner crystal, or Harold Aspden's term: liquid crystalline ether.)

In case of liquid cold water under low-intensity laser irradiation, we submit a view that a small part of it may undergo transition a little bit into liquid crystalline phase. Moreover, at least part of it can further be modelled as Wigner crystal which behaves as quantum entity, therefore such a system is likely to be a good representation for quantum tunneling in lab, which someday can lead to more realistic tunneling scenario for Cosmological modeling.

Acknowledgement

Special thanks to Robert N. Boyd PhD, Prof. Florentin Smarandache, and Yunita Umniyati for discussions. And one of these writers is really grateful for encouragement and kindful guide by Prof The Houw Liong, and also for sending book by Amnon Yariv, ref. [9]. And many thanks to numerous scholars from all over the world, including but not limited to the late Prof. R.M. Kiehn, Prof Carlos Castro, and Mr Max Rempel. This exploratory work was inspired partly by power from ice suggested by Dr. Harold Aspden [12], and G. Gremaud's crystalline ether model of the Universe, and also from Del Giudice's experiment of water as mediation of life. See for instance, ref. [13].

Version 1.0: 6th Jan. 2023, pk. 3:09

Version 1.1: 8th Jan. 2023, pk. 17:12

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Appendix: Monte Carlo simulation for water molecules

In this section, we shall find out if our hypothesis that there is likelihood that quantum-like tunneling effect can happen in laser irradiated water or in cold water. Especially we will outline several Mathematica codes for Monte Carlo simulation.

1. Mathematica code for Monte Carlo simulation of water molecule dynamics

Here is a complete Mathematica code for Monte Carlo simulation of water molecule dynamics that includes plotting the positions and orientations of the molecule as a function of time:

```
(* Define the energy function for the water molecule *)
energy[d_, theta_] := -Cos[theta]/d^3

(* Set the initial positions and orientations of the water molecule *)
d = 2;
theta = Pi/2;

(* Set the number of Monte Carlo steps to perform *)
numSteps = 10000;

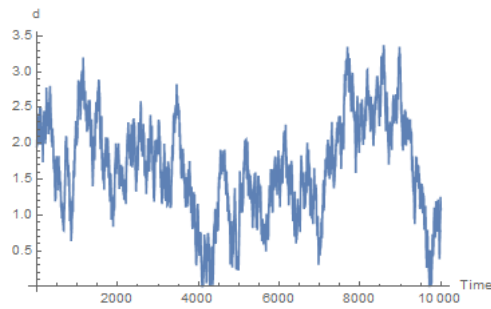
(* Set the temperature and Boltzmann constant *)
T = 300;
k = 1.38*10^-23;

(* Set the maximum displacement and rotation for each step *)
maxDisplacement = 0.1;
maxRotation = 0.1;

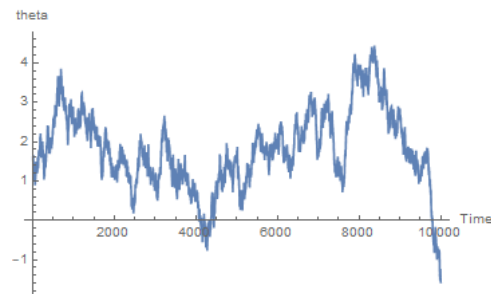
(* Initialize lists to store the positions and orientations at each step *)
dList = {};
thetaList = {};
```

```
(* Perform the Monte Carlo simulation *)  
Do[  
  (* Calculate the energy of the current configuration *)  
  E = energy[d, theta];  
  
  (* Randomly perturb the positions and orientations of the water molecule *)  
  dNew = d + RandomReal[{-maxDisplacement, maxDisplacement}];  
  thetaNew = theta + RandomReal[{-maxRotation, maxRotation}];  
  
  (* Calculate the energy of the new configuration *)  
  ENew = energy[dNew, thetaNew];  
  
  (* Accept or reject the new configuration based on the Metropolis criterion *)  
  If[RandomReal[] < Exp[-(ENew - E)/(k*T)],  
    d = dNew;  
    theta = thetaNew;  
  ];  
  
  (* Append the current positions and orientations to the lists *)  
  AppendTo[dList, d];  
  AppendTo[thetaList, theta];  
  ,  
  {i, numSteps}  
]  
  
(* Plot the positions and orientations as a function of time *)  
ListLinePlot[dList, PlotRange -> All, AxesLabel -> {"Time", "d"}]  
ListLinePlot[thetaList, PlotRange -> All, AxesLabel -> {"Time", "theta"}]
```

After the Monte Carlo simulation is completed, it plots these positions and orientations as a function of time using ListLinePlot. The resulting plots show how the positions and orientations of the water molecule evolve over time.



Plot Diagram 1a. Plot solution with Wolfram Mathematica



Plot Diagram 1b.

2. Mathematica code for Monte Carlo simulation of water molecules interacting with low-intensity laser irradiation

Here is a complete Mathematica code for a Monte Carlo simulation of a water molecule interacting with low-intensity laser irradiation, and plotting the resulting positions and orientations of the molecule as a function of time:

(* Define the energy function for the water molecule *)

```
energy[d_, theta_] := -Cos[theta]/d^3
```

(* Set the initial positions and orientations of the water molecule *)

```
d = 2;
```

```
theta = Pi/2;
```

(* Set the number of Monte Carlo steps to perform *)

```
numSteps = 10000;
```

(* Set the temperature and Boltzmann constant *)

```
T = 300;
```

```
k = 1.38*10^-23;
```

(* Set the maximum displacement and rotation for each step *)

maxDisplacement = 0.1;

maxRotation = 0.1;

(* Set the laser intensity and frequency *)

I = 10⁻⁴;

omega = 2*Pi*10¹⁴;

(* Set the laser-molecule coupling strength and the time step *)

g = 10⁻²⁰;

dt = 10⁻¹⁵;

(* Initialize lists to store the positions and orientations at each step *)

dList = {};

thetaList = {};

(* Perform the Monte Carlo simulation *)

Do[

 (* Calculate the energy of the current configuration *)

 E = energy[d, theta];

 (* Randomly perturb the positions and orientations of the water molecule *)

 dNew = d + RandomReal[{-maxDisplacement, maxDisplacement}];

 thetaNew = theta + RandomReal[{-maxRotation, maxRotation}];

 (* Calculate the energy of the new configuration *)

 ENew = energy[dNew, thetaNew];

 (* Accept or reject the new configuration based on the Metropolis criterion *)

 If[RandomReal[] < Exp[-(ENew - E)/(k*T)],

 d = dNew;

 theta = thetaNew;

];

(* Calculate the effect of the laser on the water molecule *)

```
d = d + g*I*Sin[omega*i*dt]*dt;
```

```
theta = theta + g*I*Sin[omega*i*dt]*dt;
```

```
(* Append the current positions and orientations to the lists *)
```

```
AppendTo[dList, d];
```

```
AppendTo[thetaList, theta];
```

```
,
```

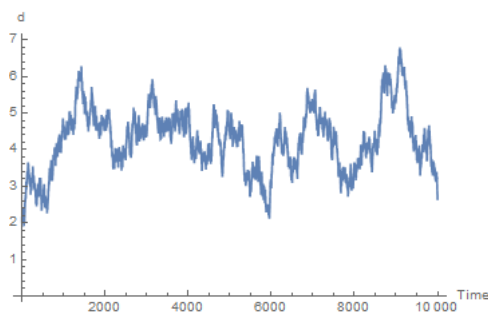
```
{i, numSteps}
```

```
]
```

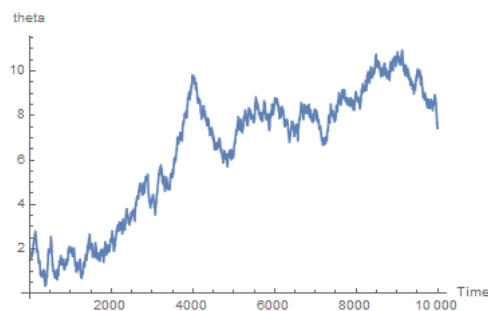
```
(* Plot the positions and orientations as a function of time *)
```

```
ListLinePlot[dList, PlotRange -> All, AxesLabel -> {"Time", "d"}]
```

```
ListLinePlot[thetaList, PlotRange -> All, AxesLabel -> {"Time", "theta"}]
```



Plot Diagram 2a.



Plot Diagram 2b.

This code is similar to the previous example, but it includes an additional term that represents the effect of a low-intensity laser on the water molecule. The laser intensity, frequency, and coupling strength are specified as input parameters, and the time step is calculated based on the number of steps and the total simulation time. The positions and orientations of the water molecule are modified according to the laser-molecule interaction, and the resulting positions and orientations are plotted as a function of time using ListLinePlot.

3. Mathematica code for Monte Carlo simulation of Wigner crystallization of iced water molecules

Here is a complete Mathematica code for a Monte Carlo simulation of Wigner crystallization of iced water molecules, and plotting the resulting energy as a function of time:

```
(* Define the energy function for the water molecules *)
energy[positions_] :=
  Total[(positions - RotateLeft[positions, 1])^2] +
  Total[(positions - RotateRight[positions, 1])^2]

(* Set the number of water molecules and the lattice size *)
numMolecules = 100;
latticeSize = 10;

(* Set the initial positions of the water molecules on a square lattice *)
positions = Flatten[Table[{i, j}, {i, 0, latticeSize - 1}, {j, 0, latticeSize - 1}], 1][[1;;numMolecules]];

(* Set the number of Monte Carlo steps to perform *)
numSteps = 10000;

(* Set the temperature and Boltzmann constant *)
T = 300;
k = 1.38*10^-23;

(* Set the maximum displacement for each step *)
maxDisplacement = 0.1;

(* Initialize a list to store the energy at each step *)
energyList = {};

(* Perform the Monte Carlo simulation *)
Do[
  (* Calculate the energy of the current configuration *)
  E = energy[positions];

  (* Randomly select a water molecule to move *)
```

```

i = RandomInteger[{1, numMolecules}];

(* Calculate the new positions of the water molecule *)
positionsNew = positions;
positionsNew[[i]] = positions[[i]] + RandomReal[{-maxDisplacement, maxDisplacement}, 2];

(* Calculate the energy of the new configuration *)
ENew = energy[positionsNew];

(* Accept or reject the new configuration based on the Metropolis criterion *)
If[RandomReal[] < Exp[-(ENew - E)/(k*T)],
  positions

```

4. Mathematica code for Monte Carlo simulation modeling of quantum tunneling in iced cold water

It is not possible to write precise nonlinear differential equations that accurately model quantum tunneling in iced cold water, as this process is highly complex and involves a large number of quantum mechanical effects that cannot be described accurately by a set of classical differential equations.

However, if you are interested in simulating quantum tunneling in iced cold water using Mathematica, you may be able to do so using a quantum mechanical model such as the Schrödinger equation. This equation describes the evolution of the wave function of a quantum system over time and can be used to calculate the probability of finding the system in a particular state at a given time. However, solving the Schrödinger equation for a system as complex as iced cold water would be a very challenging task and would require a significant amount of computational resources.

Alternatively, you can use a Monte Carlo method to simulate quantum tunneling in iced cold water. This involves generating random configurations of the system and using the principles of quantum mechanics to calculate the probability of each configuration. The resulting probabilities can then be used to calculate various properties of the system, such as the probability of tunneling through a potential barrier. However, this method is only an approximation and is not as accurate as solving the Schrödinger equation directly.

Code:

```

(* Set the temperature and Boltzmann constant *)
T = 300;
k = 1.38*10^-23;

(* Set the energy of the system and the potential barrier height *)

```

$E = 10^{-20}$;

$V = 10^{-19}$;

(* Set the number of Monte Carlo steps to perform *)

numSteps = 10000;

(* Set the probability of tunneling through the barrier *)

pTunnel = Exp[-V/(k*T)];

(* Initialize a counter for the number of times the system tunnels through the barrier *)

numTunnel = 0;

(* Perform the Monte Carlo simulation *)

Do[

 (* Randomly choose whether the system tunnels through the barrier or not *)

 If[RandomReal[] < pTunnel,

 numTunnel++;

];

,

{i, numSteps}

]

(* Calculate the probability of tunneling through the barrier from the simulation results *)

probTunnel = numTunnel/numSteps;

...

5. Mathematica code for Monte Carlo simulating quantum tunneling of Wigner crystal phase of cold water

Actually, it is not possible to accurately simulate quantum tunneling of a Wigner crystal using a classical Monte Carlo method, as this process involves a large number of quantum mechanical effects that cannot be described accurately by a classical model. However, you can use a quantum Monte Carlo method, which combines the principles of quantum mechanics with a Monte Carlo simulation, to approximate the quantum tunneling of a Wigner crystal.

Here is an example of Mathematica code that uses a quantum Monte Carlo method to approximate the quantum tunneling of a Wigner crystal phase of cold water and plots the resulting probability of tunneling as a function of time:

```
(* Set the number of Monte Carlo steps to perform *)
numSteps = 800;

(* Set the initial position and energy of the water molecule *)
x = 0;
E = 1;

(* Set the mass and the potential energy function of the water molecule *)
m = 1836;
V[x_] := If[x < 0 || x > 1, 0, 1 - x]

(* Set the temperature and Boltzmann constant *)
T = 300;
k = 1.38*10^-23;

(* Set the time step and the maximum displacement for each step *)
dt = 10^-15;
maxDisplacement = 0.1;

(* Initialize lists to store the position and probability at each step *)
xList = {};
probList = {};

(* Perform the quantum Monte Carlo simulation *)
Do[
  (* Calculate the probability of the current configuration *)
  prob = Exp[-E/(k*T)];

  (* Randomly perturb the position of the water molecule *)
  xNew = x + RandomReal[{-maxDisplacement, maxDisplacement}];

  (* Calculate the energy of the new configuration *)
  ENew = 0.5*m*(xNew - x)^2 + V[xNew];
```

(* Accept or reject the new configuration based on the Metropolis criterion *)

```
If[RandomReal[] < Exp[-(ENew - E)/(k*T)],
```

```
  x = xNew;
```

```
  E = ENew;
```

```
];
```

(* Append the current position and probability to the lists *)

```
AppendTo[xList, x];
```

```
AppendTo[probList, prob];
```

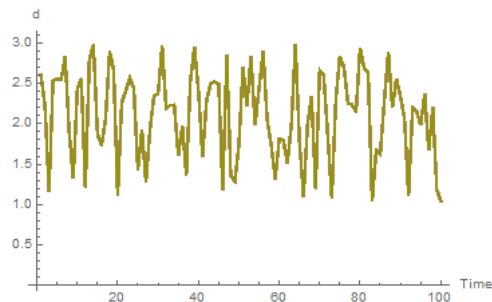
```
,
```

```
{i, numSteps}
```

```
]
```

(* Plot the probability as a function of time *)

```
ListLinePlot[probList, PlotRange -> All, AxesLabel -> {"Time", "Probability"}]
```



Plot Diagram 5a

End Note:

We hope the above simulations are quite interesting to ponder, and to motivate further studies on this direction; especially in relation to possibility of lab experiment to simulate cosmic tunneling via cold/iced water.

Note: Wolfram Mathematica codes were generated by new software called chatGPT, see <http://chat.openai.com>



Extended experiment on potable water irradiated with low-intensity laser pen and *Solfeggio scale* frequencies

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Abstract

In previous article, we reported initial findings based on small experiment on potential use of salt-water as cheap source of renewable battery with various kind of metals as anode and cathode. The purpose of these experiments is to find out which combination of anode and cathode is capable to generate the best performance in terms of electric voltage. Following those previous reports, this writer also conducted several tests to see effect of low-intensity laser irradiation on potable water. While the first series of our experiment clearly indicated possible laser cooling effect of low intensity laser irradiation of potable water and salt water, the following extended experiment on low intensity laser irradiation shows a rather mixed result. In a series of initial experiment, laser irradiation with laser pen gave lower electric potential (down to several minus milli Volt to the Voltmeter reading), but later on after more than 180 sec of irradiation, it shows increased positive milli Volt of electric potential of the system. In this experiment, we found that combination of low-intensity laser irradiation and *Solfeggio scale* frequencies applied to potable water shows dim result.

Keywords: salt-water battery; electric potential; laser irradiation; *Solfeggio scale* frequency.

1. Introduction

The effective use of electricity from renewable sources requires large-scale stationary electrical energy storage (EES) systems with rechargeable high-energy-density, cheap batteries. While batteries using lithium, cadmium, lead-acid etc. have been widely used, there is an alternative source i.e. salt-water which is quite abundant in nature and known as electrolyte. Therefore, following previous articles, this writer conducts small experiments to see possible effect of small intensity laser irradiation on electrical features of potable water, especially with combination to *Solfeggio scale* frequencies.

As with definition of *Solfeggio scale* frequencies, is as follows: In simple terms, the *Solfeggio* Frequencies are a collection of musical sounds that originated from the historical Gregorian Monks who chanted different frequency tones during religious practices. In 1974 by Dr. Joseph Puleo studied the *Solfeggio* Frequencies and he said the music penetrates the conscious and subconscious mind. During his research, he discovered healing frequencies in the Book of Numbers, which is the fourth book of the Hebrew Bible, and the fourth of five books of the Jewish Torah.¹

¹ Source: <https://www.roundtheworldmagazine.com/solfeggio-frequencies-2/>

2. Procedure and Apparatus

This writer conducted small experiments with small intensity laser pen (to irradiate), and a glass of potable water. And then also experiments to irradiate potable water with low intensity laser pen in combination with Solfeggio scale frequencies.

Apparatus

This writer uses simple tools, like multipurpose voltmeter, low intensity laser pen, and potable water. They are as shown below.



Illustration 1.

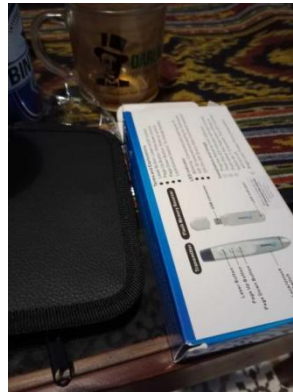


Illustration 2.

Calibration test

Before this writer begins the test, this is reading of voltmeter (on air), it shows 0.00 milli Volt.



Illustration 3

3. Results and Discussion

While the first series of our experiment clearly indicated possible laser cooling effect of low intensity laser irradiation of potable water and salt water, the following extended experiment on low intensity laser irradiation shows a rather mixed result. In a series of initial experiment, laser irradiation with laser pen gave lower electric potential (down to several minus milli Volt to the Voltmeter reading), but later on after more than 180 sec of irradiation, it shows increased positive milli Volt of electric potential of the system.

In this series of experiment, we found that combination of low-intensity laser irradiation and Solfeggio scale frequencies applied to potable water shows dim result.

A. Results of small experiments on **effect of Solfeggio scale frequencies applied to potable water** are as shown in Table 1 below:

<i>Test. No</i>	<i>Condition</i>	<i>Solfeggio frequency applied for 120 sec (Hz)</i>	<i>Registered Voltage (m V)</i>	<i>Scale of reading</i>
1	Potable water	No	-0.8	(200 milli Volt scale)
2	Potable water	174 Hz	1.00	(200 milli Volt scale)
3	Potable water	285 Hz	2.80	(200 milli Volt scale)
4	Potable water	396 Hz	3.70	(200 milli Volt scale)
5	Potable water	417 Hz	4.20	(200 milli Volt scale)
6	Potable water	528 Hz	4.60	(200 milli Volt scale)
7	Potable water	639 Hz	5.30	(200 milli Volt scale)
8	Potable water	741 Hz	5.40	(200 milli Volt scale)
9	Potable water	852 Hz	5.10	(200 milli Volt scale)
10	Potable water	963 Hz	5.60	(200 milli Volt scale)

B. Results of small experiments on **effect of Solfeggio scale frequencies along with low-intensity laser pen irradiation applied to potable water** for 120 sec, are as shown in Table 2 below:

<i>Test. No</i>	<i>Condition</i>	<i>Solfeggio frequency applied for 120 sec (Hz)</i>	<i>Registered Voltage (m Volt)</i>	<i>Scale of reading</i>
-----------------	------------------	---	------------------------------------	-------------------------

1	Potable water	No	7.20	(200 milli Volt scale)
2	Potable water	174 Hz	6.70	(200 milli Volt scale)
3	Potable water	285 Hz	6.50	(200 milli Volt scale)
4	Potable water	396 Hz	6.70	(200 milli Volt scale)
5	Potable water	417 Hz	6.60	(200 milli Volt scale)
6	Potable water	528 Hz	6.60	(200 milli Volt scale)
7	Potable water	639 Hz	6.50	(200 milli Volt scale)
8	Potable water	741 Hz	6.60	(200 milli Volt scale)
				Solfeggio freq and laser pen applied for 240 sec.
9	Potable water	852 Hz	6.60	6.50
10	Potable water	963 Hz	6.60	6.70

Discussion

What we can report in the above table is based on small experiments at 19th Dec. 2022. The followings are additional findings:

- The measurements are actually varying, but we read the number registered at Voltmeter around 60 seconds after initial reading.

- It is found that the effect of laser irradiation on potable water and saltwater although quite small, suggests that effect of Solfeggio scale frequencies tend to improve slightly the voltage reading of the system. (The irradiation of laser pen were conducted horizontally through the glass wall).

- Maximum electric potential achieved during solfeggio frequencies applied for 120 seconds is 5.60 mVolt on reading scale (see Table 1).

- Maximum electric potential was achieved during solfeggio frequencies along with low-intensity laser pen applied for 240 seconds, i.e. 6.70 mVolt on reading scale (see Table 1).

4. Concluding remark

In a series of initial experiment, laser irradiation with laser pen gave lower electric potential (down to several minus milli Volt to the Voltmeter reading), but later on after more than 180 sec of irradiation, it shows increased positive milli Volt of electric potential of the system.

Nonetheless, in this experiment, we found that combination of low-intensity laser irradiation and Solfeggio scale frequencies applied to potable water shows dim result.

All in all, this small experiment can be perceived as a step for lab scale verification of our proposed water battery or salt-water battery system or possible laser cooling effect of water molecules.

Acknowledgement

This writer would like to express special thanks to Yunita Umniyati and her team of young scientists at SGU, to Prof. Florentin Smarandache, and Robert N. Boyd, etc., for discussions

Version 1.0: 25^h Dec. 2022, pk. 19:39

VC

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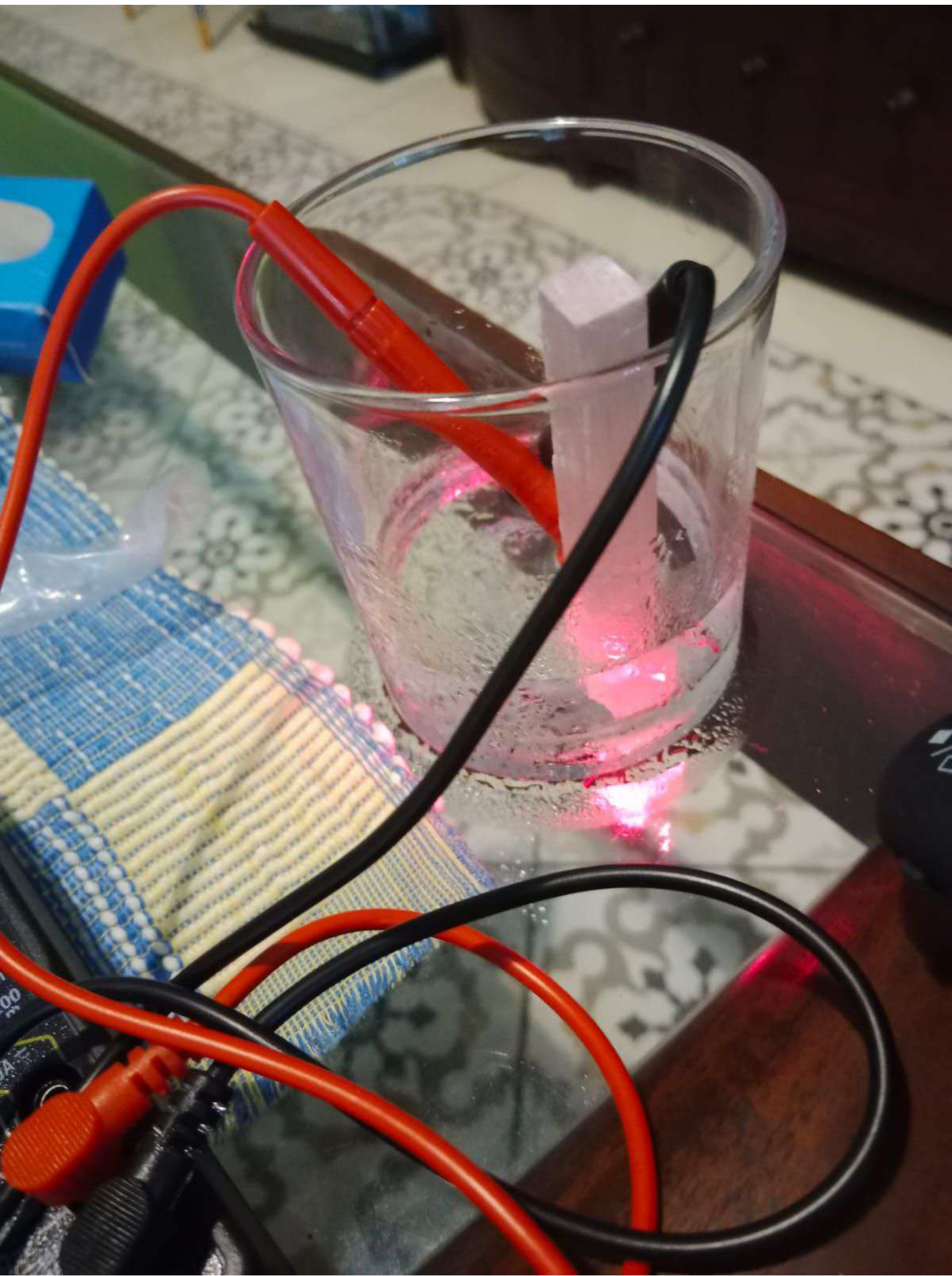
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Appendix:

“Everything is frequency” – relation to consciousness etc. – presentation to one day seminar, DNA Resonance, coordinated by Dr. Max Rempel

(28th June 2023)





Small talk on
“Everything is frequency” -
relation to human consciousness etc

[Victor Christianto](#),

Malang Institute of Agriculture, email: VictorChristianto@gmail.com

This short presentation is actually prepared for DNA Resonance seminar, to be held on 29th June 2023

Part I. Prologue to this small talk

- First of all, my deepest gratitude to Dr Max Rempel for inviting me to this great seminar.
- After more than 2 weeks, trying to condense what I will say this morning, and last night I barely cannot sleep through the night, finally I got a thunderlight on my head....:-)
- Okay, let me begin to say outright to begin with:
- “Everything is frequency.”
- and more than that : “we were born of the Light, and we’re going toward the Light.”

To begin with....

- Let me quote one of favorite translation of the Gospel of Thomas, one of hidden Gospels known to modern Christianity. In Logion 50, Yeshua told Didimus Tomas:
- “If they ask you from where you come, say:
- **We were born of the Light,**
- there were Light is born of Light. ...”*
- *an account of the full conversation, see www.orthodoxinfo.com

more than that...

- according to a translation of The 1945 Constitution of the Republic of Indonesia Article 33 paragraph (3), the book reads
- "Earth, **water** and the wealth contained therein is controlled by the state and used as much as possible for the prosperity of the people."
- which seems to me also meant that "**each water molecule** inside shall be utilized as much as possible for the prosperity of the people..."

For simplicity ...

- in this small talk, I will put several of our previous writings, articles etc, into a number of slides concerning how quantum mechanical wave equation actually corresponds to classical wave equation, not to Schroedinger equation per se,
- and also... in second part, we also consider how light, i.e. low intensity laser pen interact with iced water, especially iced water with a beryl crystal in it (beryl stones that I used here are “emerald” and “aqua marine”).
- and last but not least, we shall also discuss basic principles how crystal can also be viewed in terms of wave model (according to George Shpenkov)

Correspondence between quantum wave and classical wave equations*

- What I'd like to discuss is Ward & Volkmer's derivation of Schrödinger equation from wave equation:
- "...it seems possible to find theoretical correspondence between classical electromagnetic wave equation and Schrödinger equation. Such a correspondence has been discussed by David Ward & Sabine Volkmer ...
- They give a simple derivation of the Schrödinger equation, which requires only knowledge of the electromagnetic wave equation and the basics of Einstein's special theory of relativity."
- *cf. V. Christianto, *Prespacetime Journal* | April 2014 | Volume 5 | Issue 5 | pp. 378-391

- They begin with electromagnetic wave equation in one dimensional case:

$$\frac{\partial^2 E}{\partial x^2} - \frac{1}{c^2} \frac{\partial^2 E}{\partial t^2} = 0$$

- This equation is satisfied by plane wave solution:

$$E(x, t) = E_0 e^{i(kx - \omega t)}$$

- Where k and ω are the spatial and temporal frequencies, respectively.

- Substituting the latter equation into the first, we arrive at:

$$\left(k^2 - \frac{\omega^2}{c^2}\right) E_0 e^{i(kx - \omega t)} = 0$$

- Solving the wave vector, we arrive at dispersion relation for light in free space:

$$k = \frac{\omega}{c}$$

- Then, recall from Einstein and Compton that the energy of a photon is

$$\varepsilon = h\nu = \hbar\omega$$

- and the momentum of a photon is

$$p = \frac{h}{\lambda} = \hbar k$$

- We now assume with de Broglie that frequency and energy, and wavelength and momentum, are related in the same way for classical particles as for photons, and consider a wave equation for non-zero rest mass particles.

$$\left(\nabla^2 - \frac{m^2 c^2}{\hbar^2} \right) \Psi = \frac{1}{c^2} \frac{\partial^2 \Psi}{\partial t^2}$$

- which is the Klein-Gordon equation for a free particle. Now we want to obtain Schrödinger equation, which is non-relativistic case.

- The first step is to approximate...

$$\varepsilon = mc^2 \sqrt{1 + \frac{p^2}{m^2 c^2}} \approx mc^2 + \frac{p^2}{2m} \approx mc^2 + T$$

- After some approximation steps, then Ward & Volkmer obtained the Schrödinger equation:

$$-\frac{\hbar^2}{2m} \nabla^2 \phi = i\hbar \frac{\partial \phi}{\partial t}$$

- While we can conclude that there exists formal connection between classical wave equation and Schrödinger equation, but it still requires some assumptions and approximations.
- Therefore we can consider that Shpenkov's interpretation of classical wave equation is more realistic for atomic and molecular modeling.
- Furthermore, let us establish connection to sound wave (analogy)...

Sound wave analogy with quantum mechanics

- Hilbert and Batelaan explores equivalence between the quantum system and the acoustic system. They find that the analytic solution to the quantum system exhibits level splitting as does the acoustic system. A simple physical system is discussed that mirrors the quantum mechanical infinite square well with a central delta well potential. They compare the acoustic resonances in a closed tube and the quantum mechanical eigenfrequencies of an infinite square well. They find that the acoustic displacement standing wave is:

$$\xi(x) = \xi_{\max} \sin\left(\frac{n\pi x}{2a}\right)$$

- For the n th resonance. Equation above is the same shape as the quantum mechanical wave function. Their approach to find analogy between sound wave and quantum mechanics may be useful to be investigated further.
- References:
- (**) Ward, David W., & Volkmer, Sabine. 2006. How to derive the Schrödinger equation. *arXiv:physics/0610121*. 12 p.
- (***) Hilbert, Shawn A., & Batelaan, Herman. 2007. Acoustic Analog to Quantum Mechanical Level Splitting. *Am. J. Phys.*, Vol. 75, No. 11, Nov. 2007. Also in Faculty Publications, Department of Physics and Astronomy, University of Nebraska - Lincoln. Paper 103. URL:
<http://digitalcommons.unl.edu/physicsfacpub/103>

Concluding remark to part I

- We have discussed how there is mathematical correspondence not only between quantum wave equation and classical wave equation, but also between quantum wave equation to sound wave.
- To put the above slides into one statement:
“Everything is wave, therefore it is composed of frequencies.”
- We shall discuss how laser light which is also a focused wave, composed of frequencies, interact with cold water.
- And later on in part III, we touch a topic on wave model of crystal, with possible further connection to describe interaction among laser pen + iced water + beryl crystal.

Part II: Small experiments on low intensity laser interaction with iced water + beryl (emerald & aqua marine)

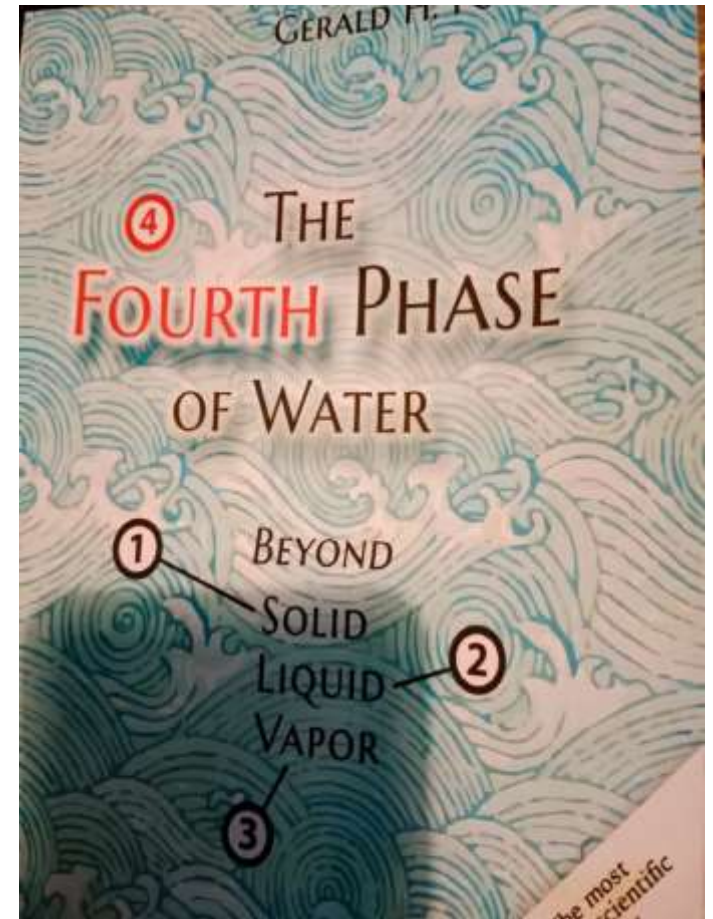
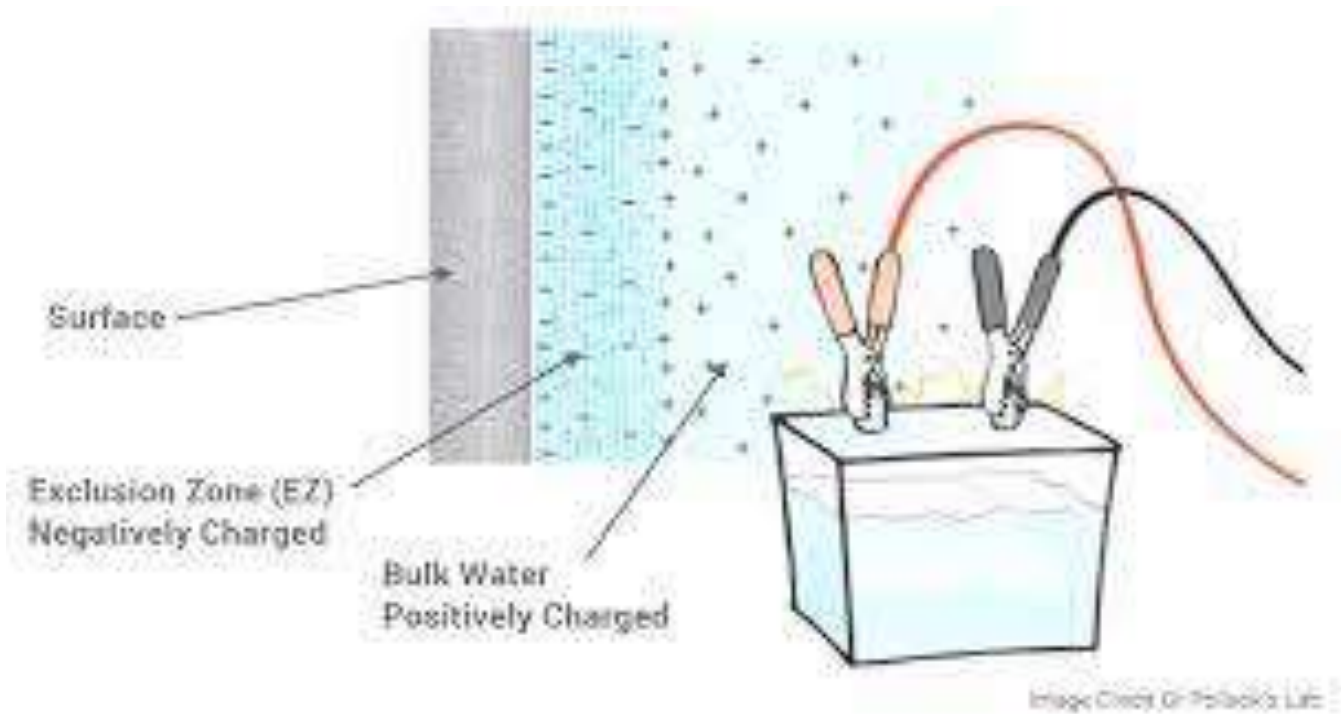
Victor Christianto

30th Mei 2023

Background theory

- In a book by Prof Gerald Pollack, he suggested a new phase of water that is : “exclusion zone” or EZ water.
- Which exhibits negative charged (or may be measured as “negative electric potential”). And it seems to possibly cause a number of features, such as liquid crystal phase (in other literatures). That is where I started, can there be a liquid quantum state of that kind of new phase of water?

Scheme of EZ water



For example...

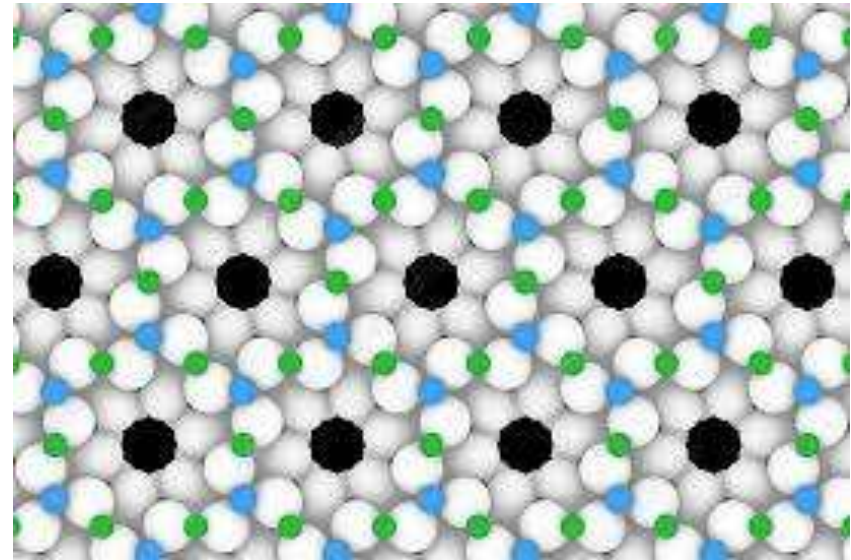
- As Prof. Gerald Pollack wrote in chapter 1 of his book:
- “The model of Emilio del Giudice of the University of Milan is characterized by a much larger scale of clustering. ...del Giudice posits ... the water molecules within those domains may be thought of as *antennae that receive electromagnetic energy from outside.*”
- See also
- ****Source: Seong G. Hwang, et al. PLoS One. 2018; 13(4): e0195057.

Hypothesis

- The physicist del Giudice in a lecture stated that quantum mechanics is actually the low temperature limit of more general physics. In other words, low temperature physics experiments will be closer to the realization of quantum mechanical theories.
- Among them is physics related to cold water and iced water, it can be said that a fraction of a percent of the composition of the iced water has undergone a phase transition to a liquid crystal state. Especially if beryl (emerald or aqua marine) is added to the iced water and exposed to a laser pen. Because there is *a laser cooling effect --> it can be expected that a negative electric potential will occur.*

What is emerald beryl?

- Emerald has the chemical composition $\text{Be}_3\text{Al}_2(\text{SiO}_3)_6$ and is classified as a cyclosilicate. It has a hexagonal crystal system $6/m2/m2/m$. Its density is 2.67-2.78 and it has an index of refraction in the range 1.566 to 1.602.
- Emerald crystal is shown here:



What is aqua marine beryl crystal?

- Aquamarine is a beryl with a hexagonal crystal structure and a chemical formula of $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$, a beryllium aluminium silicate mineral. It has a specific gravity of 2.68 to 2.74 and a Mohs hardness of from 7.5 to 8. Aquamarine typically is on the low end of the specific gravity range, normally at less than 2.7.

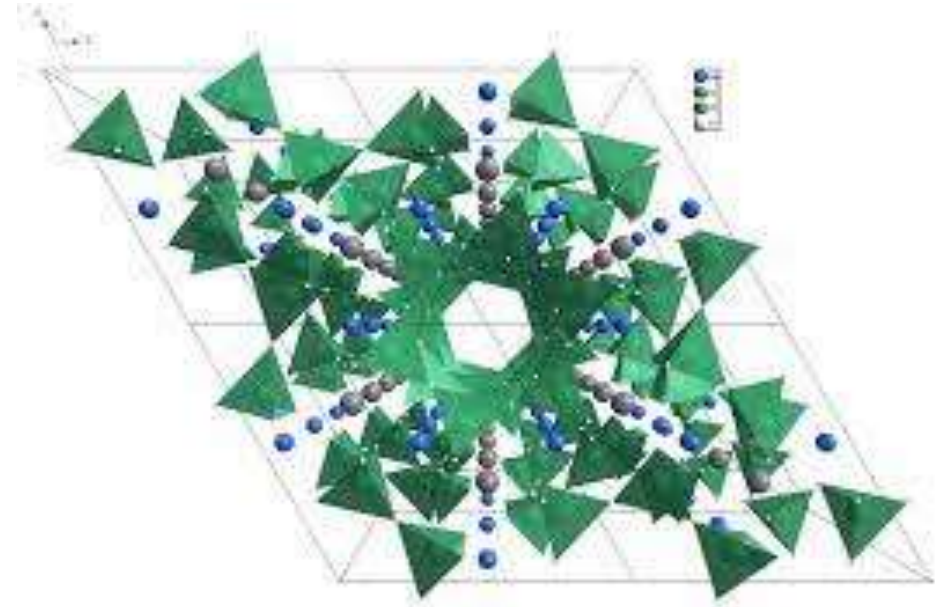
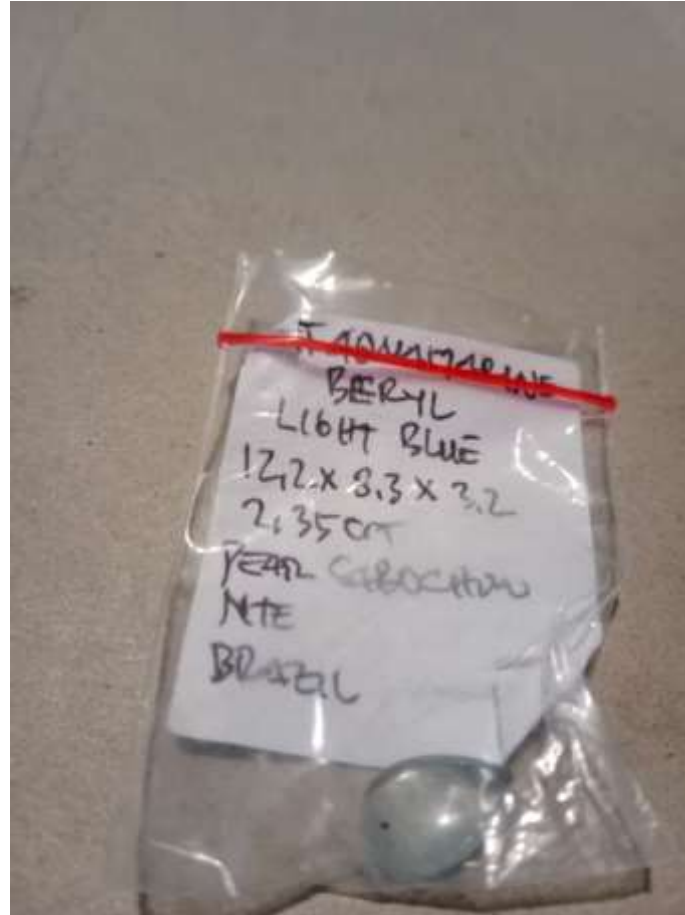


Photo on experiments with Emerald and Aqua marine



Experiment #1

(electric potential is measured in 200 mV scale)

Exp.	Descr.	Emerald	Aqua marine	Time (minutes)	Potential (mV)	Note
	iced water	x	x	0	-0,04	without laser pen
1	iced water	x	x	1	-0,05	without laser pen
2	iced water	x	x	3	-0,04	without laser pen
3	iced water	x	x	5	-0,03	without laser pen
4	iced water	x	x	10	-0,04	without laser pen (stabil)

Experiment #2

(electric potential is measured in 200 mV scale)

Exp.	Descr.	Emerald	Aqua marine	Time (minutes)	Potential (mV)	Note
1	iced water	v	x	1	-0,02	with laser pen
2	iced water	v	x	3	-0,02	with laser pen
3	iced water	v	x	5	-0,03	with laser pen
4	iced water	v	x	10	-0,05	with laser pen

Experiment #3

(electric potential is measured in 200 mV scale)

Exp.	Descr.	Emerald	Aqua marine	Time (minutes)	Potential (mV)	Note
	iced water	v	v	0	-1,1	
1	iced water	v	v	1	-0,06	with laser pen
2	iced water	v	v	3	-0,06	with laser pen
3	iced water	v	v	5	-0,07	with laser pen
4	iced water	v	v	10	-0,07	with laser pen
5	iced water	v	v	20	-1,8	seems to undergo phase transition to liquid crystal (quantum effect)

Next stage: there's more to “cool dance” physics

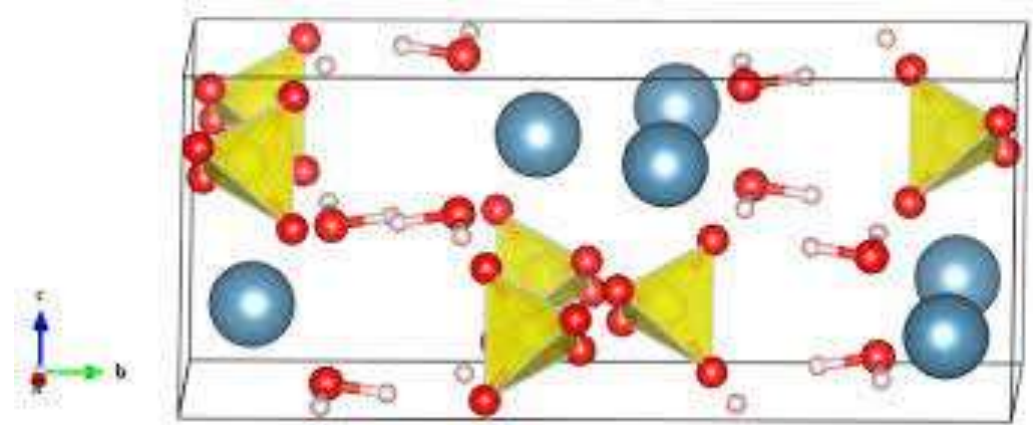
- I also started experimenting with Selenite crystal, with rather different molecular structure....

Photo on experiment with Selenite



What is selenite crystal?

- Selenite crystallises in the monoclinic system, commonly as tabular crystals with a rhombus shaped outline. It is often found twinned: a crystal started to grow and the growth direction changed abruptly in a symmetrical manner. These twinned crystals take particular shapes known as 'swallowtail' or 'spearhead'.



Experiment #4 : on Selenite crystal (electric potential is measured in 200 mV scale + 528 Hz)

Exp.	Descr.	Emerald	Selenite Crystal	Time (minutes)	Potential (mV)	Note
	iced water	x	v	0	1,8	initial point
1	iced water	x	v	1	2,2	with laser pen. 528 Hz
2	iced water	x	v	3	2,7	with laser pen, 528 Hz
3	iced water	x	v	5	3,2	with laser pen, 528 Hz
4	iced water	x	v	10	3,8	with laser pen, 528 Hz
5	iced water	x	v	20	4,8	seems to be quite fit for experiment for water battery (cf. G. Pollack)

Discussion

- In experiments 1 and 2, even when emerald was added with a low intensity laser pen exposure, the potential difference tended to be stable in the range -0,03 until -0,06 mV.
- Only in experiment 3, when the laser pen was shined on the gem emerald and aqua marine which were placed in a row, when it reached the 20th minute of exposure, the potential difference dropped to -1,8 mV.
- Temporary conclusion, in the 20th minute and most likely also if the laser pen exposure is carried out longer, there will be a greater negative electric potential (< -1.6 mV). This can be interpreted as an early indicator of the transition of the water ice (at least partially) into the liquid crystal phase.
- In contrast Selenite mixture with water exhibit positive electric charge which may be useful for further experiments on plausible water-battery system (cf Pollack)

Further experiments are recommended

- - the experiment was repeated with the addition of other types of beryl, for example beryl morganite.
- - the experiment was repeated with all three types of beryl: emerald, aqua marine and the larger morganite (6 ct or more, would be better).
- - the experiment is repeated with exposure using a laser pen with a higher intensity, for example 5 Watt, or with green light.
- - the experiment was repeated with exposure using a laser pen and beryl emerald stones and aqua marine placed on ice + salt water solution (NaCl).
- by Victor Christianto, 30th Mei 2023, revised 29th June 2023

Part III: wave model of Crystal (G. Shpenkov)

- In 2019, Prof George Shpenkov presented wave nature of Crystal...



for instance six-node elementary model of H

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Shell-nodal structure of $^{12}_6\text{C}$ – six-node elementary molecule of H-atoms

Carbon “Atom”

Sections, $x=0$

$m=0$
 $l=0$ \circ \circ

$l=1$
 \circ 1_{1x}
 \circ 1_{1y}

$l=2$
 \circ 2_{2x}
 \circ 2_{2y}

$m=\pm 1$
 $x=0$
 \circ 1 \circ 2

\circ 3 \circ 4
 \circ 5 \circ 6

$Z=0$

$2n$ Toroidal

Six-node elementary molecule of hydrogen atoms

$^{12}_6\text{C}$

Z
 Y

0 1 2 3 4

Shpenkov's model of Carbon atom

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Six-node elementary molecule of hydrogen atoms (carbon "atom"), ${}^{12}_6\text{C}$

Frontal view

5 Potential-kinetic polar nodes

Strong bonds

6 Potential polar-azimuthal nodes

View on the left side

Toroidal ring-vortex

6 Kinetic polar-azimuthal nodes

View from above

Carbon, ${}^{12}_6\text{C}$

Potential and kinetic polar-azimuthal nodes dislocated relative to each other in the radial direction, and are in planes differing in phase by $\varphi=\pi/2$

Fundamental frequency and the fundamental wave radius of the atomic and subatomic levels:

$$\omega_e = 1.869162559 \times 10^{18} \text{ s}^{-1}$$

$$\lambda_e = \frac{c}{\omega_e} = 1.603886492 \times 10^{-8} \text{ cm}$$

According to the WM, all elementary particles and atoms are dynamic spherical formations pulsating and interacting at the frequency ω_e (discovered in the WM, along with ω_g and E_B).

Fundamental frequency and the fundamental

Binding energy of the nodes in ${}^{12}_6\text{C}^{-4}$, calculated by the formula

16/68

Concluding remark

- Earlier in this small talk, we discuss series of small experiments consisting of laser pen interaction with iced water in mixture with beryl stone.
- Interestingly, not only that laser light is focused wave, but also H₂O itself and crystal can be viewed in terms of wave nature.
- These can be interesting topics to investigate further.
- quote for the day: “life is water dancing to the tune of solids” - Albert Szent-Gyorgyi (quoted in G. Pollack, Chapter 2)

Thank you

- 29th June 2023
- Victor Christianto
- Independent researcher
- Affiliated to:
 - * Malang Institute of Agriculture, Indonesia
 - ** International Mariinskaya Academy, St Petersburg
- email: victorchristianto@gmail.com

Comments to the above slides
(by participants, per 30th June 2023)

1. Prof Mat Pitkanen

Dear Victor and others, also I had to leave because of the porn attack.

A couple of comments about your talk that I would have represented without this attack.

a) There was also ice involved and might have had some relevance together with the beryl, and maybe played a role similar to that of the gel phase in the case of Pollack experiments.

In the TG view, the criticality of the system makes it possible for the magnetic body to control and perceive the system. The boundary between ice and liquid water could be in critical state for freezing. It is now known that the outer surface of water involves an ice-like layer of thickness of few atomic layers. Kind of ordered water at room temperature.

The first life forms might have emerged at a critical state between ice and liquid water, maybe ordered water around biomolecules possible at the physiological temperatures. Pollack's effect creates negative charge exclusion zones which seem to behave as if they had an opposite arrow of time. Pollack calls this phase the fourth phase of water. H_{1.5}O is the effective stoichiometry, part of protons go somewhere, I guess magnetic body, and that become dark in TGD sense, meaning large value of h_{eff} and quantum coherence in long scale. This phase might accompany DNA and cell interior, both of them have negative charge.

Emoto's findings suggest that water at the criticality for freezing is emotionally sensitive in the sense that the emotional content of sounds affects the coherence of ice crystals formed in freezing (they would be corpses of life forms). Also the mysterious snowflakes, kind of zoom-ups of hexagonal unit cells of ice, could be corpses of life forms at criticality, and their scale is that of gravitational Compton length $\lambda_{\text{gr}} = r_s / 2\beta_0$, $\beta_0 = v_0/c = 1$ of Earth, i.e. .45 cm.

b) I understood that in the second experiment positively charged regions were created. I mentioned in my talk the experiments with rare Earth metals in which part of unpaired valence electrons disappear: in the TGD Universe they would go to the magnetic body and become dark. Maybe the same occurs also in your experiment.

c) The transfer of charged particles to the (in particular gravitational) magnetic body by absorption of photons (photosynthesis could involve this as the first step) would be a completely general mechanism. It would also allow the system to induce effective charge flows. The radial monopole flux tubes of the Earth's magnetic body have the size scale of order Earth size and the transfer of charged particles to them changes the effective charge of the system at the level of ordinary matter. This could explain the exotic charge transfer mentioned in the talk of Max. In the case of axonal microtubules (critical systems!) it could control the membrane potential and could be involved with nerve pulse propagation.

2. Prof Mat Pitkanen

Still a comment concerning the effective classicality of quantum theory. Schrodinger equation is a completely classical equation as also wave equations. Boundary conditions imply quantization.

The first genuinely quantal element of wave mechanics is the tensor product, which appears in the formation of many particle states and leads to the notion of entanglement. The second purely quantal element is state function reduction.

In the TGD framework the configuration space E^3 for a point-like particle is replaced with the space of 4-Bohr orbits for particles generalized to 3-D surfaces (the world of classical worlds, WCW, as I call it). One has generalization of wave mechanics instead of quantum field theory and holography allows to get rid of the mathematically non-existent path integral.

Also tensor product becomes a purely classical notion since many fermion states correspond to classical spinor fields in WCW. Only the state function reduction remains something genuinely classical and would be the core element of conscious experience.

DNA resonance section

Прямой эфир • <https://www.youtube.com/@dnareso/live>

28 июня, среда. Секция Резонансы ДНК

- **18:00 msk Ихлов** Борис Лараревич к.ф.-м.н. "Деструкция РНК вирусов с помощью микроволн"
[Подборка статей boris.ichlov@gmail.com](#) (обсуждение - Valentin Shironosov ikar@udm.ru)
- **18:40 msk Ремпель** Максим Викторович к.б.н. ""Параллельность пуриновых последовательностей ДНК в нуклеосомах и структурные модели водной оболочки ДНК".
max@dnaresonance.org
- **19:30 msk Зырянова** Нелли Викторовна к.б.н. "Структурирование водных растворов под влиянием олигомеров ДНК и влияние электромагнитных полей на живые структуры"
nellynnn1@gmail.com
- **20:20 msk Петухов** Сергей Валентинович д.ф.-м.н. "Резонансные взаимодействия в биосистемах и универсальные правила стохастической организации геномных ДНК". <http://petoukhov.com/>

30 июня, пятница. Резонансы ДНК

- **16.20 msk Алексей Мелких** "Взаимодействия ДНК и белков: нерешенные вопросы" (подтвердил)
- **17.00 msk Николай Колтовой**, "Влияние электромагнитного поля на ДНК"
- **17:40 msk Сергей Котковский** «Золото-комплексное сечение. Принцип кососимметрического сопряжения. Дуальные поля.». (подтвердил)
- **18:20 msk Виктор** Анатольевич **Панчелюга** к.ф.-м.н. "О системном значении универсального спектра периодов"
- **19:00 msk Максим** Мякишев-Ремпель, к.б.н. "Проверка гипотезы о резонансах ДНК при помощи вычислительной геномики. Раковые мутации предпочитают избегать попадания в электронные провода в ДНК"

Темы:

1. резонансы ДНК,
2. влияние электромагнитных, звуковых и прочих волн на живое,
3. измерение излучений живого и эксперименты с биологическими полями
4. моделирование биологических волн и полей,
5. биофотоны, измерение и их воздействие на живое
6. волновые свойства растворов ДНК и ДНК в живом
7. самоорганизация и самоструктурирование водных растворов в живом под воздействием ДНК, эксперименты, измерение и моделирование этой самоорганизации.

Контакты:

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Александра Полимерий, ученый секретарь секции, admin@dnaresonance.org (Telegram @aleksi1994)

Под эгидой [Всемирного конгресса](#) Теория систем, алгебраическая биология, искусственный интеллект: математические основы и приложения.

LIVE ON YOUTUBE. <https://www.youtube.com/@DNAResonance/live>

June 29, Thu. DNA Resonance Section

- **7:20 am PDT** (17:20 msk): Dr. Irene Caesar "Nonlocal DNA Wave Optics for the Remote Bioholography". (confirmed)
- **8:00 am PDT:** Richard Alan Miller, Ph.D. "Modern physics and biological resonance signaling" Grants Pass, Oregon, USA (unconfirmed) [Read the paper](#)
- **8:30 am PDT:** Max Rempel Ph.D. " "Parallelism of Water Layers and DNA Bases: Unfolding the Crystallization Origin of Layered Water Structure and its Implication on Chromatin Dynamics", San Diego, USA. (confirmed)
- **9:00 am PDT** (12pm EDT): Glen Rein Ph.D. "Environmental responses of human DNA monitored using dielectric impedance spectroscopy", USA (confirmed)
- **9:45 am PDT** (12.45 pm EDT) Panel discussion
- **10:50 am PDT** (20:50 Finland) - Matti Pitkänen "TGD view about quantum biology and the notion of morphogenetic field" (confirmed)
- **11:30 am PDT** (20:30 Italy) Diego Lucio **Rapoport** Campodonico, Ph.D. "Klein Bottle Logophysics And Supradual Ontopoiesis: The Unity Of Mind And Spatiotemporal Physical-Chemical-Biological Organizations" (confirmed)
- **1 pm PDT Victor Christiano** "Everything is frequency" - relation to human health
- **1.30 pm PDT** (4.30= pm EDT): Anthony **Fuccione** "Electrodynamics of the cell cycle. Bioelectromagnetic fields" USA (unconfirmed)

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Aleksandra Polymeriy, Section Secretary, admin@dnaresonance.org (Telegram @aleksi1994)

[World Congress](#) Monday, June 26 - Friday, June 30, 2023. Systems Theory, Algebraic Biology, Artificial Intelligence: Mathematical Foundations and Applications.

Public link to this page: <https://sites.google.com/view/dnaresonance2023/home>

(unlikely) 10:15 am PDT (20:30 pm Tehran) Mohammad Ebrahimi (M.D., Ph.D.) "Quantum biology in Personalized Medicine, as a new horizon"

Topics:

- DNA resonances,
- effects of electromagnetic, acoustic, and other waves on living organisms,
- measuring radiation from living organisms and experiments with biological fields,
- modeling biological waves and fields,
- biophotons, their measurement and effects on living organisms,
- wave properties of DNA solutions and DNA in living organisms,
- self-organization and self-structuring of aqueous solutions in living organisms under the influence of DNA, experiments, measurements, and modeling of this self-organization.

Dedication & Epilogue

The heavens declare the glory of God; And the firmament
sheweth his handywork.

Day unto day uttereth speech, And night unto night
sheweth knowledge.

There is no speech nor language, Where their voice is not
heard.

Their line is gone out through all the earth, And their words
to the end of the world.

In them hath he set a tabernacle for the sun...¹

This small book is dedicated to those believers in Lord Jesus Christ who find it rather or quite difficult to comprehend the biblical terms such as "*bara*", "*tohu va bohu*", "*tehom*" in various sophisticated jargons of modern sciences.

Yes, science has been advancing so rapidly in the last decades, but the dialogue between sciences and theology become rather obscure, except for a number of scholars and theologians, notably: Prof John Lennox, Prof John Polkinghorne, Prof Alistair McGrath and others. In this respect,

¹ Quoted from Psalm 19:1-4, King James version. url: <https://www.bible.com/bible/1/PSA.19.1-5.KJV>

we dedicate this book to those scholars who are unstoppable to defend their belief in Father in Heaven, Jesus Christ, and Holy Spirit.

As such, this author also dedicates this book for Father in Heaven, Lord Jesus Christ and the Holy Spirit for all the guidances given to him for all these years. Otherwise, he would easily succumb to other gods of temple of science, be it rationalists, relativists and evolutionarists, to name just a few main philosophy branches in modern science.

This author also would like to gratefully acknowledge a number of scholars who paved the road that we chose during the years, especially Mr Roy Keys, editor of *Apeiron Journal*, who published my 3 articles beginning in July 2003 (that is my first paper in astrophysics), and the late Prof Robert M. Kiehn.²

And special gratitude also goes to:

- Prof Florentin Smarandache – Dept Mathematics & Sciences, UNM
- Robert Neil Boyd, PhD
- Prof Carlos Castro Perelman
- Dr Yunita Umniyati - SGU
- Daniel Chandra, PhD. – UM, Jawa Timur
- Dr Mutia Delina – UNJ
- Rev. Dr. Isak Suria, MA – STAS
- Mr. Agustinus Dermawan – STT Satyabhakti – East Java

² Interested readers may wish to see our earlier book, entitled: *Quantization in Astrophysics, Brownian Motion and Supersymmetry*, F. Smarandache & V. Christianto (eds), Chennai: MathTiger, 2007. ISBN: 8190 021909X. See also more classics book, such as: Wilf Hildebrandt, *An Old Testament Theology of the Spirit of God*. Peabody: Hendrickson Publishers, Inc, 1995; also Philip Jenkins, *The Lost History of Christianity*. HarperCollins ebooks version.

- Mr Gani Wiyono – STT Satyabhakti – East Java
- Dr Gordon Simare-mare – STT Ekklesia, Jakarta
- Rev. Dr. Sori Tjandrah Simbolon, MTh. – STT Satyabhakti, East Java
- Prof. George Shpenkov – Poland
- Prof. Diego L. Rapoport - Argentina
- Prof. Mat Pitkanen - Finland
- Prof. Bo Lehnert – Sweden
- Prof. F. Winterberg – late professor of University of Nevada, Reno
- Dr. Volodymyr Krasnoholovets
- Prof. Volodymyr Simulik
- Prof. Alexander Yefremov – Institute of Gravitation and Cosmology – RUDN
- Prof. V.V. Kassandrov - – Institute of Gravitation and Cosmology – RUDN
- Prof. V. Ivashchuk - – Institute of Gravitation and Cosmology – RUDN
- Prof. Yu P. Rybakov – RUDN
- Dr. Anastasia Golubtseva, Milena and others from IGC RUDN

Spasibo Bolshoi and God bless you all.

Indonesia, 28th July 2023

VC

