MARCH-THROW TO THE BEGINNING OF QUANTUM MECHANICS.

(Revision of scientific positions and results of a number of past experiments with their new interpretation in the format of the proposed concept based on the fundamental principle of complementarity and its geometric analogue).

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"***Previously, it was believed that physics describes the universe. Now we know that physics describes only what we can say about the universe.***" *Nobel laureate Niels Bohr.*
"***Quantum physics urgently needs new images and ideas that can only arise from a profound revision of the principles that underlie it.***" *Nobel laureate Louis de Broglie.*

ABSTRACT.

The observed crisis and stagnation in the areas of theoretical physics, such as quantum physics and particle physics, as well as theories based on them, is noted by many scientists. There is a lot of criticism, but so far, in the ranks of academic physics, there are no constructive theoretical proposals in terms of a new paradigm that could resolve the crisis. Academic science is steadily moving towards combining the approaches of Einstein's Theory of Relativity and Quantum Physics into a general Theory of Everything, but so far it is doing this on the already created foundation and its established views and authorities.

This article voices a constructive proposal that aims to help get out of this crisis. It is proposed to pay attention to the **geometric approach** in the format of a new self-consistent concept based on the ontology of the fundamental principle of complementarity.

The new approach expresses the need to return to the initial beginning of the creation of Quantum Mechanics and GTR and to reconsider some positions regarding the application of the complementarity principle to the issues of quantum phenomena and the form of a quantum phenomenon. At the dawn of the birth of GTR and Quantum Mechanics, a situation arose when significant and strong discoveries related to the theory of ether were, for a number of reasons, in the shadows, and in their place ideas came to the stage of science, the elements of which, in isolation from the position of the presence of a supporting environment, turned out to be either with a weak philosophy or somewhere erroneous.

As a result, instead of a holistic picture leading to the comprehension of nature, the foundations of the science of physics of the 20th century turned out to be theories that do not fit together and rather generate the illusion of understanding. This became the main reason for the crisis that arose, a break from the realities of Nature and an ever-increasing immersion in virtual theoretical worlds created on the basis of the mathematical apparatus of algebra.

In the format of the announced new approach, a physical and philosophical revision of conceptual positions, as well as the resulting conclusions made on the basis of the experiments conducted at that time by J. Thomson and E. Rutherford (Geiger-Marsden) was proposed.

"***We should not allow the degeneration of all other cognitive organs due to the development of one rational analysis.***" *Nobel laureate W. Heisenberg.*

In his autobiography, written after winning the Nobel Prize in 1999, theoretical physicist G't Hooft included questions and reflections on the state of the current leading theories in theoretical physics. [1] Quote:

«What about the deep, open problems in the Standard Model? Many of my colleagues agree that supersymmetry, a symmetry relation between particles with different spins, should play an essential role. But what should a supersymmetric "parent theory" be like? How and why should supersymmetry be broken to explain the world as we observe it today?

Do we really have to believe that there are dozens of particle types called "super partners", none of which have ever been seen? Such questions make me feel uncomfortable with supersymmetric theories.

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Should we really believe that there are dozens of types of particles, called "superpartners", none of which have ever been seen? Such questions make me feel uneasy with supersymmetric theories.

The true answers must undoubtedly come from the incorporation of the gravitational force. At first sight it may seem difficult to believe that such an extremely weak force could cause so much havoc in a theoretical construction such as the Standard Model. The point is, however, that if gravity really corresponds to the curvature of space and time, as we must conclude from the successes of Einstein's theory of General Relativity, then Quantum Mechanics predicts quantum fluctuations in this curvature that, at the tiniest distance scales, grow out of control. This means that either gravity theory, or Quantum Mechanics, or both, must be replaced by some superior paradigm... Whatever paradigm this would be, it is likely to entirely reform our understanding of the fundamental interactions, answering all our present questions at one stroke». [1]

Let us try to answer the question of what this higher paradigm must include in order to change our understanding of the fundamental interactions. Obviously, it is necessary to rewind philosophical logic back to some starting point of reasoning in order to understand which paradigm can be considered higher. In essence, the fundamental nature of its theoretical proposals should be determined "not by the bulkiness of the mathematical apparatus, but by the degree of connection with materialistic philosophy and proximity to the boundaries of the knowable." [17]

Let's start with the fact that in the current period four types of fundamental interactions are known (electromagnetic, gravitational, weak and strong), which are described by the apparatus of algebra through the forces acting in them.

Descriptions of interactions through forces are represented by laws (Newton, Coulomb, Lorentz, Ampere, etc.). Conclusion: **forces** manifest themselves in **interactions** and are described by the laws of interaction.

Let's ask ourselves: what determines the laws of interaction? The laws of interaction are determined by **principles** or, if we mean the construction of a monistic theory, in other words, a unified Theory of Everything, then we must talk about a single initial principle from which all other principles, as well as laws, originate, and which determines the uniform nature of motion. All other types of motion are a modification of the universal type of motion or its special case.

The initial fundamental principle is a pre-establishment, a precondition. Principles are not proven. Principles are revealed as a generalization of experimental facts and empirical observations. They are universal in nature and are defining. Principles allow for a uniform explanation of the totality of phenomena under consideration, which may belong to different scaling levels. A law is a development of a principle, and laws have a particular manifestation of principles at each scaling level or in a specific existential sphere.

What is determined by a principle? A principle mediates the structure of interrelations. It is the structure of interrelations that determines the nature of interactions and then the forces in them. Consequently, the highest paradigm will be an approach based on an empirically revealed initial ontological principle, which has a comprehensive nature regardless of the scaling level and the sphere of existence. And a theory built on the initial principle will be monistic and will represent a generalizing Theory of Everything.

The initial principle has long been known to modern science, and it has also been known since ancient times – this is the principle of complementarity. For quantum physics, it was formulated by Niels Bohr. In turn, from ancient times it was transmitted in the form of a pictorial symbol of Yin-Yang and is present in philosophical views.

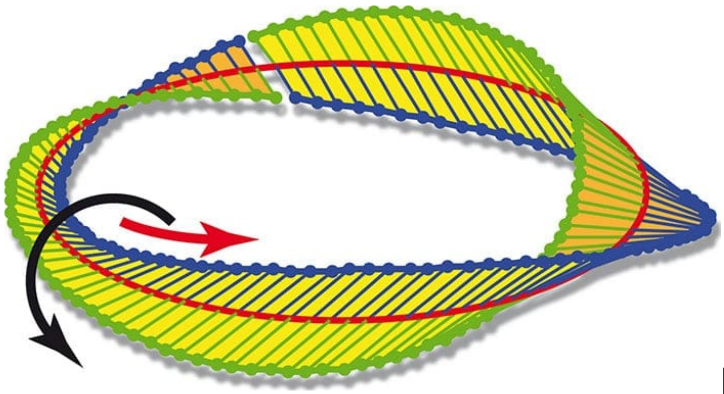
According to etymology, the word "***complementary***" means opposite, but complementary to a complete whole. Complementary components are part of one complete whole, in which they complement each other's differences. This semantic content is revealed from the etymology of the word "***complementary***":

complementary (adj.)
1620s, "ceremonious" (a sense now obsolete in this spelling of the word), from **complement** (n.) + **-ary**. Sense of "**forming a complement, mutually completing each other's deficiencies**". [19]

As demonstrated by the geometry of the Yin-Yang symbol, complementary components are not separate entities, they are the result of an internal dual breakdown, a partition of one whole into two components, divided by a conditional partition, displayed by a wave (sinusoidal) function, which visualizes the relationship of the components – they are in antiphase, mutually balanced and synchronized.

Understanding the essential content of the concept of "complementary" determines the correctness of the result of its application to issues of the structure of the world order. And since the principle of complementarity is the original and comprehensive, it mediates the original dual interrelation, the original proportion, the original equation and the original geometry of movement. The geometry of the original dual interrelation, reflected in the ancient symbol "Yin-Yang" is a mirror-asymmetric interrelation of two complementary components of one whole, which are in antiphase. Such antiphase breakdown of one whole determines the uniform nature of the rotational movement, which is the simultaneous execution of a two-cycle revolution – around its internal axis and around the external center, as evidenced by the entire cosmos.

Such a two-cycle nature of movement is geometrically displayed by the Mobius strip. (The illustration is taken from the source [18] exclusively for the visualization of the nature of the two-cycle movement).



[18]

The black arrow for this context indicates the movement around the internal axis, which coincides with the red line of the Mobius curvature.

The red arrow for this context indicates the orbital revolution around the external center, which is conventionally located in the center of the Mobius ring.

All cosmic bodies perform this two-cycle nature of movement, accordingly, the conclusion is that this type of movement will be the main one in the micro-world. Thus, the geometry of the Mobius ring gives the science of physics the necessary key to understanding the interrelations and interactions both in the observed space and in the invisible micro-world.

"If you carefully examine the ancient Yin-Yang symbol, you can see that its pictorial geometry contains all the elements of the geometry of the Mobius strip.

For a visual representation, a two-color sheet of paper was used - one side is white and the other is black. The sheet is folded into a Mobius strip and unfolded outward first with the white side (black inside), and then with the black side (white inside).

White side of the tape. (black inside).

YIN-YANG symbol.

Black side of the tape. (white inside)

These illustrations demonstrate the fact that the geometric content of the Yin-Yang symbol completely coincides with the geometric content of the configuration of the two-color Mobius strip with the repetition of all the main lines of bends, as well as the opposites displayed in color.

Based on the above, the following conclusion suggests itself that the Yin-Yang symbol as a pictorial representation of the original universalism of the **Fundamental Principle of Complementarity** (**FPC)** is essentially a two-dimensional representation on a plane of the three-dimensionality and dynamics of the torsion of the Mobius Pattern, which is adopted in the proposed monistic concept as a **geometric analogue of the FPC**. [3], [4], [5], [6], [7].

As illustrated by the content of the ancient Yin-Yang symbol, complementarity is a natural mirror-asymmetric duality enclosed in one “membrane”. From this duality and the mechanism of the dynamics of the movement mediated by it, the characteristics of space and time follow accordingly. The complementary principle mediates the essence of the phenomenon of magnetism, which is the physical embodiment of the FPC and is based on the natural duality of magnetic polarities.

Based on the fundamental nature of the original principle of complementarity and on its basis, I proposed to consider the original **magnetic loop** in the Mobius strip version, that is, closed through inversion by 180 degrees. No theoretical physicist has yet proposed such a consideration of the magnetic loop. Nevertheless, the universal duality, which is based on the principle of complementarity, mediates precisely this representation.

To this geometric representation, we should add a paper experiment with a sinusoid as a function, which is a wave consisting of two complementary phases. If you cut a sine wave into a strip of paper and then close the ends, the result is a Mobius ring. This illustrates the fact that any wave (wave process) in a closed state displays a Mobius pattern. This is another experimental criterion for the correspondence of the geometry of the Mobius strip and the geometry of the Yin-Yang symbol. And all three geometric representations presented below display the essence of complementary interrelation.

Three equivalent complementary interrelations.

The FPC is the initial ontological basis of the monistic concept proposed in the author's monograph [3], which determines the further development of theoretical thought and all the conclusions made in the application of the FPC geometric analogue (the Mobius strip) to the main questions of theoretical physics: the structure of the supporting cosmic medium, the essence of magnetism, gravity, quantum entanglement, the structure of the atom, the phenomenon of the hydromagnetic dynamo, as well as obtaining answers to questions about the essence of charges, charge quantization, magnetic monopole and the phases of its fibrations with the formation of the basic dipole element of nature, respectively, the explanation of the difference between "dark matter" and baryonic matter.

The applications I made and the results obtained [3][4][5][6] demonstrate that Mobius geometry gives physics a guide to a new way of studying the surrounding world, and these facts are increasingly noted in current popular science publications. In this context, it is worth remembering that among the main ideas of W. Clifford's program was the idea of geometrization of physics, namely, **reformulation of all natural phenomena in terms of a single mathematical language describing the effects of the geometry of flat and curved spaces**. [8]

In essence, the explanation of the main theoretical issues based on the application of the Mobius geometry format is a kind of implementation of this point of the Clifford program. [3]-[6]

The history of physics as a science is such that, despite the fact that the principle of complementarity was formulated by N. Bohr for quantum mechanics in 1927 and is its most important principle, however, for a number of reasons its application did not receive the development that would give quantum physics the necessary clarity, and it did not produce the expected effect in the new quantum field that would bring that constructive clarity to the visualization and presentation of quantum phenomena. The formulation of the principle of complementarity that was made by N. Bohr during his presentation at the conference in Como was not well received by the scientific community.

N. Bohr's interpretation of the complementarity principle in the context of the accumulation of contradictory experimental facts over almost 20 years was as follows: for a complete description of quantum-mechanical phenomena, it is necessary to use two mutually exclusive sets of classical concepts that together provide comprehensive information about these phenomena as a whole.

Sometimes the use of a word that is, on the one hand, synonymous, and on the other, not entirely correct in the context of constructive thought, distorts the understanding of what the lecturer meant in essence. In this case, the use of the word "mutually exclusive" in the context of presenting the essence of the complementarity principle and its application to natural phenomena must be replaced by "complementary differences to a complete whole", as it sounds in the etymology. Complementary in essence are not mutually exclusive. Their complementary interrelation postulates their dual relationship without mutual exclusion. Not only this, but also a number of other circumstances in that period of science, is the reason why quantum physics from the very beginning of its birth developed in the absence of clarity and illustration of the form of a quantum phenomenon. In essence, it developed blindly, i.e. without a figurative representation of "ambiguity that does not lend itself to classical description."

Therefore, "avoiding the construction of any visual kinematic models, Pauli introduced a doubled Hilbert space $H2\otimes H$ (space of wave functions), the vectors of which are two-component spinors." [9] At that time, none of the founders of quantum science, except for P. Dirac, could offer any visual representation of spin and spinor. In an attempt to explain how to represent spin, P. Dirac used a twice-twisted trouser belt, which was left to his followers as a legacy as the "***Dirac belt***."

Taking into account the above, it is very important to make a dash back to the beginning of quantum mechanics with the need to make appropriate rethinking of a number of theoretical positions and especially the position of the presence of a supporting cosmic medium, which at the time of the birth of quantum mechanics acquired the status of “taboo”.

In the proposed monistic concept based on the ontology of the principle of complementarity – **FPC** – [3] [4] [5] [6] [7] the observed effects or phenomena of the micro-, macro- and mega-worlds are explained from the position of, firstly, the presence of a supporting etheric medium and, secondly, the original natural duality (complementarity) and its equivalent universal template, expressed geometrically by the Mobius strip. According to such a template, the matrix structure of the spatial fabric is based on dynamic nodes, which are topologically closed magnetic loops (**monopoles**). Thus, the concept is laid out from one **substantial entity**, which has a characteristic wave geometry and dynamics of movement based on magnetism, which is the physical embodiment of the FPC. I believe that in quantum physics these spinning dynamic monopoles performing Mobius torsions with inversions are described as spinors. [5][6]

And if the **geometrization of physics** was formulated in the program of W. Clifford as a reformulation of all natural phenomena in terms of the mathematical language describing the effects of the geometry of curved spaces, then the geometric properties and parameters of the Mobius strip are a completely suitable candidate as a **universal framework** for the real implementation of the geometrization process.

A monistic description on one universal basis provides simplicity and efficiency, there is no need to coordinate or invent anything additionally, since all physical parameters originating from one and single universal framework basis and being its derivatives are coordinated and synchronized with each other automatically. This is one of the most important understandings in the representation of the Universe, interconnected fractally-holographically or, in other words, according to one Image and Likeness.

And if, as it is designated by the theoretical physicist G. t'Hooft, "***the true answers must undoubtedly come from the incorporation of the gravitational force***", then the proposed monistic concept based on the geometric approach successfully gives an answer to the question of how the gravitational interrelation is mediated by the duality of magnetism, how it is present in the micro-world and explained in the macro-world, and then it is possible to take into account the conditioned interactions and forces in them. [3] – [7]

As practice shows, without ontological observation and identification of the original geometry algebraization in the absence of an IMAGE does not give a productive final result in the creation of a generalizing theory.

The powerful apparatus of modern mathematics has already been developed to such an extent that with the help of specially selected formulas and adjustment of free parameters in equations it has become possible to substantiate practically any theory proposed in the field of scientific thinking.

In addition, in high-energy physics, those positions that are important for the theory being promoted, for example, renormalization, gauge fields, fractional charges, etc., are introduced practically as fundamental properties of nature, discovered by science with the help of mathematics, but their operating mechanisms are not explained in any way.

In turn: "Geometry is the area of knowledge that is located, as it were, between abstract ("pure") mathematics and real reality. It is the mediator that resolves the contradiction between knowledge and error." But if it is completely algebraized, then "such geometry takes a person beyond the spatial perception of concrete reality and immerses him in an abstract-virtual reality in which literally everything is possible, including what is actually impossible." [12]

So the creation of a Unified Theory requires ontological content.

As is well known and noted above, quantum physics began to develop in the absence of clarity and figurative representation, which literally immediately caused a negative reaction from some scientists, in particular from A. Einstein and P. Langevin.

In a situation of lack of clarity, the rapid development of algebra led to a certain imbalance and practically after the next hundred years, quantum science entered a period of crisis, from which, as noted in the author's monograph, and also, as G. 't Hooft says in his last interview, it is possible to get out only if we make a big dash back to the very beginning of the development of quantum science.

"***Quantum Physics Is on the Wrong Track, Says Breakthrough Prize Winner Gerard ’t Hooft***." Under this title, *Scientific American* published an interview with the eminent theoretical physicist and 1999 Nobel laureate in physics Gerard 't Hooft after he received the world's highest-paid scientific award in early 2025. [2]

Reflecting on his legacy and the future of physics, Gerard 't Hooft notes a number of facts that are taking place at the current stage of the development of quantum theory and beyond.

In a conversation with ***Scientific American*** ’t Hooft spoke about his Breakthrough Prize, his optimism for the future of particle physics, his dissatisfaction with quantum mechanics, and the scientific and cultural effects that have arisen from some of his most provocative ideas.

While Hooft notes that "it is natural for science that we cannot always have an infinitely continuous stream of discoveries and new insights," he nevertheless emphasizes that more fundamental discoveries are needed and "there will be more fundamental findings that will again change our views on what is going on. There are insights, of course, but not the ones that are needed to make a basic new breakthrough in our field". [2]

«The real reason there’s nothing new coming is that everybody’s thinking the same way! People don’t seem to want to make the daring new steps that I think are really necessary.

I think we have to start thinking in a different way. And I have always had the attitude that I was thinking in a different way. Particularly in the 1970s, there was a very efficient way of making further progress: think differently than your friends, and then you find something new!

My way of thinking about the world, about physics, about the other disciplines related to physics is that everything should be much more logical, much more direct, much more “down to Earth” ”. [2]

When discussing the Standard Model (SM), G't Hooft emphasizes the following, considering the SM to be a wonderful discovery of the last century:

«It’s very simple, but if you look deeper, you see there’s something very important missing from it. The Standard Model is based on quantum mechanics, and quantum mechanics tells you what happens when particles approach one another and scatter. But they can scatter in many different ways; they have a large number of choices about it, and the Standard Model doesn’t give any sound prediction there. It gives you only statistics. The Standard Model is a fantastic theory that handles the statistics of what things are doing. But the theory never tells you with infinite precision which choice nature makes; it tells you only that these different possibilities are there at a certain probability amplitude. That is the world as we know it. That’s how we know how to phrase the laws of nature. But it’s not the laws of nature themselves.

People think quantum mechanics is too beautiful to be wrong, whereas I believe quantum mechanics is not the right way of ultimately saying what basic laws objects obey when they hit each other». [2]

The theoretical physicist smoothly leads to the idea that obviously mathematical quantum mechanics, as well as experimental quantum mechanics at colliders, differs significantly from the real quantum mechanics that takes place in the nature of things and which, in its essence, is not something that does not obey the general rules.

This is known from ancient rules. According to these rules, "what is below corresponds to what is above" and vice versa, as the ancient statement says.

In one of the latest works [4], as well as in earlier ones [10], I also necessarily emphasized that Quantum Mechanics is not some kind of exception to the general rules of Nature, and QED (quantum electrodynamics) is not something special that cannot be imagined and that does not obey the Universal Laws of interaction.

The holographic property of the structure of the World Order asserts the fact that any fragment of the Universal Hologram displays the Whole, but only with significantly less detail, and the smallest unit of the geometry of the spatial structure is a carrier that contains minimal information as a **substantial InfoGene**, which is fractally-holographically transmitted to all creations and thereby asserts the unity and uniformity of all that exists.

A return to the beginning of the formation of quantum physics is necessary primarily because, in addition to the lack of clarity, quantum science began to develop its foundation in an empty vacuum space and without taking into account the presence of a supporting cosmic etheric medium. The theoretical basis developed regarding the concept of the presence of ether was by that time quite strong, especially since J. Maxwell derived his theory of electromagnetism precisely on the basis of the presence of the etheric medium and its supposed structure, the understanding of which had been polished since the time of R. Descartes.

And what is most telling is that, as Nobel laureate R. B. Laughlin notes in his book, “About the same time that the theory of relativity began to be accepted, radio studies began to show that the empty vacuum of space had its own **spectroscopic structure** – similar to that of ordinary quantum solids and liquids.

Subsequent studies at large particle accelerators have now led us to understand that space is a medium that is more like a piece of window glass than an ideal Newtonian void. Space is filled with “material” that normally appears transparent, but can be made visible – if you hit it hard enough and knock some of it out.” [11]

In the context of the question of the presence of an ethereal medium in which quantum processes occur, I am very impressed by the following constructive image. I quote from the work of the scientist Bugaev A.F.:

“Based on the basic empirical properties and patterns of the Observed Reality, the basic logical assumptions (axioms) about the essence of the Quantum Reality (QR) are made, from which conclusions follow, leading to the above-mentioned empirical properties of the Observed Reality (OR). That is, “the inverse problem of modeling is solved”: knowing the already studied “answer” (properties and structure of the OR), we find the initial conditions of the QR “problem”, the development of which leads to the already known and studied “answer”. [20] [4 [90]]

Based on such logic, the reality accessible to direct observations, projectively identically reflects the quantum reality and the processes occurring in it, which with sufficient approximation can be described in the format of general universalism. This once again emphasizes the idea that the quantum world is not something that is beyond understanding and representation. The only question is that other proposals for its classical description have not yet appeared, instead of the complications that were born at the time of the birth of quantum physics. G't Hooft expresses a related thought as follows:

«Many people who write papers on quantum mechanics like to keep some sense of mysticism about it, as if there’s something strange, almost religious, about the subject. I think that’s totally false. Quantum mechanics is based on a mathematical method used to describe very ordinary physical effects. I think the physical world itself is a very ordinary one that is completely classical. But in this completely classical world, there are still too many things that we don’t know today; there are steps we’re basically missing on our path to deeper understanding. I’m talking about steps that would exploit the fact that the whole world is very simple and straightforward. The trouble is, the world still appears complicated to us now, which is why we’re in this situation». [2]

G't Hooft is the author of the powerful idea of the holographic principle, which he introduced into the field of theoretical physics. But it is precisely the property of the hologram that points to the fact that the most complex is based on the fundamental simple and everything is built fractally-holographically according to its original template (Image and Likeness).

G't Hooft believes that «The real challenge is not in answering old questions but rather in finding new, better questions for whatever problem you’re addressing.

If you believe right from the beginning that quantum mechanics is a theory that gives you only statistical answers and never anything better than that, then I think you’re on the wrong track. And people refuse to drop the idea that quantum mechanics is some strange kind of supernatural feature of the particles that we will never understand. No! We will understand, but we need to step backward first, and that’s always my message in science in general: before you understand something, just take a few steps back. Maybe you have to make a big march back, all the way back to the beginning». [2]

If quantum mechanics is on the wrong track and to get out of the crisis it is necessary to think differently and take steps back, then as a forced march to the beginning of quantum mechanics, together with the philosophical preamble expressed at the beginning of this article, I have proposed a practical analysis of the famous experiments of J. Thomson and E. Rutherford (Geiger-Marsden) [13] and given a new interpretation of the phenomena that are observed in them. In this case, the emphasis is placed on the fact that in that historical period of the development of scientific thought, when these experiments were conducted for the first time, the observed phenomena were given those interpretations that, according to the state of science, could take place at that time. There were obviously no other constructive proposals.

In addition to the fact that the opinion of an authoritative person in science indicates the need to return to the beginning, I was taught this from the very beginning of my engineering career. After completing my studies at the university, I was hired as a computer repair engineer in one of the capital's computing centers and often encountered difficulties that I was still learning to overcome.

My supervisor always said his signature phrase: "You know, let's start from the beginning...". For my part, I always tried to convince him that I had come a long way and confidently argued my results. To which he replied: "If something stalls and does not go further, it means that a mistake or inaccuracy was made. And that means we need to go back to the original beginning." And together we went back to the beginning and he turned out to be right. His lessons remained for me that indicator of thinking that always leaves you in a winning position, even if you have to go back and admit mistakes. This is exactly what you need to be able to do, and not beat yourself against the epistemological wall of conviction, which outlives itself in any case.

I learned this simple lesson. It played its role later, when in my author's monograph I confidently spoke about the need to return to the beginning and revise the already established views in science based on new insights:

"In the current state of physics and philosophy, these statements are very relevant and it is necessary to support the idea of taking a "time out" from formulas and looking at all the problems that have arisen in physics and philosophy from more general scientific and philosophical positions. Having returned to a certain conditional BEGINNING of general positions, one can take a new look with a fresh perspective at existing problems in order to try to logically resolve them at a new level and with a new approach. Sometimes it is necessary to take a step back in order to move forward more effectively again.

The author of this work proposes to implement this proposal practically and, having resorted to simplifying the solution of the problem with the help of GEOMETRY, conduct a slightly different experiment with a new approach and do without formulas up to a certain stage, connecting a slightly different mechanism for achieving the goal to the methodology of studying the structure of the World Order. Any answer that requires complex mathematics to explain is only a semblance of understanding, especially in situations where scientists themselves do not know why their mathematics works." [3]

"Time out" [13] is the name of one of the published works, the content of which suggests returning to the historical period of the beginning of Quantum Mechanics and the experiments of J. Thomson and Geiger-Marsden. I have carried out an updated analysis of these experiments and given them a different interpretation according to the proposed new format on the ontology of the principle of complementarity, which contributes to the formation of a different view of the nature of quantum phenomena, as well as the structure of the atom and its symbiosis with the ethereal Quantum Medium. These experiments initially contain those inconsistencies that are clearly present, but to this day no one has noticed or analyzed them, since there were no proposals to look at them on a different platform due to the fact that there were no new bright ideas and theoretical proposals from the position of which a new vision and explanation could arise.

I have given new interpretations in accordance with the proposed self-consistent concept, which includes the presence of a supporting Quantum Medium as a necessary condition for considering the physics of space. The new theoretical view does not contradict the views of predecessors on issues related to the presence of a supporting cosmic medium, as well as with the same views expressed in modern theories. The new concept allows us to significantly expand our understanding of the structure of space and its matrix structure based on the properties of its matrix unit. [4]

We are talking about a physical point in space with its geometry, which was pointed out by W. Clifford, as well as its basic frame properties, which are transmitted InfoGenetically to all objects in space, regardless of scale. The spatial fabric in the form of a spin matrix network is represented by a dynamic Quantum Medium, the dynamics of the spinning of units of which is based on magnetism in a state of **monopolarity**, that is, the etheric Quantum Medium is a matrix of vortex magnetic monopoles that perform continuous oscillations, in other words, acts of quantum breathing (monopole emission-absorption). [4]

The monopole state is determined by the geometry based on the ontology of the principle of complementarity and is physically expressed by a **magnetic loop**, closed in antiphase, that is, with an inversion, which is displayed by the Mobius strip. Thus, in the proposed new format, a closed magnetic loop is considered with an antiphase turn of 180 degrees. Such an antiphase closure is the original natural duality that mediates the phenomenon of magnetism as such. [4]

Such a loop is a **magnetoelectric circuit** in which antiphase **reconnections** occur, accompanied by an act of monopole emission-absorption of quanta of **etheric magneto-plasma**.

This causes continuous and unceasing **oscillations** that all objects in space perform: primary etheric modes, atoms, biological organisms, stellar-planetary systems, galaxies and the entire Universe as a whole.

The fact that such oscillations occur has long been established by science, but the cause for which they occur has not yet been fully explained. The geometric approach in the format of closed "***Clifford parallels***", which is the Mobius strip, helps to take a new look at the magnetoelectric phenomenon and consider the **magnetic monopole as a magnetoelectric circuit and a quantum-mechanical unit** that performs continuous and non-stop oscillations and spins in the **two-cycle rotation mode**, performing discrete emissions and absorptions. In essence, the geometry of the Mobius strip reflects the **original form of the quantum phenomenon**. All these aspects are covered in more detail in [3] - [7].

I will once again cite from the work of the scientist Bugaev A.F., in which related judgments are expressed:

"The change in the properties of the QR [Quantum Reality] does not occur chaotically, but in a directed manner: from its initial state to the opposite and back to the initial (the law of change). Mathematically, such a law of dual change, which has limits, is described by a hyperbolic dependence: X * Y = const, where: X is the change of the initial property into its opposite, Y is the change of the opposite property into the initial. .... the transition of the property does not lead to an identical initial, but to a quasi-initial state, different from the initial.

That is, there is always a shift in the parameters, leading to torsion and rotation of the trace of movement and, therefore, the topology of the change will not have the form of a circle, but the form of a double-spiral closed twisted curve, i.e. a Mobius strip. A single cycle of change of property into its opposite and back is comparable with a quantum of Planck energy and a photon of light, therefore the topology of the quantum of energy and the photon will have the form of a Mobius strip." [20] [3, [90]]

The same definitions are found in the works of the scientist Sergienko P.Ya. I quote:

“The study of the discoveries of natural scientists led me to the conclusion that the fundamental principle of the infinite diversity of objects in the Universe is not some universal elementary particle of matter (substance), but an elementary form of space-time motion. The elementary geometric form of this universality, expressing the true essence of the geometric form of space-time motion (from the photon field of an electron to the star field of the Universe inclusive), is a “string”, rotating, twisting and folding torus of space-time in the form of a “Mobius strip”, or “torsion”, which not only rotates, twists, stretches, compresses, but can also fold (increase in geometric progression).” [6, [95], [96]]

In the universal method of bifurcation with doubling, which is an act of generating matter from within, the original magnetic monopole is geometrically transformed into the **basic element of nature** – a **magnetic dipole**. This act is the act of **polarization of the ether**, that is, the transformation of etheric matter, which does not have an external magnetic field in the form of dipole, into a **baryonic matter** that has an external magnetic field and is in the state of a magnetic dipole. [5], [6]

The magnetic dipole inherits the framework properties of the magnetic monopole – these are non-stop and continuous oscillations (quantum breathing), while acquiring new properties in geometric transformations based on the **bifurcation/fibration** method, namely, an external **magnetic field**, the property of **opposite charges**, **gravitational balancing**, and with a decrease in symmetry it becomes an **atomic element**, which also inherits the listed properties in the method of further copying dipoles. [6]

An atomic element formed on such a basis is a wave packet of magnetic dipoles connected into a **topological node** by a link-like interconnection (**quantum entanglement**). Such a natural topological interconnection can be obtained if the magnetic loop (monopole) is considered closed inversely. In this case, the geometric transformations of the monopole through bifurcation/fibration create an interconnected system formation (topological node), in which all processes are synchronized automatically, since before the geometric transformation all dipole components were part of a single whole. [6]

In addition, such a method of forming an atom provides an exhaustive explanation for the quantization of charges and the multiplicity of the minimum, drawing a line under the question of whether a fractional charge from the minimum exists. [6].

Such a wave model of an atom based on a set of topologically connected dipoles remains planetary as before, since it represents a universal **Center-Periphery** scheme. But the internal content of the atomic structure, consisting of continuously spinning dipole magnetic loops, having a frequency characteristic and internal synchronization without the use of artificial forces, appears to be the wave formation that will correspond to the obtained **linear atomic spectra**, and also explain a whole series of phenomena. [6]

Among them are those phenomena of intense atomic radiation, which are the result of the action of the following factors on the substance: friction, collision of pieces of silicon and in the Usherenko effect, ultrasound (sonoluminescence), microwave or laser radiation, focused sunlight, high-voltage voltage and much more. The same effect occurs from the impact of higher atmospheric temperatures on dry organic matter in the summer period of the year, which leads to a more intense release of submicro-portions of intra-atomic etheric magneto-plasma, and these mini-sparks are the cause of spontaneous combustion of dry organic matter and forest fires. With various types of effects on various types of matter, the atoms of the matter will emit various types of magneto-plasma quanta with varying degrees of intensity. [6], [13]

Based on the description of the given approach to the structure of the atom, the revision of J. Thomson's experiment draws attention to the fact that the gas atoms (molecules) in the experiment, when exposed to voltage, **produced an act of emitting magneto-plasma quanta.** These radiation quanta affected the screen and produced flashes on it. Thus, the correct conclusion will be that in this experiment J. Thomson observed atomic radiation and he discovered the **phenomenon of an energy quantum**, which was emitted by the wave structure of gas atoms.

The phenomenon of emission of quanta by atoms has nothing in common with a certain part (particle) of the atomic structure, which separates from the atom and leaves it. Nevertheless, at that time, the emitted quantum was associated with an atomic particle as part of the structure of the atom and was called an "***electron***". The following already obtained knowledge led to this conclusion, namely, matter consists of molecules, and molecules of atoms. Scientific thought followed this chain of reasoning further in favor of further dividing atoms into particles, despite the fact that the word "A-TOM" itself contains its **eidetic essence** – IN-DIVISIBLE. That is, it is not further divided into smaller parts, from which atoms can then be reassembled, gluing these parts together into a single whole by unknown forces.

Yes, molecules are assembled from atoms under certain conditions. These are chemical compounds, and molecules of chemical compounds can again be disassembled into atoms under certain conditions. But further execution of the same algorithm seems to be weak philosophy, if we take into account the fact that Nature acts at each level in a Single Image and Likeness, that is, fractally identically.

If at the biological level an individual is a whole organism, then it is impossible to disassemble it into parts, so that these parts can then be reassembled into a single whole again. An individual as a **stable system formation** is formed from a seed in the process of generation and growth of matter from within by the method of bifurcation with doubling of the InfoGenome. Then, from the individuals obtained as a result of seed growth, it is possible to assemble **social formations**: a family, a work collective, a sports community, a political party, and others, and disassemble these communities again into separate individuals.

And the correct philosophical conclusion will be that at each level there is an initial stable block, which is formed by the universal method of generation from the "seed", and then these generated blocks can be played with like cubes. At the micro-level, such a stable block is an **atom**, and under certain conditions, molecular compounds are assembled from atoms, and then disassembled again into atoms. But this algorithm is not applicable to atomic system formation, since it is precisely this that is generated by the method of bifurcation with doubling of original InfoGene from the etheric elemental (**monopole**), which plays the role of the "seed". [7]

It is possible to go further in this same format of reasoning to the next level according to the universal Laws of Analogy and Unity or, in modern language, fractal-holographically. For example, a star-planetary system is a single entity, like an individual and an atom. It is a stable cosmic block. The combinations of such blocks, along with their variations, constitute a galaxy.

Returning to the experiment of J. Thomson, it can be said that the interpretation of the emitted electron quantum as an atomic particle given at that time led to the situation in the Elementary particle physics, in which the number of so-called mathematically modified "particles" multiplied to almost 400. The phenomenon of emission of a discrete portion of magneto-plasma by an atomic structure was taken as the essential content of an atomic particle, however, in itss essence, a quantum of radiation is not a particle. A discrete quantum imitates corpuscular properties, but by its structure it is not what determines the property of particles of matter from which chemical compounds can be formed.

A quantum of radiation is a discrete portion of magneto-plasma formed by the dynamics of internal self-motions of topologically linked atomic wave magnetic dipoles. The lifetime of such emitted formations is usually short. They are absorbed by the matter, annihilate with other similar discrete formations and go back into the medium.

It is worth emphasizing that quanta as discrete portions of magneto-plasma are emitted and absorbed, and can annihilate with each other. But they cannot be classified as particles that carry the property of stable materiality. In turn, the dipole components of the atomic structure, if separated, have a longer lifespan, but it is not possible to perform the reverse action on them to combine them into a magnetic dipole, since their system-forming gravitational interrelation, initially actualized in the process of generating matter from within, is destroyed. [6]

After examining J. Thomson's experiment in a new format and giving an updated interpretation of its results, we will consider the results of E. Rutherford's experiments (Geiger-Marsden) in the same format. [13]

The experiments involved bombarding metal foil with alpha particles emitted by radioactive material, and were carried out with the aim of expanding the understanding of the atomic structure, which after the experiments of J. Thomson had a "***pudding model***".

I have analyzed the characteristics of the alpha particle experiment objects, which indicate the following: alpha particles emitted by naturally radioactive elements have an energy of **4 to 11 MeV**.

"Being quite heavy and positively charged, alpha particles from radioactive decay have a very **short range** in matter and, when moving in the environment, quickly lose energy at a short distance from the source. Alpha particles can be effectively retained by several centimeters of air or tens of micrometers of dense matter, such as a sheet of paper and even the horny dead layer of the epidermis (skin surface), without reaching living cells. All of the above applies to radioactive sources of alpha particles whose energies do not exceed **15 MeV**. Alpha particles obtained in an accelerator can have significantly higher energies, and, accordingly, properties." [Wikipedia]

According to the description of the Geiger-Marsden experiment, probing was performed by atoms of heavy elements, alpha particles with an energy of **4.05 MeV** (in other sources, the values may differ, for example, **5.4 MeV** in [21] and **7.7 MeV** in [22]), which is two to three times lower than the specified limit of **15 MeV**, beyond which the effect of alpha particles changes.

Then the question. How, according to the description of the experiment, can such a low-energy alpha particle reach the foil, then pass through it (the density of the foil is indirectly higher than the density of the epidermis), then, having a fairly short range by its properties and at the same time quickly losing energy, also reach the screen and, in addition to this, also produce scintillation on it?

It is obvious that the interpretation of the phenomenon observed in the experiment is not correct and does not correspond to the properties of the experimental objects.

According to the above-described properties of the alpha particles used in the experiment, it is the conclusions that the alpha particle, upon reaching the foil, passes through it, reaches the screen and leaves flashes on it that are questionable. In fact, the indicated properties of the alpha particle with an energy of 4.05 MeV do not correspond to the set of actions that are attributed to the alpha particle in this experiment.

What then is really happening in the experiment and what sparks? As already indicated above, the line atomic spectra indicate the fact that atoms emit and absorb energy quanta on their own. Under various external factors, for example, in the experiment of J. Thomson the effect of voltage, and in the experiment of Geiger-Marsden the effect of alpha particles, the atoms radiate in the same direction and emit a stream of discrete portions of magneto-plasma, which, leaving flashes on the screens of the detectors, go back into the medium or are absorbed by the matter of the detector. The factors of influence can be different, and the radiation effects themselves are different depending on the combination of the selected type of matter and the type of influence on it.

What actually happens in the Geiger-Marsden experiment can be described as follows: alpha particles act on the metal foil and the effect of their influence is a more intense emission of portions of magneto-plasma by the foil atoms – opposite the emitter and on both sides of the foil in the form of sparking. It is these emitted energy quanta that reached the screen and produced scintillations on it.

As is well known, metal is the best conductor of magneto-plasma energy current. The use of gold and platinum foil in the experiment demonstrates that their atomic structures produce a sparking effect when exposed to alpha particles, i.e. the release of magneto-plasma portions. These are the same sparks that occur when pieces of silicon collide or when microwave radiation impacts the metal pattern of dishes in a microwave oven, as well as when a comb rubs against hair, silica particles impact metal targets in the Usherenko effect, and ultrasound in the sonoluminescence effect. All of this is one and the same effect of the emission of sub-micro portions of magneto-plasma by various types of matter under various types of impact. Etheric magneto-plasma permeates everything that exists – from intra-atomic space to outer space. And the way this sounds figuratively in the quote from the book by Nobel laureate R. B. Laughlin is worth repeating again:

"Space is filled with 'material' that under normal conditions appears transparent, but can be made visible – if you hit it hard enough and knock out some of it." [11]

There are descriptions of the Geiger-Marsden experiments, in which one sheet of foil was replaced by several, with the assertion that, having passed through all these layers of foil, the alpha particles finally reach the screen and leave flashes.

With the above-mentioned properties of the alpha particles used in the experiments, can we even talk about the passage of an alpha particle through one, and even more so several layers of foil with gaps between them?

It turns out that the initial characteristics of the alpha particles in the experiment declare that an alpha particle with such energy does not even pass through the epidermis and is retained by a sheet of tissue paper, and when it comes to interpreting the results of the experiment with metal foil, then the epistemological conviction, based on established ideas, tries in any way to prove the passage of such low-energy particles not only through one, but even through several layers of metal foil, and to explain the scintillation on the screen by this passage, without finding any other explanation for the essence of this phenomenon.

It is obvious that in that historical period there were simply no alternative explanations due to the next stage after Newton of the expulsion of the ether from the field of scientific thinking. Based on this, all questions of interactions with the etheric medium did not receive their development, despite the fact that the predecessors had almost already built a model of quantum ether based on magnetoelectric oscillating vortex ether formations (J. Maxwell's "wheel vortices") and their mechanics.

The current explanatory paradigm of the presence of final scintillations on the detector screen, allegedly from the impact of alpha particles on the foil, essentially requires a radical revision. You can beat your head against the epistemological wall of the established paradigm of the structure of the atom in the modern worldview for as long as you like, add additional postulations to it and foam at the mouth to prove the dogmas established in it, but the fact remains that E. Rutherford's conclusion about the planetary model of the atom **from particles**, made on the basis of the interpretation of the experiments with alpha particles given at that time, cannot answer the question of where the atomic particle-electron gets the energy for its movement, why it does not fall on the oppositely charged particle-proton and why such a model does not fit with the obtained line atomic spectra of radiation and absorption.

Despite the fact that in essence the conclusion about the planetary structure of the atom turned out to be correct, the misconception consisted in the internal representation of the structure of the atom on the basis of individual particles connected to each other by unknown forces. And the interpretations of experiments with alpha particles played a major role in this, but the explanation of the observed phenomena in the experiments has a sufficient number of contradictory logical inconsistencies.

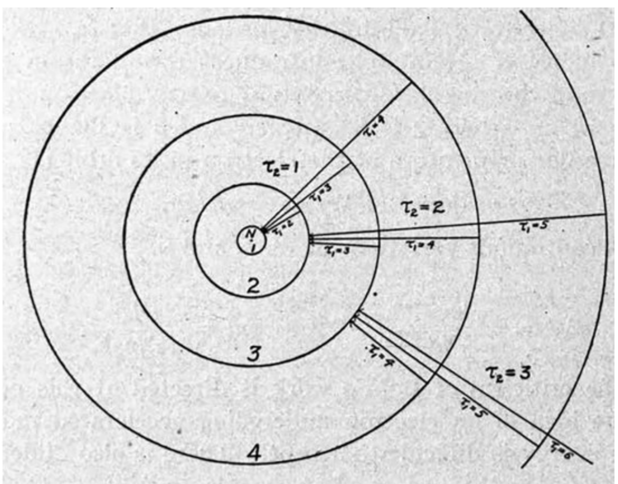
The observed phenomenon of scintillations, attributed to alpha particles, which in the experiment did not have sufficient energy, speed and range to reach the screen, much less pass through the metal foil, may well have a different explanation according to the proposed dipole-wave magnetic essence of the structure of the atom, its energy and rhythm-dynamics, as well as its quantum symbiosis with the etheric Quantum Medium.

It should also be said that in 1905-1906, the Japanese researcher H. Nagaoka published two articles, where, combining ideas from physics and chemistry and relying on the experience gained in Japan and Europe, at the turn of the century he proposed his atomic model. E. Rutherford's article describing the planetary model of the atom was published only in 1911, after H. Nagaoka had written a series of articles on the same topic. His calculations were talentedly made by analogy with the rings of Saturn. It was especially important that H. Nagaoka was able to show that this "Saturnian system" is physically stable.

In essence, the main question remained about the nature of the nucleus and orbits. But it is obvious that at that historical period the final answer could not yet be obtained, and the atomic model is still based on particles.

In the proposed wave model based on Mobius magnetic dipole loops, the nucleus of an atom and its periphery are formed due to the polarization orientation of Mobius dipoles in the radial direction – the arms of the dipoles, connected in a topological knot, form the nucleus, and the mirror asymmetric arms form a vibrational peripheral membrane. [3], [6]

The dipole arms have a gravitational interrelation, and quantum entanglement (link connection) connects the magnetic dipoles in a topological knot. The structure is automatically synchronized and stable.



Left: Fig. 32. Illustration of the "Saturnian atom" from Ernest Wilson's book "The Structure of the Atom" (1916), in which he referred to the work of Hantaro Nagaoka. In the center is the nucleus surrounded by orbits. [14]

Right: the basis of the wave model of the atom based on magnetic dipoles. [6]

Regarding what was said about the gravitational interrelation in the geometry of the magnetic Mobius Dipole, there is a note by W. Clifford with theses, compiled by the scientist in an unknown year and for what purpose. But if we evaluate the document from the standpoint of scientific achievements of the late 20th century, we can see that in the scientific plans of Clifford (1845-1879) the ideas of creating a common platform for combining all research from different fields of science are clearly visible and in particular the scientist emphasizes **gravity**, which in his opinion connects very different phenomena together, and the **ether provides a bridge between these phenomena.**

"This explains the laws of electric and magnetic attraction/repulsion, the action of electric currents on magnets and on each other, the laws of induction, the derivation of the velocity of charges and the polarization of light, the rotation of the plane of polarization by a magnetic field. All these things must be deduced from the knowledge of the **geometric shapes of atoms and their relationships with the ether**." W. Clifford [4] [13], [8]

Despite the fact that in theoretical physics there were and are elements of ideas that point to a different path of development of scientific thought than the one that has already been formed and established, nevertheless these elements have not yet been formed compositionally. And 100 years after the above-described famous experiments and the interpretations given to them, the interpretations of new experiments with the help of modern equipment are already in the format of the same established views and ideas, despite the fact that N. Bohr's introduction of additional postulates did not save the situation.

In May 2013, the results of an experiment to obtain an image of a hydrogen atom using photoionization microscopy with a layer-by-layer superposition of a large number of images on top of each other were published in ***PHYSICAL REVIEW LETTERS***. [15]

The result of the experiment was explained within the framework of the Copenhagen interpretation, which reads as follows:

"According to the laws of quantum mechanics, an electron in an atom does not have any specific position by itself. Only when an atom interacts with the external environment does an electron manifest itself with varying probability in a certain vicinity of the nucleus of the atom: the region in which the probability of detecting an electron is maximum is called the electron shell." [15]

The conclusion based on this interpretation is that the scientists were able to clearly demonstrate the shape of the electron shells predicted by quantum mechanics with the image obtained in the experiment.

My first question is: where is the electron located before it "manifests itself with varying probability in a certain vicinity of the nucleus of the atom"?

And the second question: how, with such a probabilistic appearance of an electron in some vicinity of the nucleus of an atom, is not only the stability of the atom ensured, but also the stable existence of the experimenters who conducted the experiment and gave such an interpretation? Where are they together with the electron until it decides to appear from nowhere and in an unknown place?

Gentlemen, I beg your pardon, but physics is a science about the nature of things that surround us, about ourselves, and not about probabilistic processes in the virtuality of far-fetched reasoning.

The latest survey-research of the journal «***NATURE***», conducted on July 30, 2025, showed the following:

«Physicists disagree wildly on what quantum mechanics says about reality. First major attempt to chart researchers' views finds interpretations in conflict». [23]

It should be assumed that this survey will be the starting point for a meaningful and radical revision of the basic tenets of quantum mechanics and its reformatting within the framework of the general universalism of the unified laws of Nature.

For example, physicist Anton Zeilinger believes that "quantum states exist only in his head and describe information, not reality." Physicist Alain Aspect, who shared the 2022 Nobel Prize with Zeilinger for the research on quantum phenomena, disagrees.

“Respondents differed radically on whether the wavefunction represents something real (36%) or is simply a useful tool (47%) or something that describes subjective beliefs about experimental outcomes (8%). This suggests that there is a significant divide between researchers who hold ‘realist’ views, which project equations onto the real world, and those with ‘epistemic’ ones, which say that quantum physics is concerned only with information.” [23]

Perhaps this survey will be a starting point for revising the understanding of quantum mechanics and a possible reformatting of its theoretical basis within the framework of the general universalism of the unified laws of Nature. The reality we observe originates in the quantum submicro-world, which is not an exception to the general rules of Nature. And the way the quantum world is described at the current stage using mathematical formalism does not mean that this description can create a specific idea of the quantum world, since quantum physics initially began to develop on the basis of those ideas about the micro-world of matter that existed at the period of the beginning of the development of QM, as well as in the complete absence of clarity, that is, figurative representation.

This is where the root of all the problems lies, because, as it is shown historically, the quantum world of discrete radiation was accepted by physicists as the world of elementary particles and all the costs of this philosophy followed after.

«The Copenhagen interpretation’s philosophical underpinnings have become so normalized as to seem like no interpretation at all, adds Robert Spekkens, who studies quantum foundations at the Perimeter Institute for Theoretical Physics in Waterloo, Canada. Many advocates are “just drinking the Kool-Aid of the Copenhagen philosophy without examining it”, he says. [23]

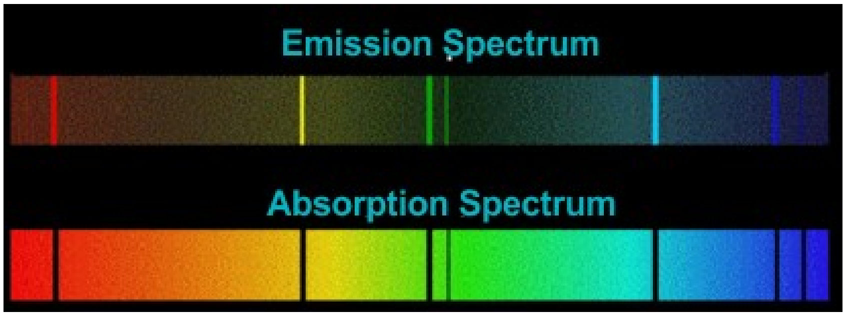
And if at some historical stage of the development of scientific thought, for objective reasons, misconceptions were allowed in reasoning, then is it necessary to repeat this same misconception 100 years later, when previous ideas have not justified themselves?

There have been and are progressive thoughts in this direction, as well as current conclusions that quantum mechanics is moving in the wrong direction. Therefore, it is extremely necessary to make a forced march back and return to the beginning for a certain analysis of past shortcomings with the aim of more successful movement forward.

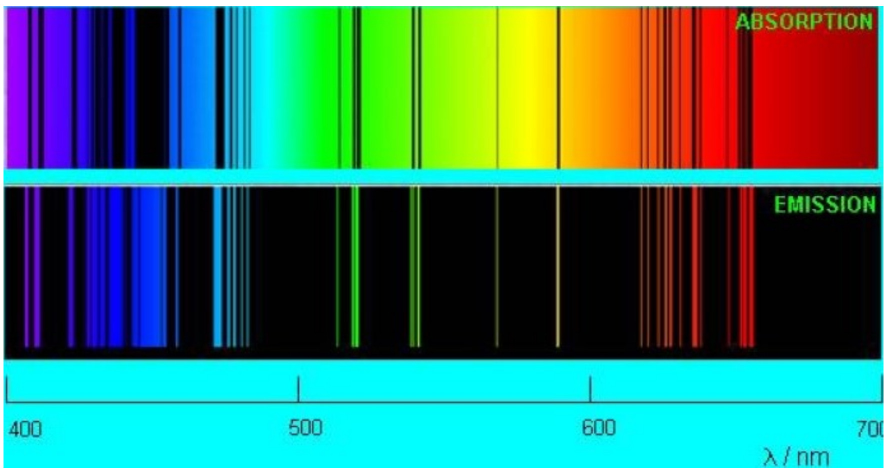
The description of the 2013 experiment is about torn-off photoelectrons that create a supposedly probabilistic flash in a certain vicinity of the atomic nucleus, called the electron shell, where their detection is most likely. In the experiment, thousands of pictures were taken, recording the appearance of photoelectrons within this shell. Then the pictures were superimposed, and as a result, the resulting picture shows this cloud.

According to the new approach I proposed and the analysis of experiments conducted 100 years ago, the interpretation of the 2013 experiment will be as follows. Photoelectrons are not electron particles torn from the atom by laser action. Photoelectrons are magneto-plasma quanta (electron quanta, as described above), emitted by the peripheral arm of the hydrogen atomic dipole after the atom was exposed to pulsed laser radiation, and each picture recorded a flash of this radiation in the peripheral region of the atom. But this photoelectron is not what is part of the atom as its part or particle.

As it is shown and illustrated in the proposed descriptive approach based on the geometric analogue of the fundamental principle of complementarity, the emission of energy quanta by an atom is a natural process of the functioning of the atomic mechanism – its rhythmo- and energy-dynamics. This is evidenced by the linear atomic spectra of emission-absorption.



Emission and absorption spectra for helium.

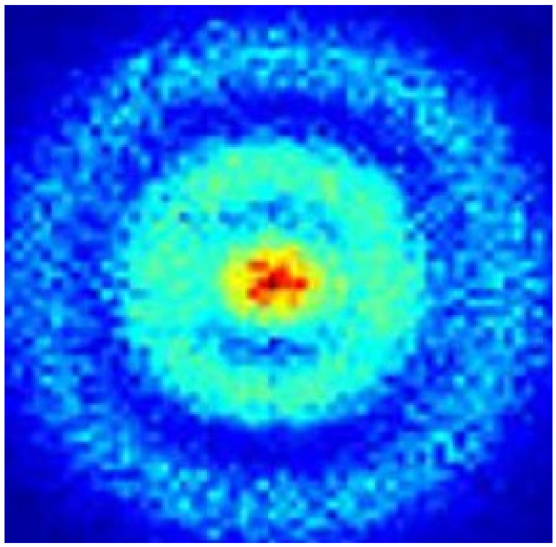


Absorption and emission spectra for sodium.

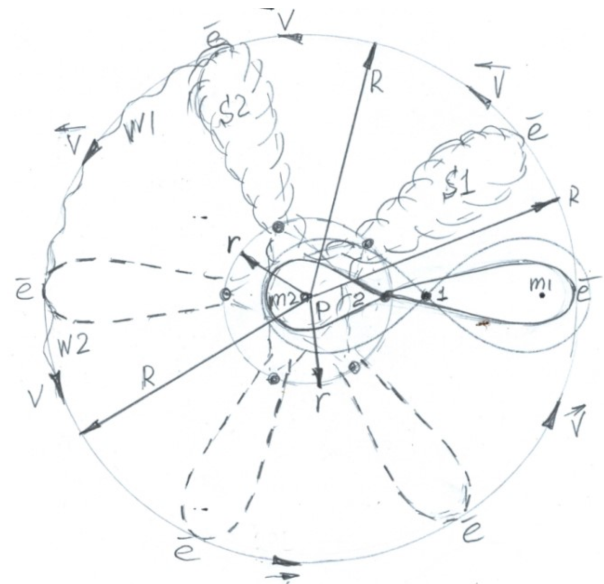
With different types of external influence: friction, impact, microwave radiation, high-voltage, exposure to ultrasound, alpha particles, heat of sun, laser radiation and others – atomic dipoles can emit magneto-plasma quanta more intensively and in the one direction. [6], [13] This is exactly what is observed in the experiments given both in 2013 and a hundred years ago.

In the experiment under consideration in 2013, the impact was produced by laser radiation and at the moments of impact on the atom, its peripheral membrane, within which (the radius of the atom) the dipole peripheral arm with inversion rotates along the membrane board orbitally and simultaneously spins through the atomic center radially, forming a soliton-like wave, gave a radiation pulse. The point of emission depended only on the coincidence of the vibration level of the dipole arm and the moment of impact on it by laser radiation.

The illustrations below show an experimental image of a hydrogen atom (on the left), which was obtained as a result of the experiment [15], and on the right is my proposed scheme of the rhythmodynamics of the internal movements of a hydrogen atom. It should be noted that the model of internal movements is presented in a general schematic manner and without taking into account the numerical parameters of the components.



Experimental image. [15]



Geometry rhythmodynamics of the hydrogen atom.

R – atom radius,
r – radius of center of balancing and tension (CBT),
e – “electron” arm,
p – “proton” arm,
V – orbital vibration speed (orbital rotation),
W1, W2 – orbital wave vibration (atomic membrane),
m1, m2 – “centers of mass” of hydrogen dipole,
S1, S2 – lemniscate spinning (rotation around the middle of curvature line)

- Dipoles indicated by dash-dotted lines conventionally show local positions of the peripheral dipole component during its motion along the orbit during rotation around the "center of mass m2".
- Dipoles indicated by arcs display wave spinning S1, S2.
- Numbers 1 and 2 at the points of intersection of the curvature line mark the CBTs, respectively, before and after the reduction of symmetry.
- Dots along the circle of small radius ***r*** mark the intersections of the Mobius curvature line of each dipole.

As it is indicated in the description and in the illustration, the spinning of the dipole components of the atom forms a radial movement, and the orbital wave-like movement of the ***m1*** arm forms peculiar “***hills***” and “***hollows***”, the alternation of which is the vibrational membrane, a kind of “***gear***”, with the help of which the quantum symbiosis of the atom with the supporting etheric Medium is carried out, as well as chemical interactions with other atoms, forming chemical compounds.

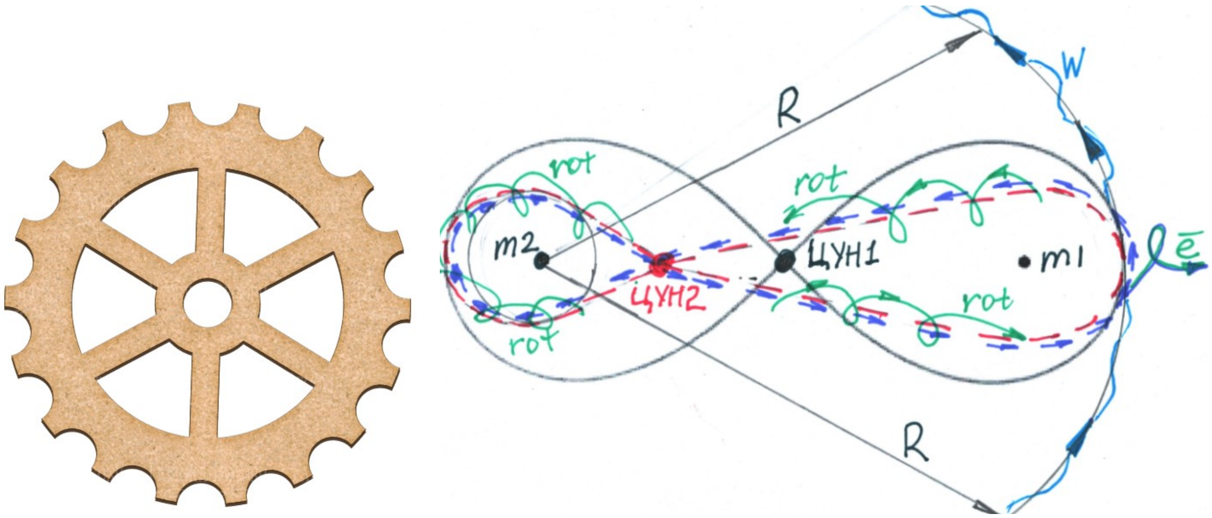
“***For an adequate description of this or that natural phenomenon, we need a mechanical model for the gears to turn*** ...” [16]

"***Mechanics was and remains the basis of all theoretical physics. Any new fundamental theory is accompanied by a fundamental generalization of mechanics.***" [24]

An atom is a stable quantum-mechanical system formation with a wave vibrational rhythmodynamics of life activity, conducting a quantum exchange with the etheric Quantum

Medium and allowing to maintain the stability of matter, as well as to enter into chemical interactions with other atoms based on frequency-vibrational characteristics.

Below is an illustration I made (without taking into account the numerical parameters of the components), which helps to visualize in more detail the complex of movements described verbally.



Dynamics of rotation of the MMDipole – hydrogen – relative to the center of mass m2.

R is the radius of the atom.
m1, m2 are the centers of mass of the arms ("electron" and "proton" accordingly).
CBT1 (ЦУН1) is the Center of Balancing and Tension with symmetry,
CBT2 (ЦУН2) is the displacement of the Center of Balancing and Tension with a decrease in symmetry.
- The purple arrows and the red dash-dotted line correspond to the direction of the micro-currents and indicate the shape of the lemniscate-like spinning of the Magnetic Mobius Dipole, which rotates in a wave-like manner as a single whole.
- The blue arrows along the line of the orbital circle indicate the orbital motion of the center of mass **m1** (the arm-"electron") around the center of mass **m2** (the arm-"proton"-nucleus). Forms a wave vibrational membrane in the form of a soliton-like wave running along the orbit.
- Spiral green arrows rot indicate the vortex rotation of the "ribbon", during which the process of emission-absorption of energy quanta, quantum exchange with the medium, occurs at the membrane boundary.
- Green ***e*** with a line is the emitted energy quantum.
- Blue W is a vibrational **soliton-like wave**, running along the circumference of the orbit, formed by the orbital rotation of **m1.**

Since the current paradigm of theoretical physics, with all the fidelity of the existing model of the atom as a planetary one, considers the atomic components as separate particles, then accordingly in this model on the particles it is not possible to explain why a rotating electron particle does not fall on a proton particle, it is also not possible to explain where the electron particle gets the energy for its orbital rotation, and it is also not possible to explain the lack of correspondence of such an atomic structure to the obtained line atomic spectra and other casuistic difficulties.

The approach based on Mobius Geometry gives an idea of a unified physics for the components of the Atomic Magnetic Dipole – "***proton-electron***" ***together*** – and allows us to imagine the dynamics of their spinning motions as one indivisible whole. From this mutually synchronized rhythmodynamics follow all the subsequent necessary explanations.

The shift of symmetry relative to the CBT during the formation of the hydrogen atom from the symmetrical ***basic element of nature*** is the starting point from which the roles of the mirror-asymmetrical shoulders are redistributed while maintaining a complete gravitational balance between them, and the basic element – the Magnetic Mobius Dipole (MMD) – begins to play the role of a building block – an ATOM. [6]

The Magnetic Mobius Dipole, as well as the atom based on interconnected Mobius Dipoles, are self-consistent systems that, due to the properties of the bonding interrelations, are characterized by a high level of stability.

The proposed atomic model on such a basis gives a new vision of intra-atomic dynamic processes for the conversion of etheric magneto-plasma and the mechanism of interaction of atomic components in a single whole, as well as those structural interrelations – **gravitational and quantum entanglement** – that ensure the stability of the atom. The universalism of the scheme is extrapolated from the micro-level of the atom to the level of the macro-cosm and cosmic system formations.

Also, the proposed scheme of the formation of an atom based on the fibration of a magnetic monopole quite clearly shows the difference between the structures of etheric matter and baryonic matter. The monopole state of etheric matter does not have structural gravitational crossing and does not have topological nodes, which, in turn, is inherent in the state of baryonic matter. [4] [5] [6] [13]

Thus, returning to the beginning helps to make the necessary correction both in understanding the essence of the principle of complementarity in the application of its dualism to the micro-world of quantum phenomena and the atom, and in the interpretation of previous and current experiments.

"Any theory has two aspects. The first aspect is the mathematical formalism of the theory. The second aspect is the physical interpretation of phenomena within the theory. Errors can arise due to the discrepancy between the mathematical formalism of the theory and objective reality. Errors can arise at the foundation of the theory due to an incorrect understanding of the essence of phenomena. These errors are possible even with the correct mathematical formalism of the theory." [17]

The following should be emphasized. In the process of evolution of consciousness, humanity goes through a number of stages of mastering etheric magneto-plasma and its varieties. The first stage of this mastering was the stage of mastering fire as a type of low-temperature plasma. At this stage, man learned to make fire through elements that easily give off magneto-plasma upon collision, friction, and focusing sunlight using a lens. Sparks of magneto-plasma emitted from atoms ignited organic fuel (dry organic) and the destruction of molecular bonds led to the release of thermal energy. The next stage of mastering magneto-plasma was the stage of obtaining its energy current in metal conductors by creating electric current generators, which is a method of movement (voltage) of magneto-plasma when creating rotation in a magnetic field.

The current period of development has already been marked by a number of experiments in which a colossal amount of magneto-plasma is released when a number of processes are launched, as well as obtaining electricity by arranging stationary magnets of different configurations among themselves. However, the question remains that the results of these experiments cannot be explained within the framework of existing theoretical approaches and at the level of those established views on the structure of matter and, accordingly, the atom. And the obvious in phenomena becomes incredible when trying to obtain explanations for these phenomena on established dogmas.

«This is my feeling as to why we don't make breakthroughs. We should think about things in a different manner. A simpler question is: «Can you formulate quantum mechanics without a superposition principle?» And my answer is yes. We have to try to phrase things more precisely to keep public misunderstandings from wreaking havoc on science». [2]

Let's move from this quote from the ***Scientific American*** interview with G. 't Hooft to a survey of physicists in ***Nature***: "

Over the past century, researchers have proposed many ways to interpret the reality behind the mathematics of quantum mechanics, which seems to throw up jarring paradoxes. In quantum theory, an object's behaviour is characterized by its wave function: a mathematical expression calculated using an equation devised by German physicist Erwin Schrödinger in 1926. The wave function describes a quantum state and how it evolves as a cloud of probabilities." [23]

That is, "researchers still disagree widely on how best to describe the physical reality that lies behind the mathematics, as a *Nature* survey reveals." [23]

The following can be said about this. It is an undeniable fact that at the time of the birth of quantum physics, its founders received a number of insights mainly in the language of algebra and without any vivid figurative ideas. This elevated quantum mechanics to the rank of some kind of seemingly mystical science. This mysticism was well fed by the approach that existed at that time to the atomic structure and to various kinds of discrete radiation phenomena elevated to the status of particles, which they are not in fact, and this was said above. It was precisely the assignment of particle properties to quantum radiation and vice versa – the assignment of properties of quantum radiation to particles, that gave rise to the scientific mysticism regarding quantum science, due to which quantum physics fell out of the category of classical laws.

This raises the question of "how best to describe the physical reality underlying these mathematical formulas." To describe reality, it is necessary to take a step back and put everything in its places, which will allow us to understand to what extent what the formulas describe corresponds to actual reality and how to represent it.

Questions. Isn't it paradoxical that the fathers of quantum physics, from the moment of its inception, created equations without a figurative representation of them, and, a century later, their followers, raised on these equations, continue to torture "Schrödinger's cat" and select an appropriate description of reality for it, making attempts to interpret it??? Isn't this one of the main problems of quantum physics, namely, trying to interpret reality under the created equation? Or is it simply necessary to classify questions and equations into those that correspond to the category of radiations subject to wave equations, and those that correspond to the category of particles and to which these equations are not applicable?

Doesn't there arise an urgent need here to **ask new questions** that concern, first of all, general philosophical views on the world in its integral unity and with its unified classical laws, to distinguish between the understanding of the phenomenon and its essence, and only then to deal with the state of the "**cat**" as part of the physical world, not forgetting that the "**cat**", even if the experiment is mental, is baryonic matter in biological form, and the quantum world is the world of radiations emanating from each baryonic atom of the "cat" and Quantum Medium. This is the difference, as discussed above and shown in [4][5][6][13].

Perhaps G. 't Hooft expressed very accurately the idea that "«**the real challenge is not in answering old questions but rather in finding new, better questions for whatever problem you're addressing.**" [2]

Old questions are primarily related to the efforts that physicists-mathematicians make to use the formalism of algebra to contrive and describe the actual reality. Describing reality in this way is the same as describing an elephant with closed eyes, that is, by touch, and at the same time combining the descriptive efforts of the algebraic metric of those who sit on different parts of its body, making all sorts of renormalizations in order to illuminate its external appearance, not to mention its internal structure.

New questions will be related to seeing the "elephant" as a whole and its life process, which links together the separated areas of physics as a science about NATURE (*from Greek ta physika, literally "the natural things,"*), in which all life processes at different scaling levels have their parallels among themselves and are interconnected due to the similarity of equivalent processes.

New questions are primarily related to building interdisciplinary bridges and ultimately linking phenomena on a single basis. Quantum physics is not an exception to the general rules. It is part of the topology of Life in the universal understanding of its birth and growth in development cycles from a generative seed and the formation of new seeds for subsequent generations. The general schemes of Life are One. And quantum mechanics as part of physics describing the world of quantum phenomena has no prospect of a way out of the crisis that has arisen without an understanding of the General Biology of the Living Universe and its basic processes, similar to biological ones, but inherent in all matter, which is essentially alive.

These are the processes of **quantum respiration** (oscillations of "inhale-exhale"), **quantum metabolism** (**exchange** or radiation-absorption) and **quantum symbiosis** of objects of space with the supporting cosmic Quantum Medium.

Insights are needed in that the Universe is a single system, characterized by memory, the ability for directed mobility and self-reproduction, quantum exchange and metabolism, regulated energy flow and the reproduction of objects. The Universe as a whole is a Single System, possessing a full set of properties by which science defines the concept of "***Life***".

Insights are needed to see the identity of the breathing processes of each object in space from the sub-micro-small to the gigantic Universe in its entirety. All matter performs the phases of these oscillations synchronously as a single inseparable whole.

These are the moments of insight that must be relied upon and which are facilitated precisely by the interdisciplinary bridges between quantum chronodynamics, hydrodynamics and biology, that is, the relationship between the physics of moving fluids and the physics of living systems, in other words, the relationship between the hydrodynamic physics of vortices and the biology of living cells, as well as quantum chronodynamics.

"New physics must be built not through attempts to reduce incompatible theories to each other, but through deriving them from another, more fundamental, deeper and more fruitful theory, from which everything originates. Science has long had everything necessary and sufficient theoretical elements to discover Unity, but they require a different synthesis into one and another basis. Essentially, only one thing is missing – simply a different view of the treasures of already accumulated facts and knowledge. The need has matured to identify a complex of the most important links of Unity and combine them into a clear typological and topological structure that clarifies the structural patterns of interrelations in the Unified Whole. This is the main task of the new platform proposed in the study." [3]

"The fundamental idea that must be voiced first of all, when discussing the aspects of constructing a unified Theory of Everything and analyzing the proposed theories regarding Ether (physical vacuum), Gravity and the structure of the Atom, concerns the fact that these concepts are inextricably linked and, even if a theoretical view proposes to consider each of the aspects separately and makes its own justifications, then the second and third must follow from the conceptual framework of first, i.e. they must be connected by one single paradigm and must be able to explain one through the other and the third, no matter from which concept the reasoning begins. It is impossible to theoretically justify some separate platform for each of them and consider them from different starting points."[3]

"***The fundamental nature of a theory is determined not by the bulkiness of its mathematical apparatus, but by the degree of connection with materialistic philosophy and proximity to the boundaries of the knowable***." [17]

CONCLUSION.

Logical reasoning is proposed as a philosophical basis that can help to put the initial positions in quantum physics in their places. The proposed step back leads to an insight that can radically change the course of scientific thought in quantum mechanics, opening up a new spectrum of ideas and a new field of thought for quantum physics. The starting point for constructing a monistic theory is the initial principle that mediates the initial interrelation in the substantial template, and the starting aspect in reasoning must be considered the presence of a supporting cosmic medium and its dynamic matrix structure based on the dualism of the initial complementary principle.

Revision of previous interpretations of the results of earlier experiments regarding the observed phenomena of quantum radiation, as well as the distinction between the essential concepts of "particle" and "portion of radiation" bearing the corpuscular property of discreteness, helps to produce a different consistent arrangement of logical conclusions. This is capable of untying the "Gordian knot" that has arisen in understanding the difference between emitted quanta and an elementary particle of matter as between a phenomenon and its essence.

The application of a geometric approach to questions of quantum phenomena and the parallel reduction of its results with the results obtained using algebra [5] [6] helps to find those correspondences that can be created starting from the proposed **initial form of a quantum phenomenon in the format of the geometry of the Möbius strip** as a reflection of the universalism of complementary duality. The geometric properties and parameters of the Mobius strip are a completely suitable candidate as a universal framework for the actual implementation of the geometrization process. The original dual complementary interrelation mediates all the interrelations derived from it, which determine the interactions and forces in them.

The ontology of the fundamental principle of complementarity (FPC), which implies the existence of its equivalent on all fractal levels and planes of being, allows us to substantiate a unified geometry of spatial fabric and a universal form of motion, and, accordingly, a unified equation. The application of this geometry to the issues of theoretical physics of both the micro- and macro-worlds allows us to create a monistic theory, and, accordingly, to carry out the process of geometrization of physics, which will be the foundation for constructing a unified Theory of Everything

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