KULAK L.A. (ANTONIYA ILYINSKAYA)

3. BASIC ELEMENT OF NATURE. MÖBIUS GEOMETRY. GRAVITY. MODEL OF ATOM .

"Quantum physics urgently needs new images and ideas, which can only arise from a profound revision of the principles that underlie it." *Nobel laureate* ***Louis de Broglie****.*

"Of all the services that can be rendered to science, the introduction of new ideas is the most important." *Nobel laureate* ***Joseph John Thomson***

"Geometry exists for this very reason, so that knowledge may not be divorced from spatial contemplation." P.A. Florensky

"It is precisely the ethereal matter of space (masked by the obviously inappropriate term "vacuum") that, according to the conviction of truly knowledgeable scientists, should become the basis for bringing all the forces of nature into a single self-consistent picture." [68]

In my author`s monograph "Substance. Atom. Theory of Everything" [35] I proposed a self-consistent concept based on the ontology of the **complementarity principle**. The concept is proposed as a **new platform for generalizations** and covers the issues of the structure of the supporting Cosmic Medium, the **basic element of nature** and the **atomic model** based on it, the method of formation of atoms and the actualization of structural interrelations that hold system formations together as a whole, as well as the fractally-identical transfer of the general universal structural scheme to scaling levels. The monograph uses the methodology of Fractal Synthesis and lays the foundations of Linguistic Physics.

Speaking about the ontology of the complementarity principle, it should be noted that this principle has been known since **ancient times**.

For **quantum mechanics**, it was formulated by Nobel laureate **N. Bohr in 1927** and is its most important principle.

Subsequently, the principle of complementarity was generalized in science, which led to the creation of the **concept of complementarity**, which covers not only physics, but also biology, psychology, cultural studies and, in fact, all areas of knowledge in general.

B. Mandelbrot's fractal geometry, discovered **in 1967**, has its roots in the ontology of the principle of complementarity.

The ontology of the complementarity principle also underlies the **holographic principle**, introduced into modern science **in 1993** by theoretical physicist **G. 't Hooft** as a hypothesis about the general property of quantum gravity – a theory that aims to create a quantum description of gravitational interaction and bring theoretical achievements closer to the creation of a general Theory of Everything.

Experience and the accumulation of knowledge show that the comprehensive essence of the complementarity principle implies the existence of its equivalent in everything and is a **universal natural duality**. And the main conclusion is that it is the **original and fundamental principle**, mediating a unified formula, a unified equation and a unified geometry. And if in all reasoning we start from its original essence, then we can get significant simplifications both in chains of logical reasoning and in mathematical calculations.

A more detailed restatement of the theoretical view proposed in the monograph is grouped by me into four main articles in accordance with current topics of theoretical physics,

and several articles published earlier are also added to this. In physics, experiment plays a decisive role in the construction of theories. Therefore, in the format of the proposed concept, not only a number of basic questions of theoretical physics are considered, but also the results of existing theoretical proposals and experiments are included, confirming both the correctness of the chosen starting point of the concept and the conclusions made on its basis, which can be classified as a **fundamental work**.

"The fundamental nature of the theory is determined by the degree of penetration into the secrets of nature and is determined not by the cumbersomeness of its mathematical apparatus, but by the degree of connection with materialistic philosophy and proximity to the boundaries of the knowable." Kuligin V.A. [1]

At this point, it is important to emphasize that the existing paradigm of particles still has its place due to the fact that at the stages of cognition, scientific thinking creates a vector of dividing a single spatial structure into separate fragments, peculiar puzzles, which are much easier to learn and describe by the apparatus of algebra separately.

Nevertheless, the fullness of time comes when differentiation has already exhausted itself, the fragments are known and a feeling of a dead end and a state of crisis arises. It is then that the stage of integration and synthesis of already acquired knowledge into the overall picture begins, the picture which is most clearly visible at the current stage of cognition. This picture forms a new fundamental theory, which requires both a new platform of generalizations and new mathematics.

Experimental results applied to the theoretical field of the new concept proposed by me increase the weight of the arguments in favor of the conclusions made, and are also the evidence link that is extremely necessary for the theoretical view to acquire the status of reflecting the reality of natural phenomena. And in this regard, the experiment is the fact that supports and confirms the theory.

"*In physics, it is the experiment that plays the decisive role in constructing a theory*." Academician of the Russian Academy of Natural Sciences G.I. Shipov [78]

For the theoretical presentation I used a **geometric approach**, which, as is known, helps to make quite significant simplifications and often leads to the goal faster than the path laid out by the apparatus of algebra. Also, the geometric approach contributes to visualization and the creation of figurative pictures, which theoretical physics experienced an acute shortage in the period of the creation of quantum mechanics, and is also experiencing also experiences the same deficit at the current stage of development.

The foundation of the geometric approach in the new proposed concept is the **geometric analogue of the principle of complementarity**. As a geometric analogue, the **Mobius strip** or Mobius ring is considered. The basis for this is the correspondence of this geometry and its properties to the ontological content of the principle of complementarity as a universal duality mediating the dynamics and forms of movement, as well as to the pictorial display in ancient symbolism.

The representation of a physical point in space in the form of a Mobius ring and its consideration as a magnetoelectric circuit provides the key to the analysis of the processes of Cosmogenesis, which can bring many theoretical views to a common denominator. In this regard, the universalism of the principle of complementarity as a **natural duality**, presented in

the format of Mobius Geometry, can be laid down as the basis for creating the Unified Theory of Everything and, in all likelihood, is the most effective way to achieve this goal.

The author's monograph and articles also note hypothetical assumptions and elements of theoretical proposals in which scientists in the history of science, at the level of guesses or partial conclusions, touched upon the method of explaining a number of theoretical aspects using the geometry of the Mobius strip.

However, to date, no scientist has considered the properties of Möbius geometry in application to the fundamental and intractable questions of physics so broadly as to obtain their resulting or exhaustive explanation, as well as to link the scaling levels into a unified paradigm on this basis and to show the universality of the interrelations that mediate interactions and determine the forces in them, that is, to create a Unified Theory of Everything. A number of questions of theoretical physics in electrodynamics and quantum mechanics still have no explanation. The proposed geometric format demonstrates how these difficult questions can be resolved.

A more detailed presentation of the questions of physics in the theoretical view I propose in the format of Möbius Geometry is grouped into four articles:
"1. Quantum Medium. Möbius Geometry. Magnetic Monopole."
"2. Quantum Entanglement. Möbius Geometry. «Yin-Yang» Symbol. Phases of Fibration".
"3. The Basic Element of Nature. Mobius Geometry. Gravity. Model of the Atom".
"4. Hydromagnetic Dynamo. Mobius Geometry. The Method of Formation of the Atom".

To these four articles several articles published earlier are attached:
5. "Experiments of Thomson and Rutherford", ("Time out") [60]
6. "Clifford`s parallels", [37]
7. "Fibration of the Mobius Pattern. Formation of the Atom" [70]

This article is a continuation of two previous articles: "***1. Quantum Environment. Mobius Geometry. Magnetic Monopole***" and "***2. Quantum Entanglement. Mobius Geometry. The "Yin-Yang" Symbol. Phases of fibration***", which examine the issues of the structure of the etheric Quantum Medium, the structure of the quantum unit of the etheric medium – the Mobius Magnetic Monopole, its properties and phases of fibration, as well as structural interrelations actualized in the fibration phases, the formation of the Mobius Magnetic Dipole, the "Center-Periphery" scheme, and offer the following conclusions:

1. The main driving mechanism mediating the method of universal torsion (UNI-VERCE) is INVERSION (mirror asymmetry), enclosed in the topology of the geometry of the Mobius strip. This inversion mediates the interrelation between complementary components and determines the universal law of the dynamics of their interaction.
2. The supporting **Cosmic Medium** is a **physical medium** and represents the initial state of matter – **the primordial matter** – in the form of a dynamic cellular (matrix) structure of vortex magnetoelectric nodes, closed according to the complementary principle, which mediates the phenomenon of magnetism as such and oscillating self-motion – **spinning**.
3. **Magnetism** is the physical embodiment of the comprehensive principle of complementarity, which determines its universality and generality of manifestation.

4. **The matrix structure** gives the supporting etheric medium the property of granularity and, according to fractal similarity, it is characterized by effects occurring in granular materials.
5. **The magnetic field** of such nodes is not externally manifested as bipolarity, since their polarity has a closure in **one topology**, and is in a monopolar (monopole) state – **two in one**, closed in **antiphase**. The nodes of etheric matter are magnetic monopoles. Such an initial physical state of matter is magnetoelectrically "invisible" or unmanifested. It represents a monopole hidden duality. A **monopole does not mean unipolar**, but has an internal closure of the polarities of magnetism. It represents a **monopole hidden duality**.
6. The **geometric visualization** of such a magnetic monopole is a Mobius strip with a minimum aspect ratio of a plane closed through an inverse turn of 180 degrees. The **Mobius Magnetic Monopole (MMM)** contains a natural **antiphase duality**, as well as the **duality of symmetry and mirror asymmetry**, combining them into one whole.
   In essence, this is the original **form of a quantum phenomenon**, which determines discreteness. The InfoGen of the original antiphase duality and the symmetry-asymmetry duality is transmitted to all subsequent generations in a universal copying method. **Magnetism as a physical embodiment of this duality has the property of transmitting its InfoGen to all subsequent generations.**
7. In the state of closure through inversion and due to the internal **magnetic reconnection**, the etheric monopoles perform continuous and non-stop **oscillations**, which are an act of their internal spinning in the form of Mobius torsion, which is the simultaneous execution of two cyclorotations:
   - rotation of inversion around a conditional internal center along the middle of the Mobius curvature line and
   - cyclorotations of inversion around a conditional external center located inside the Mobius ring.
   This double type of cyclo-turnover is transmitted InfoGenetically to all system formations generated by the etheric Quantum Medium, and is a universal type of torsion UNI-VERSE, as evidenced by the entire cosmos and the names of the Universe in English, as well as Russian. [35]
8. The **Mobius Magnetic Monopole** (**MMM**) is a spinning **quantum-mechanical unit** that performs continuous and non-stop oscillations and produces sub-micro-**monopole radiation**, as well as the absorption of portions of magneto-plasma as a phase of **quantum breathing**.
   The **Mobius Magnetic Monopole is the original fundamental unit.**
   The **geometric shape, metrics and dynamics** of the MMM cycle rotation contain a relationship with numerical values close to three constants: $\varphi = 1.618$, $\pi = 3.1415$ **and** $e = 2.718281828459$.
9. According to the description, such a vortex matrix of the supporting Cosmic Medium will create **turbulence effects** and, accordingly, a hydromagnetic dynamo will be spontaneuosly generated in it.
10. **Magnetoelectric oscillations** of magnetic etheric monopoles are a reciprocal quantum process of "radiation-absorption", in other words, a process of oscillating **quantum breathing** of the etheric Medium, which is also transmitted InfoGenetically to all the creatures of the environment from small to large as a process of breathing of life and at each level of scaling and in each plane of being has its own way of expression. This

breathing of life is performed by both sub-micro-units of the etheric Quantum Medium, and atoms, bioorganisms, stellar-planetary systems, galaxies and the Universe as a whole.

11. The process of quantum breathing of the supporting Medium creates a sub-micro-vibrational background and is that high-vibrational carrier mediating all processes of interactions in the supporting Medium, the transfer of information and the implementation of the background principle.
12. The spinning substrate of the etheric Quantum Medium is an etheric **magneto-plasma** – a kind of **superfluid plasma liquid** from sub-micro-monopole radiations-absorptions, that is, **active living matter**.
13. At ultra-low temperatures of outer space, the etheric magneto-plasma is a special kind of condensed medium, a kind of **mega-quantum** object, in which a variety of collective effects are observed both of the entire object as a whole and of its individual areas interacting as a whole. Such a medium is characterized by the movement of arrays of "text phrases", and not individual "letter units" of **universal binary coding**.
14. The processes occurring in the superfluid etheric-plasma medium will obey the **laws of hydrodynamics** similar to the processes occurring in water and air environments.
15. According to the laws of hydrodynamics:
    - In a hydrodynamic environment, any arc discharge, whether occurring in technological power plants or in natural conditions, can curl up into an electron vortex.
    - As a result of external influences, a vortex ring can decrease the toroidal velocity and increase the annular velocity, turning either into a vortex disk or a cylindrical vortex (thick or thin). The opposite transformation is also possible. A vortex ring in the form of a Hill vortex can form a vortex funnel in the form of a cone (jet).
    - Individual electron streams can separate from the surface of the vortex, quickly disintegrating into sparks.
    - A vortex ring can deform, passing through small holes, and restore its shape after deformation.
    - Vortex objects can divide spontaneously or under sudden external influence. The surface of an electron vortex can spontaneously delaminate into parallel electron beams.
    - Dynamic interaction is possible between vortex objects – they play leapfrog, dance in a circle, merge together, etc.
    - Vortices can form Karman paths. [5]
16. In accordance with the law of hydrodynamics on the spontaneous division of a vortex object or its division under a sharp external influence, it is proposed to further consider the phases of the process of bifurcation/fibration of a vortex monopole formation closed through an inverse turn, which geometrically represents the original Mobius strip as a special case of **Clifford parallels**.
17. As shown schematically, the result of the first phase of the bifurcation/fibration process is the doubling of the original InfoGenome of the Mobius Magnetic Monopole (MMM) and its polarization, that is, transformation into the Mobius Magnetoelectric Dipole (MMD), which, when doubling the inversion and loop length, has the configurability of the lemniscate-"eight".

    As a result of such a transformation, the internal polarity acquires an external multi-manifestation in the form of bi-polarity or **dipole**. The dipole state of matter is its magnetoelectrically manifested state, which is called ***baryonic matter***.

18. All manifested matter in the universe has a magnetoelectric dipole structure. Based on this, the **dipole template** is the ***basic element of nature*** on the basis of which atoms are built and then everything else is fractally-holographically. This template is **universal** and is mediated by the ontology of the principle of complementarity.
19. In the process of step-by-step fibration of Magnetic Monopoles, which can be called the process of generating matter from the inside out, the actualization of those structural interrelations that are necessary to maintain the growing system formation in one whole occurs. This is **bipolar gravity** and **quantum entanglement**, which are derivatives of the original **complementary interrelation**, physically manifested as **magnetism**.
20. In the process of growth from the generative element, the "Center-Periphery" interrelation is actualized, which is equally extrapolated to different levels of scaling and to different planes of being.
    All **three** described interrelation**s**: gravitational, quantum entanglement and center-periphery, represent a functional **Universal Triplet of Interrelations**, equally inherent in all existential levels: the micro-world of an atom, a biological cell, an organism, stellar-planetary and galactic systems, as well as the Universe as a Whole.

In this work, in the format of Mobius Geometry (MG), the structure of the basic element of nature is examined in more detail and a model of the atom based on it is proposed, and in this format, atomic schemes are shown from the element of hydrogen and its isotopes to the element of fluorine.

"A physicist I know once told me: "For an adequate description of this or that natural phenomenon, we need a **mechanical model** for the gears to turn ..." " [2]

I am very impressed with the opinion of this physicist, since in the proposed format and illustration based on the geometry of the Mobius ring, I use not only its consideration as a **magnetoelectric circuit**, but also as a **quantum-mechanical unit** that must turn on real gears, and not only on written wave equations.

Based on this, the proposed **conceptual ontology** is based on a **physical point** in space and on only one **assumption**, which is an ontological statement that this physical point is structured according to a **complementary principle**, which is comprehensive and initial in the general development of CosmoGenesis. This logic is set out in the two previous articles and in this work its continuation leads to the proposal of a model of an atom based on the Mobius Magnetic Dipole.

As it was already described in the work "***1. Quantum Environment. Mobius Geometry. Magnetic Monopole***", **Mobius Magnetic Monopoles** are quantum-mechanical units of the matrix of the etheric Quantum Medium with magnetoelectric properties, which mediate the vibrational background of the Medium, its quantum activity, its energy filling and are the seed elements for the generation of objects of the Medium: atoms, stellar-planetary and galactic systems.

The generation is carried out by the universal method of bifurcation with doubling of the InfoGenome, which is illustrated by the scheme of the fibration phases. The scheme of the fibration phases also demonstrates the fact that in the spatial fabric only geometric transformations of the original unit and growth of the structure from the inside out occur.

At one time, physicists-predecessors hypothetically pointed out a number of elements that are contained in the proposed descriptive format. However, none of them managed to turn hypotheses into complete pictures of the representation and this created great difficulties in the

formation of quantum electrodynamics (QED), which turned out to be devoid of figurative pictures. I will give a few quotes on this matter.

"After a short period of ideological confusion and disagreements caused by the temporary limitation of "visuality", a general agreement was reached on the replacement of specific images with abstract mathematical symbols." V. Pauli. [2]

"The general concept of spin had as its source a specific description of the "ambiguity that defies classical description" of the electron, understood as a particle." [2]

"The first spin theory that gave a correct mathematical formulation of the "classically indescribable two-valuedness" was proposed by Pauli in his 1927 paper. Avoiding the construction of any visual kinematic models, Pauli introduced the doubled Hilbert space H2⊗H (the space of wave functions), whose vectors are two-component spinors. Thus, two-component spinors and the first doubling appeared for the first time in physics. The subsequent doubling (bispinors, the space H4⊗H) was proposed by Dirac in 1928. The next doubling leads to hypertwistors in the Hilbert space H8⊗H.

Hypertwistors are the vectors of the fundamental representation of the Rumer-Fet group SO(2,4)⊗SU(2)⊗SU(2)', which gives a group-theoretical interpretation of the periodic table of elements. Spinors, bispinors and twistors are special cases of hypertwistor." [2]

Analogies between the steps of the algebraic description of the doubling process in QED and the proposed geometry of the stepwise doubling process during bifurcation based on GM are also indicated in the previous work "***2. Quantum Entanglement. Mobius Geometry. The «Yin-Yang» Symbol. Phases of fibration.***"

As can be seen from the citation above, when replacing specific images with abstract mathematical symbols, the fathers of quantum physics nevertheless followed the chain of doubling the information genome (InfoGenome) with the help of mathematical abstractions.

Was it possible to connect a figurative representation then? Oddly enough, but there was. P. Dirac demonstrated spin using a twice twisted trouser belt, which went down in the history of science as the "***Dirac belt***", which is the Möbius strip with two inversions in the configuration of the Magnetic Dipole.

The image of the Möbius strip was constantly spinning in the field of V. Pauli's thoughts, and the "***Pauli square***" is also well known, which illustrates the pairwise change of oscillation phases, and his famous phrase about "***bifurcation and reduction of symmetry***" still remains a secret: "Bifurcation and reduction of symmetry, – he says in one letter, – that's where Faust's poodle is buried!" [71, p. 288], [2]

Nevertheless, these hints and guesses were not formed so compositionally as to give a sufficiently clear geometric visualization of what later began to develop algebraically without a figurative representation for it. It must be said that if the algebraic logic from spinors to bispinors, and then to twistors and hypertwistors, giving a group-theoretical interpretation for the periodic table of atomic elements, is fundamentally correct and corresponds to the nature of things, then the fathers of quantum mechanics should have had at least some guess that Nature must have a sufficiently **elegant cunning** to perform this entire chain of the doubling process through bifurcation with the help of geometric transformations.

It must be assumed that there was most likely some guess and it struck the mind of W. Pauli so much that he wrote in his letter to W. Heisenberg in December 1957: “The picture is changing every day. Everything is moving. It is not yet possible to publish, but it will be something beautiful. It is not yet possible to even foresee what may be discovered here ... The

material here gives a lot. You yourself will now find a lot ... You will notice that the poodle has broken loose from the chain. **He showed where it was buried: bifurcation and reduction of symmetry.**" [72, pp. 344-345]

At the same time, W. Heisenberg notes: "Once I asked Wolfgang why he attached such great importance to the process of bifurcation, and received approximately the following answer: "... The process of bifurcation, or bifidation, as I imagine it, could explain a lot to us here, because it somehow very naturally expands the space of nature, thereby creating the possibility of new symmetries. In the ideal case, one could think that all real symmetries arose as a consequence of such bifurcations." [72, pp. 342-343]

We must pay tribute to such intuitive insight, which almost led W. Pauli to that "trick" of Nature, which it uses to expand space (generation and growth of matter from within) and create new symmetries arising as a result of such bifurcations with doubling. As is clearly visualized by paper experiments with Mobius geometry, each bifurcation creates a new type of combination of symmetry and asymmetry and, accordingly, a multiplication of components of system formation with the growth of the structure. Any dynamics is possible only with the simultaneous presence of symmetry and asymmetry in the structure. Asymmetry is essentially ensured by the presence of the golden ratio in the organization of Nature.

Such proportion gives the possibility of complications, which forms a fan structure of diversity, which is observed at all levels of nature constructions. And initially this proportion is embedded in the ratio of the geometry of the minimal magnetoelectric contour of the Magnetic Monopole as its parametric dual ratio in a combination of symmetry and asymmetry.

Considering it as a geometric analogue of the natural Magnetic Monopole, one can see with a certain clarity the presence of this combination in the Monopole as its parametric dual ratio.

"***The development of the Universe looks like a continuous sequence of symmetry violations ... The phenomenon of life fits naturally into this picture."***

Freeman J. Dyson

"***The symmetry inherent in phenomena is the maximum symmetry compatible with the existence of the phenomenon. .... the absence of certain elements of symmetry is necessary. It is the asymmetry that creates the phenomenon***." Pierre Curie (1894).

At the time of these insights of W. Pauli and his dialogues with both K. Jung and W. Heisenberg, the natural elegant cunning of how bifurcation with doubling is carried out was already known to science due to the discovery of the double helix of DNA (1953) and the method of its replication, which is a projection of the universal method of bifurcation into the plane of cell biology. It should be assumed that the information front of this discovery penetrated the thought field of the creators of QED in the form of chains of fragmentary insights.

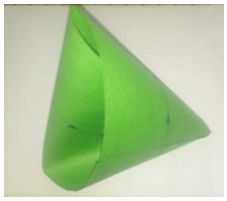
But until now, speaking in a number of theories about the bifurcation of space, its two sheets or two branes, theoretical physicists have not expanded the visibility for mathematical transformations and have not proposed the solution for quantum mechanics that becomes obvious if we consider it in accordance with the holographic principle and by analogy with DNA and its principle of bifurcation with doubling.

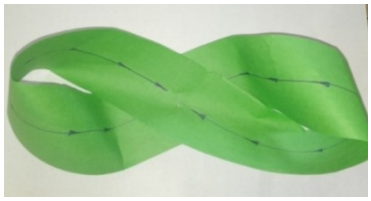
This universal method of self-copying is projected holographically-similarly both into the plane of cell biology and into the plane of quantum phenomena. That is, it is actually necessary to carry out a general schematic fractal identical transfer of the universal scheme from one plane

of being, where it is accessible for observation and well studied, to another, that is, from the plane of cell biology to quantum mechanics according to the holographic principle mediating the unity of all that exists.

Taking into account the above, as well as the representation of the original quantum-mechanical unit (monopole) in the form of a vortex formation in the configuration of the Mobius strip, the process of bifurcation with doubling and expansion of space with the formation of new symmetries can be visualized using a paper experiment for simplicity. I will repeat the phases of magnetic monopole fibration, which were described in the previous work "***2. Quantum Entanglement. Yin-Yang Symbol. Mobius Geometry. Fibration Phases***".

TWO PHASES OF FIBRATION.


1). Monopole


2.) Dipole. Gravity


3).Two dipoles. Quantum entanglement.

1. **Mobius Magnetic Monopole** (**MMM**) is a one-sided non-orientable surface. Polarity is internal, not expressed outward as a dipole. Symmetry of two sides of the plane and their mirror-asymmetric connection into one topology.
2. **Mobius Magnetoelectric Dipole** (**MMD**) is a one-sided orientable surface. The first doubling of the InfoGenome and polarization of the etheric unit of MMM. Polarity is expressed. Symmetry of two arms relative to the CUN and its mirror-asymmetric helicity.
A **basic element of nature**. It is an analogue of two pulsating spheres, "charges", the "proton-electron" interrelation, as well as the "neutron" in an atom, "planet-star" in cosmology, an analogue of the two-brane model and other analogies. The **Gravitational Interrelation** is actualized as the basis of balanced interaction of two interconnected complementary opposites – mirror-asymmetrical shoulders of the Magnetic Dipole.
The Mobius Magnetic Dipole is the **basis of the atomic structure**.
3. The Mobius topological knot of two connected Mobius Magnetic Dipoles. The second doubling of the InfoGenome. Symmetry of two dipoles and their mirror-asymmetrical spinning relative to each other.
The Link Interrelation or **quantum entanglement** is actualized as the basis of the interrelation of dipoles in system formation: atom, stellar-planetary system, galaxy, cell, organism, society, fabric of space.

The phases of the fibration of the etheric unit (MMM) and its visualization using the Mobius strip show that the combination of symmetry and mirror asymmetry in the geometry of the Mobius strip is copied InfoGenetically in the method of fibration and generates new forms of their combination in newly formed structures growing from within.

As can be seen, the MMM is a configuration unit that does not have a **central crossing** or interweaving into a topological knot. All subsequent generations have a central crossing or link interweaving of their components. This indicates the main difference between **the etheric substance** and the **baryonic matter**.

This difference is the main element in order to understand that the absence of a central interweaving characterizes the unmanifested matter, but which initially contains the duality of the Two Principles of CosmoGenesis in an unmanifested mono-form, and the vortices derived from this matter, having a central interweaving in various variations, are already manifested matter, containing the same duality of the Two Principles, but already in various atomic ratios, creating the diversity of the manifested physical world based on atoms.

All baryonic matter is in a state of polarization or magnetic dipole (**bi-polarity**), which is actualized in the phases of bifurcation.

The **etheric matter** is in a state of magnetic mono-pole or **monopolarity**, when the polarities are not actualized (not manifested) outwardly, but are represented by an **internal closure**. That is, in the absence of a pronounced external magnetic field, monopoles are sources of magnetic properties. This is the main difference between the vortices of the ether matter and the vortex formations derived from them, in which the materiality (mass) is manifested.

It is necessary to emphasize that in nature there is no **magnetic unipolarity** as such, since **magnetism is a natural duality** and a physical embodiment of the Principle of Complementarity and this is its fundamentality. It is necessary to focus the thought not on the search for a **unipolar element**, but on the search for duality, in which magnetism has a closure of polarities into one topology and represents a monopole formation "two in one". It is the closure into one topology that gives the initial state, which can be called the state of **monopole duality**, in which the etheric substance is located. Its transition to the state of dipole duality gives rise to baryon matter, its mass and gravitational interrelation.

This paper offers a more detailed consideration of the Mobius Magnetic Dipole as a **basic element of nature** and as the **basis of the atomic structure**. It is also necessary to keep in focus the fact that the same geometric parallels are projected onto the structure of stellar-planetary system formations, but only with their own specifications of form representations.

"The presence of a single field of the Universe requires a single plan for the structure of all forms of matter in order to be able to interact with this field.

Regardless of the external appearance, duality or dipoleity, which provides the rhythm of the oscillatory process, underlies all forms of matter in the organic and inorganic worlds. The reversibility of the dipole properties – the ability to emit and receive in the same structure – demonstrates a universal technique for creating forms of matter in an exact mirror image of the information fields of the external environment. The rhythm of oscillations determines the choice of a standard unit of measurement for all forms of matter: oscillation frequency as a unit of time and a unit of length." [32]

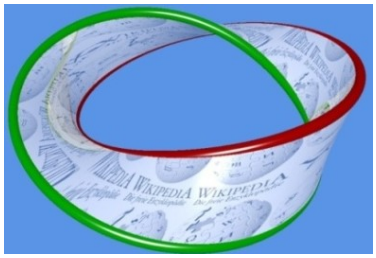
Based on the unified plan of the structure of all forms, the initial oscillatory MOD must contain complementary duality, and its structure must determine the polar magnetic duality. As shown in the work "***1. Quantum Environment. Mobius Geometry. Magnetic Monopole***", this initial oscillatory mode is a unit of the etheric Quantum Medium – the Mobius Magnetic Monopole with abbreviation **MMEP**, which has the specified characteristics.

The geometry of such a Mobius magnetic ring, if we consider it in a mathematical analogy, is a combination of absolute symmetry of two sides of one plane and their mirror-asymmetric connection into one topology. Such a geometric combination of symmetry and asymmetry has the property of transmitting the original Information Genetics in the method of self-copying in the fibration phases. As shown above, the Mobius Magnetic Dipole, formed from such magnetic ring, preserves this InfoGene, while doubling it.

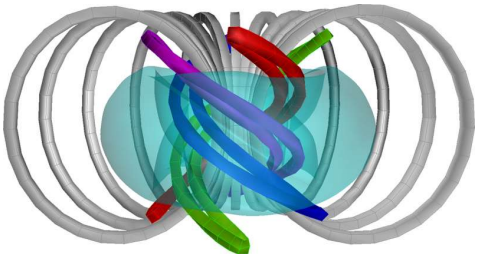
Let us initially consider the Mobius Magnetic Dipole (MMD) and its properties in its **symmetrical state** relative to the crossing point of the curvature line, when the centers of its loops are at the same distance from the **CBT** – the Center of Balancing and Tension. According to the structure and properties, the MMD should be considered the basic element of Nature, on the basis of which system formations are built.

The basic element becomes an atomic element when symmetry is broken relative to the CBT and an asymmetric distance is formed between the CBT and the centers of mass of the MMD arms. As a result of the shift of the CBT, the universal "***Center-Periphery***" scheme begins to form.

It should be especially emphasized that the Mobius crossing point in the Mobius Magnetic Dipole is not a point of direct intersection of magnetic lines. They cross in the same way as Clifford parallels, as two DNA chains and, for example, as coils cross in the new combined QA (quasiaxisymmetric) stellarator. [48]


Clifford parallels.

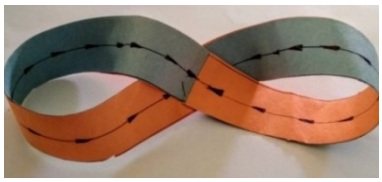

DNA strands.

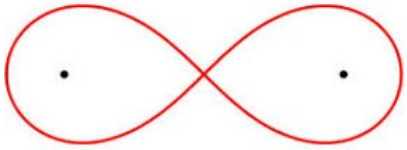

4 identical QA coils. [48]

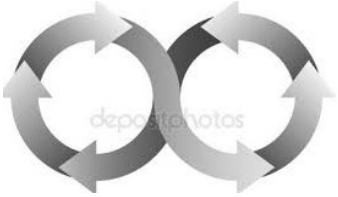
The crossing point in the Mobius Magnetic Dipole is the point at which the magnetoelectric balance of the dipole arms is established and the magnetic intensity tensor is formed. The formation of this tensor may be an undisclosed secret for science that will not only help explain many things, but also open up new possibilities for understanding issues related to the process of thermonuclear fusion and nuclear decay.

The mirror asymmetry of the Magnetic Dipole arms relative to each other organizes their opposite chirality and the arms themselves are an analogy of two pulsating spheres synchronized by the process of spinning of this two-inversion dipole structure as a one whole.

This is a very important characteristic, which allows us to understand that the twice twisted "***Dirac belt***", with the help of which he demonstrated the spin of the "electron", refers not only to the "electron", but to the entire dipole structure "***proton-electron***" as a one whole and are connected by a single process of spinning. The relativistic Dirac equation is decomposed precisely into two symmetric components with different helicity. It does not indicate the asymmetry of the masses of these components, but describes their equal state after bifurcation/fibration until this basic dual element acquires the atomic property of the first element – hydrogen. The illustrations (1) and (2) below, although are not a direct representation of this process, but they help to imagine it with their combined elements.


Mobius Magnetic Dipole.


(1)

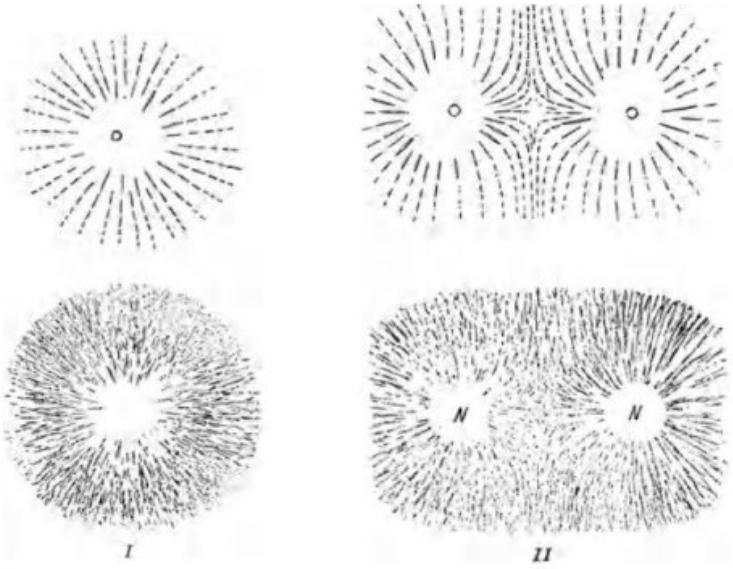

(2)

In 1875, **Carl Anton Björknes**, relying on analogies in the mathematics of differential equations, made a major discovery, which was called the hydrodynamic theory of electromagnetism. Björknes' theory not only demonstrated the derivation of J. Maxwell's equations based on the phenomena and equations of fluid physics, but also confirmed with tabletop experiments the clear and convincing correspondences between hydrodynamics and the effects of electricity/magnetism.

The main feature of this theory was that Björknes used the same objects – "pulsating spheres" – in opposite phases of their oscillations as the roles of opposite charges. Carl Björknes suggested that the electric charges of matter have the same "pulsating spheres" at the core of their physics, and the properties of positive and negative charges are manifested depending on the phase in the pulsations of their sizes.

Based on this hypothesis, as well as on the known equations of wave physics, Björknes was able to theoretically show that spheres whose diameter periodically changes in one phase due to the influence of waves generated in the ether repel each other. That is, they behave like **charges**. And spheres whose size pulsates in antiphase, respectively, mutually attract, demonstrating the physics of unlike charges.

In the illustration below: Björknes' hydrodynamic experiments, demonstrating the analogies between the physics of pulsating spheres in a liquid (top) and the physics of interactions of magnetic charges (bottom). [34]



Hydrodynamische Stromlinien und magnetische Kraftlinien: [34], [73]

Moving from this basic result and using the concepts of **hydrodynamics**, Carl Björknes managed to derive all the equations of J. Maxwell's electromagnetism. K. Björknes's theory also provided a simple and natural explanation for Maxwell's "***displacement current***". According to K. Björknes's model, the pulsations of a sphere are Maxwell's "***displacement current***".

Drawing a step-by-step analogy between K. Björknes's theory of pulsating spheres and the Mobius Dipole, one can see that the vortex arms-loops of the Magnetic Mobius Dipole (MMD), which have mirror asymmetry and oppositely directed chirality, are nothing more than Maxwell's displacement current, and what in theoretical physics are called **opposite charges**.

How the dipole geometry illustrates, **the charges** are actualized in the process of transforming the MMM into the MMD through its bifurcation with doubling of the original InfoGenome – the **length** of the loop doubles and the **inversion** doubles. In the presence of two inversions, the loop acquires the configuration of a figure “eight” with mirror-asymmetrical arms, which illustrate and visualize the division into ***opposite charges***. In other words, the **polarization** of etheric monopoles occurs with the actualization of the **external magnetic field**.

That is, during the geometric transformation of MMM into MMD, the InfoGenome is doubled and there is a mirror-asymmetrical division into electric "***charges***", which is one of the necessary conditions for the **generation of an external magnetic field**.

Thus, the doubling of the magnetic loop through its bifurcation generates opposite charging, and in the language of the current paradigm, the electric field appears together with the magnetic one. Despite this separation of the magnetic and electrical components for the convenience of their explanatory description, in fact this is one single phenomenon.

As this is discussed in detail in the work "***1. Quantum Environment. Mobius Geometry. Magnetic Monopole***", Mobius Magnetic Monopole (MMM) and the Mobius Magnetic Dipole (MMD) formed from it are ***quantum-mechanical*** objects that perform phases of quantum breathing, emitting and absorbing ether magneto-plasma. According to this, the arms of the Magnetic Dipole create flows of ether vortices in a mirror-asymmetric direction and these differently chiral flows form the amount of absorbed or emitted magneto-plasma (electricity), which quantitatively determines their electric charge.

I will cite a citation that resonates with the format of explanation of charges based on Mobius Geometry that I propose.

"***Apparently, the generation of flows of ether vortices of inverse chirality by a proton and an electron underlies their Coulomb interaction and explains the nature of electric charge***." [22]

And, as described when considering the Mobius Magnetic Monopole, the charge is the amount of magneto-plasma (electricity) transformed by the Mobius blade inversion or, in other words, a portion of electricity participating in the **quantum symbiosis** of the vortex dipole structure with the etheric Quantum Medium, in other words, the amount of magneto-plasma that can be transformed by the “blade” of the Magnetic Monopole or the arm of the Magnetic Dipole in its torsion and create a **quantum as a discrete portion of radiation**.

According to the process of converting MMM into MMD, in the first phase of fibration, the transfer of InfoGenetics occurs with doubling of inversion (spirality) and each arm of MMD is transferred a helicity of 180 degrees, capable of receiving and transmitting the amount of magneto-plasma (electricity), which today is the value of the **elementary electric charge**, has an exact calculated value and is **1.602 176 634·10−19 Cl**.

Based on the above, the Mobius Magnetic Dipole includes two magneto-plasma converters, mirror-asymmetric relative to each other. Accordingly, their single elementary charges are assigned different signs of "***plus***" and "***minus***". And this is only a conditional agreement on what to consider a ***plus*** and what a ***minus.***

To some extent, for visualization of spinning of Mobius Magnetic Dipole and its synchronous quantum mechanics, it is possible to use the movements of a rower with an oar.

Despite such simplification, nevertheless, in our beingness it is possible to find enough parallel examples, which are based on universal principles of movement and including on quantum mechanics of the micro-world. The holographic structure of the brain reads these principles of movement, copying them from objects in the etheric Medium.





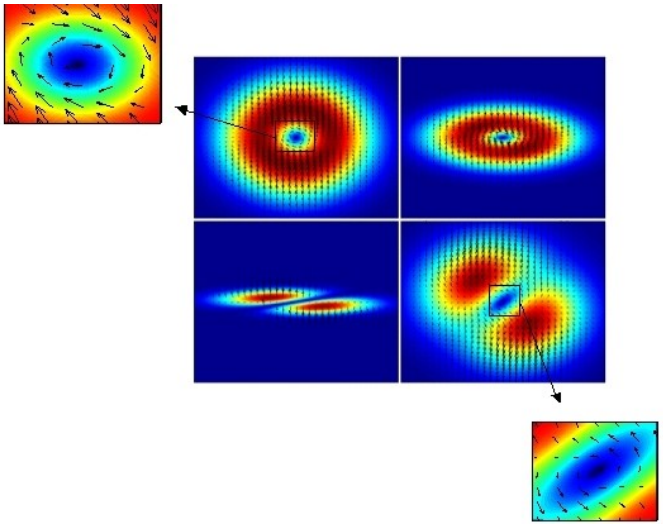
The visualization of the Mobius Magnetic Dipole (MMD) illustrates the fact that in **one dipole unit**, closed through TWO inversions, charges of opposite signs are nothing more than mutually interconnected mirror-asymmetric components belonging to one system formation (one dipole entity).

The crossing line of the Mobius Curvature in the MMD is the place where the charge undergoes a **topological** (mirror-asymmetric) **reversal and becomes opposite to itself**.

An experiment to create an artificial topological charge flip was conducted in 2001 and its results were published.

In June 2001, a publication entitled "***Observation of the Dynamical Inversion of the Topological Charge of an Optical Vortex***" appeared in Physical Review Letters. [12]

"We report what is believed to be the first detailed experimental observation of the dynamic inversion of the topological charge of an optical vortex under free-space propagation. The vortex self-transformation occurs through continuous deformation of the noncanonical strength of the corresponding screw wave front dislocation, and is mediated by the occurrence of an extremely sharp turn in a Berry vortex trajectory, which is observed at a Freund critical foliation appears as an edge-line dislocation orthogonal to the propagation direction, at a crucial point of the light evolution." [12]



[12]

An experiment with laser light focused in a cylindrical lens demonstrated that dynamic chirality reversal is indeed possible in nature. I would say it differently, namely: what exists in nature has become possible to repeat technically in an experiment.

The main value of this experimental result is that the dynamic reversal of the topological charge of the vortex contains the key to understanding how the bifurcated world always remains orientable. And, as the consideration of this issue in the format of Mobius Geometry shows, it remains orientable, since the Mobius Dipole at the base of baryonic matter is a one-sided orientable surface.

Summarizing the above, we can draw the following conclusions:

The Mobius Magnetic Dipole is a bipolar dual structure in which the mirror-asymmetrical arms acquire the properties of opposite charge.

The "charge" is the helicity formed by the Mobius inversion by 180 degrees. And this InfoGenetics in the copying method is transmitted and does not change. Based on this, we can say that the **charge is a topological invariant that is preserved**.

Only **the sign of the charge** can change based on the fact of left or right spiralization, since the sign of the charge is the direction of the helicity.

The magnitude of the charge is the amount of magneto-plasma that the MMD transforms, or the amount of electricity participating in the electromagnetic interaction.

The **measure of energy** is associated with the level of vibration of spinning and the total spiralization.

The crossing of the curvature line in MMD allows to create such a magnetoelectric connection of mirror-asymmetric vortex oscillations through the Mobius tensor of tension and balancing, which allows in one ring-shaped closed structure two mirror-asymmetric opposites (charges) to **coexist without annihilation** of mutual destruction, i.e. two charges opposite in sign can be constantly present in one essential unit in the form of phases of its oscillations.

In this regard, the geometry of the Mobius Dipole gives a clear and intelligible explanation of the "peaceful coexistence" of two opposite charges in the atomic structure, the sign of which is assigned to the "***proton***" and "***electron***".

Neither the classical nor the quantum theory of electromagnetism explain why in the hydrogen atom the "***electron***" never falls on the "***proton***". At the same time, the emphasis is placed on their constant mutual attraction. In fact, this is a **mutual gravitational balancing** caused by a combination of symmetry and mirror asymmetry. And the explanation of this phenomenon of "non-fusion" lies precisely in the mirror-asymmetric way of connecting two Mobius Dipole loops, which as opposite charges are enclosed in a ring-closed cofigurativity of the lemniscate and are connected through the crossing of the Mobius curvature line as a magnetoelectric tensor.

The crossed interrelation tensor is the way of interaction of Dipole loops as opposite charges, in which the opposite charges "do not stick together" and also "do not fly apart", but are balancedly held in one bundle and interact in a balanced way (spin as a single whole).

The Mobius Dipole is a magnetoelectric balanced structure, in which the conditional "pluses" and "minuses" always belong to one structural formation as one physical entity. Based on this, the number of "***pluses***" is always equal to the number of "***minuses***", which is equivalent

to the fact that the number of "***electrons***" is always equal to the number of "***protons***". Based on this, the **total electric charge of the universe invariably remains equal to zero**.

It is important to note this fact, which is illustrated by the Mobius Dipole, that charges are components of one system formation and cannot be in a free state independently of each other and at the same time perform their functions. Their functional interaction is due to their belonging to one wave dipole entity. Their interrelation can be destroyed, but it is not possible to restore it back, since it is actualized and formed in the process of generating matter from the inside out by the method of fibration/bifurcation.

The balancing interrelation linking the shoulders as charges and as masses will be the **Bipolar Gravitational Interrelation**. Gravity regulates the balancing "attraction-repulsion" between the arms of the Dipole, organizing "mutual support" between them (this is the original meaning that is embedded in the meaning of the root word "***gravity***"). The geometry of the Mobius Magnetic Dipole (MMD) clearly visualizes how the principle of gravitational mutual support of generated masses in a formation is realized due to the crossing formed by inverse turns. Having a mechanism of gravitational balancing inside itself, such a dipole structural formation of two emitters has an **antigravity property** as a whole and hangs unsupported in space, as evidenced by the entire cosmos.

Fulfilment of such a condition of equilibrium ensures the preservation of a stable configuration of any material objects at all scale levels, from atoms to giant clusters of galaxies. Gravity is caused by magnetism, which acts through displacement and rhythm, as well as through the phenomenon of symmetry supported by the dynamics of mirror asymmetry, which are mediated by the Mobius Geometry of the FPC. **Gravitational interrelation is a substantial property inherent in everything.**

Until now, no one has made the obvious enough conclusion that naturally follows from the application of Mobius Geometry, about the belonging of gravity to the same degree of the microworld of the atom and the macroworld of space, and about the belonging of the "electron" and "proton" to one dual-dipole entity, despite the fact that physics has long since come to the understanding that the number of protons in the universe must be equal to the number of electrons so that the total electric charge of the universe remains equal to zero.

In this regard, the Mobius Dipole provides a clear and intelligible explanation for both the "peaceful coexistence" of two opposite charges in the structure of an atom, and the gravitational interrelation between the "proton" and the "electron", which is equally inherent in a planet and a star.

Based on the proposed structure of the "***basic element***" of Nature in the configurability of the Mobius Magnetic Dipole, its properties and the mechanism of blade vortex spinning, the essence of the term "magnetic moment" existing in physics – **the magnetic dipole moment** – as the main physical quantity characterizing the magnetic properties of an atom (matter) becomes clear and explainable.

The magnetic moment of the Mobius Dipole is its ability to portionwise perceive the magnetic substrate of magneto-plasma, as well as portionwise remove it in continuous acts of radiation-absorption.

The magnetic moment, as Quantum Mechanics has shown and as the application of Mobius Geometry to this issue illustrates, is caused by the spinning process and the presence of spin (angular momentum). Spin, in turn, is caused by the 180-degree inversion, which mediates the reciprocity of the "quantum breathing" process and its portionality. Thus, the configurability

of the Mobius Monopole and Mobius Dipole determines the **discreteness** of radiation known in physics.

It should also be noted that Nobel laureate W. Pauli obtained the correct value of the magnetic moment of the "electron" using the school definition of the **magnetic moment of the ring current**. The Mobius Dipole is a ring structure with two sinusoidal cycles.

Due to the magnetoelectricity of the units of the etheric Quantum Medium, the spin is also an integral energy characteristic of the Mobius ring in monopole and dipole versions. Energy is associated with spin helicity. The direct relationship between spin and energy was once pointed out by Nobel laureate R. Penrose.

If we follow further, then the representation of a magnetic monopole and the magnetic dipole formed from it in the Mobius geometry can quite clearly answer the questions of **charge quantization and charge multiplicity to the minimum calculated one**.

The current paradigm of physics states the following facts, which, if transfer into the format of Mobius geometry, can be explained as follows.

The elementary electric charge is exactly equal to the magnitude of the electric charge of the electron, proton and almost all other charged elementary particles, which are thus the material carriers of the smallest charge in nature. The exact value is 1.602 176 634·10−19 C.

According to the appendix to this question of the Mobius Geometry format, each arm of the Mobius Dipole has that unit charge, the value of which is calculated and known today as the elementary electric charge – a fundamental physical constant, the minimum portion (quantum) of electric charge observed in nature.

This unit charge is related to the Mobius inversion and the amount of transformed magneto-plasmf and is potentially embedded in the structure of the Mobius Magnetic Monopole as a vortex unit of the etheric Quantum Medium, which is discussed in detail in "***1. Quantum Medium. Mobius Geometry. Magnetic Monopole***".

1. The charge is closely related to the fine-structure constant describing the electromagnetic interaction**.**

2. An elementary electric charge cannot be destroyed; this fact constitutes the content of the law of conservation of electric charge at the microscopic level.

Mobius geometry shows that the concept of "charge" is determined by the amount of transformed magneto-plasma. This amount is due to the Mobius inversion, which is the cause of Mobius oscillations, which are continuous and unceasing. Thus, the presence of inversion as a substantial property mediates the indestructibility and persistence of this amount of electric charge (magneto-plasma).

3. There is a positive and negative elementary electric charge, and the elementary particle and its antiparticle have charges of opposite signs.

Mobius geometry shows that the signs of the charges are nothing more than the directions of the helicity of the twist of the vortex unit.

4. The electric charge of any microsystem and macroscopic bodies is always equal to an integer multiple of the value of e (or zero). The reason for such "quantization" of charge has not yet been established. One of the hypotheses (Dirac Paul, 1931) is based on the existence of magnetic monopoles ("Dirac monopole").

The Mobius geometry indicates the geometric configuration of the magnetic monopole, its magnetoelectric properties and the way it mediates the process of charge quantization in the way of its fibration and, accordingly, the charge multiplicity to the minimum value.

During the first phase of the fibration of the Mobius Magnetic Monopole, the process of self-copying occurs and the inversion is doubled. Thus, a single charge as an InfoGen is transferred to each arm of the Mobius Magnetic Dipole, thereby acquiring a conditional opposite sign. Further phases of self-copying (fibration) lead to the multiplication of Magnetic Dipoles and the repetition of its structure with the transfer of the original InfoGen (inversion). Thus, the **minimum charge is transferred** during the generation of matter from the inside out and the **atomic structure acquires a total charge multiple of the minimum**.

The multiplicity of the minimum charge is due to the InfoGenetic transfer of the minimum charge value in the process of multiplying the structure. This process in the current paradigm is called the **process of charge quantization**.

5. Almost all charged elementary particles have a charge of e or -e (the exception is some resonances with a charge multiple of e). Free particles with fractional electric charges have not been observed.

Mobius geometry indicates the fact that in nature there is no charge fractional to the minimum. This is mediated by the process of growth of the structure from the inside out by means of self-copying through dividing with doubling and transferring the initial InfoGenetics of the minimum charge to each generation

Here it is necessary to especially emphasize the undeniable nuance that the **multiplicity of the minimum charge** is formed due to the growth of the structure from the inside by fibration/bifurcation through stepwise doubling of its InfoGenome, that is, due to the multiplication of the original in the self-copying method, and not due to the fragmentation of something original to the minimum. It is precisely the idea of minimal particles as a result of “fragmentation” that gives rise to the division of the minimal charge into three quark`s in the current SM views. The charge is mediated by a 180-degree inversion, which preserves the size of the turn during self-copying and is not broken down into smaller components. This is the meaning of the **topological invariant of the concept of "charge".**

Important conclusion. Mobius geometry has the property of preserving its InfoGenetics and transmitting it to all generations in the copying method. It is this property that underlies the holographic principle.

If we now take into account that during the formation of atoms through the method of magnetic monopole fibration, InfoGenetic copying and the formation of an atomic structure as a set of Mobius Dipoles occur, then it naturally becomes clear that the charges of the arms of the copied dipoles will be EQUAL to a whole charge, and the total charge of the resulting atomic structure, depending on the number of Dipoles in the "proton-electron" state in it, will be a MULTIPLE of the minimum portion of the elementary charge.

Thus, the general structure of the atom in the process of generation has the total charge of all the dipoles in it, which are in the unfolded "proton-electron" state. This charge is designated by the charge number Z. The charge number of an atom "Z" will always be a multiple of the minimum charge and equal to the number of "protons", as is commonly believed today. The atomic number **A** will be equal to the sum of **Z** (**P** – the number of protons) and the number **N** – the number of neutrons (Mobius Dipoles in the pseudo-ring state).

A = Z(P) + N

This is the answer of the application of Mobius Geometry to the question of physics about the quantization of charges and the multiplicity of charges to the minimum elementary. Thus, the quantization of charges and the multiplicity of charges to the minimum are mediated by the method of bifurcation/fibration and geometric transformations of the Magnetic Mobius Monopole in the act of its polarization, that is, manifestation of its polarities in the form of dipole and further growth of dipole formation.

It can be assumed that the existence of a magnetic monopole, hypothetically predicted by P. Dirac, receives its explanation in the format of Mobius Geometry, and also receives visualization and the fact that P. Dirac believed that an explanation of charge quantization can be given precisely when the magnetic monopole is found or described. As demonstrated, the geometric solution to this question turns out to be quite simple and elegant.

True, if we touch on the fact that P. Dirac represented the magnetic monopole as unipolar and as the basis for magnetic charges by analogy with electric charges, then such a figurative representation was conditioned only by those ideas about electricity and magnetism that existed at that time, but time and the new knowledge obtained make their own adjustments. Also, a very important conclusion is that the proposed approach and explanation of multiplicity based on the MMM exclude the version of further fragmentation of the charge, as is observed in the approaches of the Standard Model regarding the proposed structure of the nucleons of the "proton" and "neutron" based on quarks, when each of the nucleons is assumed to consist of three quarks with charges fractional in the amount of 1/3 of the known minimum.

If we talk about the current achievements of the algebraic apparatus in identifying quarks in the composition of “protons” and “neutrons” and, as a consequence, on the assumption of the fractionality of the minimum charge, then I have made a certain conclusion that it is precisely the internal “loops” formed by the inversion in the curvy geometry of the Mobius strip, or, in another representation, the three triangles into which the contracted Mobius strip is laid out, that play the role of those local spatial formations with a certain magnetic field strength, which in the mathematical apparatus of algebra can be identified as quarks and represented as a certain kind of elementary particles in the composition of “protons” and “neutrons”, but which in essence they are not.

A Mobius strip drawn into a cone forms **three stacked equilateral triangles** in a flattened state, which is demonstrated in a paper experiment in the work “***1. Quantum Environment. Mobius Geometry. Magnetic Monopole***” and calculations are made. It is obvious that algebraic calculations can run into them and be interpreted as **three quark particles**. In this regard, these three magnetoelectric regions are the quark confinement, which is not divided into three separate parts, but due to the properties of the Mobius strip can create the illusion of them.

One of the latest theoretical publications on this topic is the **October 2024** publication "***Modification of Quark-Gluon Distributions in Nuclei by Correlated Nucleon Pairs***" [69]

The abstract says:

"We extend the QCD Parton Model analysis using a factorized nuclear structure model incorporating individual nucleons and pairs of correlated nucleons. Our analysis of high-energy data from lepton deep-inelastic scattering, Drell-Yan, and W and Z boson production simultaneously extracts the universal effective distribution of quarks and gluons inside correlated nucleon pairs, and their nucleus-specific fractions. Such successful extraction of these universal distributions marks a significant advance in our understanding of nuclear structure properties connecting nucleon- and parton-level quantities. " [69]

It should be noted that this publication is an extension of the analysis of the created parton models within the existing QCD theory and the Standard Model, which **does not include the gravity aspect**. That is, it is nothing more than a development of the model, which is an achievement of the algebraic apparatus to date. To what extent the model correlates with how Nature conducts its constructions – there are no answers to this, since there are no experimental confirmations as such, which have not yet been obtained. The results obtained during the collision of objects of experiments at colliders cannot provide those evidentiary facts that can convincingly either confirm the models or give pictures of ideas. **Quarks are an example of how mathematical constructions are presented as real reality**.

It is possible to develop models based on mathematical formalism ad infinitum. The question is that the final station is the knowledge of natural phenomena based on ontological patterns that are equally inherent in all scaling levels and which are known through universal laws and initial principles. These principles and regularities are well known, but, obviously, mathematical modeling does not use them as starting points for the logic of theoretical calculations. The theoretical view always remains incomplete or virtual due to weak philosophy.

The approach based on Mobius Geometry as a geometric analogue of the Fundamental Principle of Complementarity is the desired ontology that, in the words of Professor V.Sh. Rubashkin, "***interrupts the evil infinity of dividing matter into ever smaller parts and thereby cuts the "Gordian knot" of logical contradictions identified by classical philosophy" in theoretical physics***." [4]

Let us continue our consideration of the Mobius Magnetic Dipole (MMD) in the context of geometric illustration of the bipolar gravitational interrelation of its two mirror-asymmetric components.

Based on the structure of the MMD, physics receives an answer to the question of the nature and essence of the gravitational interrelation, which is actualized in the first phase of fibration and geometric transformation of the MMM into the MMD.

The nature of gravity is magnetic, and its essence consists in the mutual balanced retention of dual (mirror-asymmetric) components of one system formation, as well as their synchronous interaction. That is, the interconnected components provide each other with "mutual support", which is the semantic content of the word "gravity", in other words, they are connected by gravity

Gravity operates on the principle of a balance beam with a movable axis. This axis passes through the intersection point of the curvature line, which is the magnetoelectric tensor of tension and balancing of the MMD arms – the **Center of Balancing and Tension** (**CBT**). With such a geometry of the gravitational interrelation, the CBT can shift in one direction or another depending on the change in the parameters of the arms, which can be their "masses". This explains the well-known fact in physics that gravity is always associated with mass.

The mass in its quantitative relation is collectively associated with both the amount of transformed magneto-plasma and the location of the CBT. The symmetrical location of the CBT in the MMD is not yet an atomic element. The basic element of the MMD becomes atomic when the symmetry of the CBT shifts towards one of the arms, creating a greater gravitational stress around its center of mass, which increases the mass of this arm in comparison with the other arm. The manifested mass appears simultaneously with the actualization of the gravitational interrelation in the geometric transformation of MMM into MMD. The structure of MMD is the basis of the structure of baryonic matter (matter manifested magnetoelectrically in the form of

dipole). In other words, "dark matter" passes into the phase of baryonic matter together with the actualization of the gravitational interrelation and the manifestation of mass. Baryonic matter will have the property of manifested bipolar gravity and mass.

The principle of gravitational balancing is carried out due to the effect of creating a feedback on any change that occurs in the method of connection through the Mobius crossing. With such a crossed method of connection, a reverse reaction occurs in the form of a restoring force directed against any displacement, due to which a stable equilibrium is formed.

When the parameters of the Mobius Dipole arms change, the CBT shifts in one direction or another and the components undergo mutual displacement while maintaining their stable connection. Fulfillment of the described conditions of mutual (gravitational) support ensures the preservation of a stable configuration of any material objects at all scaling levels, from atoms to giant clusters of galaxies.

Since in current theoretical approaches to physics the explanatory paradigm is based on individual particles, it is the division of one interconnected dipole entity into separate "parts" that is the reason why many aspects both in the atom and in cosmology cannot find their explanation and agree with the known laws.

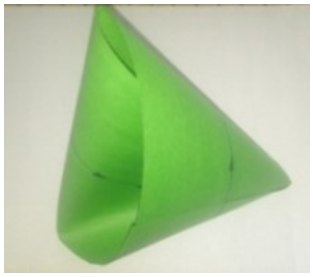
As noted above, the dipole basic element of nature becomes an atomic element by an asymmetric shift of the crossing tensor (CBT). Before illustrating this, it is necessary to show the nature of this asymmetric shift.

In the application of the geometry of the Mobius Dipole to the ***proton-electron*** interrelation during the formation of the first element of the periodic table of elements – **hydrogen** – a redistribution of the parameters of the Mobius Magnetic Dipole occurs, in which the CBT shifts according to the principle of the golden section for all characteristics of the Dipole in the complex which is an act of reducing symmetry after the first bifurcation.

"***Bifurcation and reduction of symmetry – that's where Faust's poodle is buried!"***

This famous phrase of W. Pauli in a letter to W. Heisenberg remained the unsolved secret that W. Pauli took with him in connection with his premature death. Since in the scientific path of V. Pauli, along with the "***bifurcation***", there is the "***Pauli square***", as well as the ***Mobius strip***, then, if we connect all three of these elements together, then the phrase from Pauli's letter can mean the following: in the process of bifurcation/fibration of the Magnetic Monopole in the configuration of the Mobius strip, there is a decrease (shift) in the symmetry between the arms of the Mobius Dipole (according to the principle of the golden ratio).

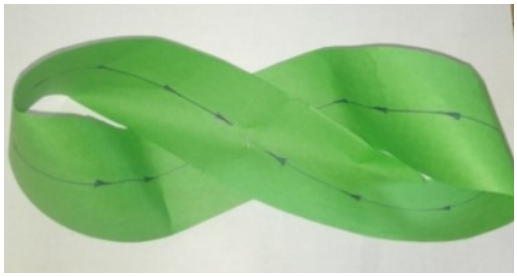
1. BIFURCATION/FIBRATION OF THE MONOPOLE.



Mobius Monopole.



FIBRATION.



Symmetrical Mobius Dipole.

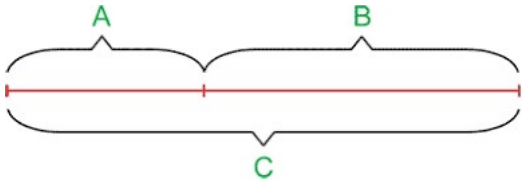
2. SYMMETRY OF DIPOLE ARMS.



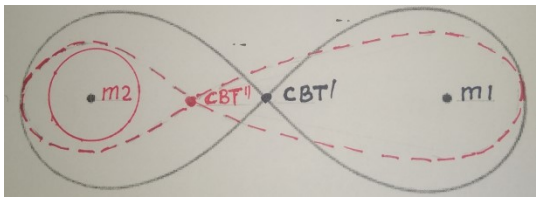


3. REDUCING SYMMETRY ACCORDING TO THE PRINCIPLE OF THE "GOLDEN RATIO" AND BALANCING DUE TO THE DISPLACEMENT OF CBT.









Lever balance with movable axis. **«Proton (m2)–electron (m1)» dipole coupling.**

CBT 1 – Center of Balancing and Tension with symmetry between the arms;
CBT 2 – Center of Balancing and Tension with decreasing symmetry between the arms.

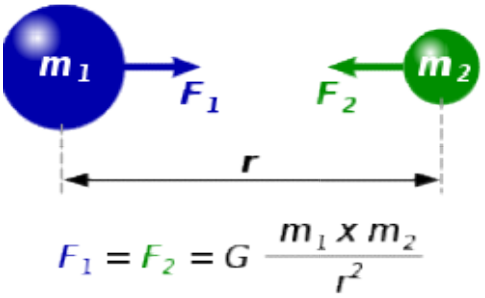
Considering the universality of the dipole scheme according to the holographic principle, the gravitational interrelation as a balancing one between the components of the dipole system formation will have the same functional place in the cosmic macro-world as well as in the atomic micro-world, and accordingly in other existential spheres. This aspect of the universality of the application of the general scheme is repeatedly emphasized in my articles and in the monograph. [35]

I assume that in cosmology the Lagrange equilibration points (libration points) are the same magnetoelectric tensor of tension and equilibration between a star and a planet in the space of the macrocosm, where in the current period the term gravitational equilibration is traditionally more applicable.

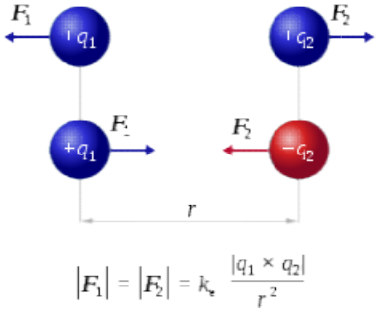
Based on the description of the interaction of dipole arms belonging to one dynamic structure of the Mobius Dipole, one can draw conclusions regarding the similarity of the formulas of **Coulomb's Law** and **Newton's Law**. At one time, Nobel laureate R. Feynman was looking for the reason why the formulas of Newton's Law of Universal Gravitation for "masses" and Coulomb's Law for "charges" are the same in form of expression, and he pointed out the fact that "***no one has yet succeeded in representing gravity and electricity as two different manifestations of the same entity***."

As it is shown in the format of the Mobius Geometry application, the nature of the dependencies of these laws is the same due to the fact that they, as "***charges***" in Coulomb's Law

and as "***masses***" in Newton's Law of Universal Gravitation, describe the same entity, in other words, the same geometric object – the two-loop lemniscate-shaped Mobius Magnetic Dipole.



NEWTON'S LAW.



COULOMB'S LAW.

I believe that such an explanation, which is simple and elegant, could satisfy R. Feynman. As it becomes obvious, many answers to intractable questions of theoretical physics and their clarity can be obtained in the format of Möbius Geometry.

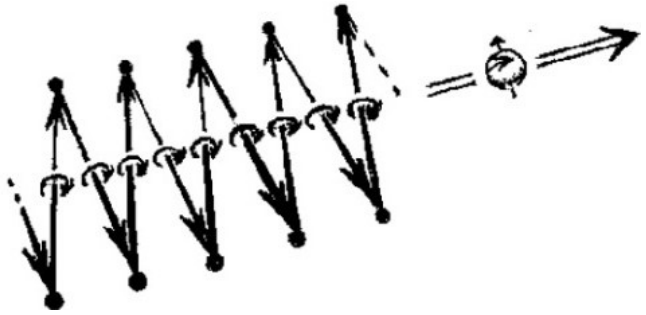
As it is visualized above, questions related to the gravitational interrelation and mass both in the micro-world of the atom and in the macro-world of space can be resolved geometrically. Algebraically, this goal has not yet been achieved in theories. The Standard Model does not include gravity in its format at all, and gravity has no clear understanding in cosmology.

Speaking about the configurability and properties of the Mobius Magnetic Dipole, it is necessary to return to the period of the creation of Quantum Mechanics.

Since the Mobius Dipole (MMD) contains two dually coupled components with mirror-asymmetric helicity and the MMD is generated by the fibration of Magnetic Monopole (MMM), the existence of which was hypothetically predicted by P. Dirac, then we can confidently assert that the bi-spinor in the algebraic relativistic equation of P. Dirac is the described Magnetic Dipole in the format of Mobius geometry on the FPC ontology.

In this context, it is necessary to provide some historical facts. As G. Weyl noted, analyzing the relativistic equation of P. Dirac, its mathematical structure "is decomposed into two massless components – one component with right-handed chirality of rotation, and the other with left-handed. The mass of this "particle" somehow unclearly arises in its constant oscillations – during transitions from one state of chirality to another. And since mass, according to Einstein's General Theory of Relativity, is inextricably linked with the geometry of space, Hermann Weyl noted that it was precisely here – in this riddle of the Dirac equation – that the key to the unification of quantum physics and the theory of gravity must lie." [10]

In the summer of 1930, Weyl's close friend Erwin Schrödinger presented his analysis of the same equation from slightly different angles [58]. Among other things, Schrödinger showed that, according to this mathematics, every particle of matter is characterized by a "trembling motion" that occurs with an extremely high natural frequency (1021 hertz) and a very small amplitude of oscillation. If we compare the results of Weyl and Schrödinger, we can see that they fit together organically into a single picture of the so-called "zig-zag representation" of fermions, as Roger Penrose calls it. [59]



"Zig-zag representation". [59]

It is well known that the mathematical fact of the presence of components with positive and negative electric charges in P. Dirac's relativistic equation led Dirac to predict the existence of **positively charged electrons**, i.e. **positrons**, as they would be called later. Positrons were actually discovered in experiments, thus confirming the power of Dirac's equation at that time.

However, P. Dirac's later opinion regarding such an interpretation of his relativistic equation (i.e. the electron-positron pair) included the opinion that "the basic equations are incorrect". P. Dirac himself had a feeling that his equation reflected another, more crude interrelation **belonging to reality**.

W. Heisenberg's opinion on this matter is well known. According to the fact that at that time in the world of particles it was known that the ***electron*** and *proton* have equal and opposite charges, from the structure of the Dirac equation it turned out that the electron somehow hides the proton in its wave oscillations, and the proton, accordingly, hides the electron in itself (which essentially corresponds to the **wave motions of the MMDipole**). However, the masses of the electron and proton differ by almost 2000 times and these are particles with significantly different properties. The insightful W. Heisenberg, who puzzled over this problem, told P. Dirac at that time that this riddle could be solved only after a "***unified theory for the physics of the proton and electron together***" was created.

And since, if we take into account the current state of theoretical physics and the fact that a unified theory for the physics of the proton and electron together has not yet been created, then, obviously, this is one of the reasons why big science is not attracted by the construction of the equation of P. Dirac for unifying the classical theory of gravity with quantum theory.

The proposed course of reasoning in the approach based on the format of Mobius Geometry shows that perhaps the need has arisen to return again to the equation of P. Dirac and look at it at a new stage of development of thought based on **geometry format** and experimental data.

Thus, to sum up, the relativistic equation of P. Dirac has not yet been understood and realized to the depths that it hides within itself. In fact, it reflects the ***basic element*** of Nature in its most general **symmetrical state**. The interpretation given earlier in the context of the "***electron-positron***" is not the final point to which, as P. Dirac believed, he himself had approached, since, as further practice showed, the creation of an atom (positronium) based on the symmetrical compound "***electron-positron***" did not lead to success. This pair annihilates, since both are quanta emitted by the atomic structure. This is the basis of the positron emission tomography method. And the atom is a unitary structure in which symmetry and asymmetry are combined in the result of its natural generation.

The final point is that the symmetrical basic element in the P. Dirac equation must acquire an **asymmetrical phase** of the interrelation of the components of the "***proton-electron***", which in this phase acquires a different character and a different dynamics of the **combined**

motion. This combined motion is the ***unified theory of the physics of the "proton-electron" together.***

If we summarize the facts of history, then in essence Dirac managed to obtain an equation that, **firstly**, indicates the dual structure of the "basic element" of Nature, **secondly**, is decomposed into two components with differently directed mirror-asymmetric chirality (two charges) and, **thirdly**, these components have a unified dynamics of mutual interaction with the appearance of mass in mutual transitions from one state of chirality to another. In theoretical reasoning, Dirac himself attributed this mutual nature of interaction, understood as spin, only to the electron, and in the history of science it remained that "***Dirac belt***" in the form of a twice-twisted trouser belt, with the help of which P. Dirac created and demonstrated the image of ***spin***.

According to the geometric transformations proposed above, it is visualized that the dual basic element of nature in the form of a magnetoelectric lemniscate-shaped Dipole with two turns of 180 radii performs spinning movements as a whole. Perhaps the dipole can be conditionally divided at the point of intersection of the line of curvature (CBT) and the spin can be written down on its shoulders. But the fact remains that the **two shoulders belong to one dipole formation and they spin as a whole**. In this case, there is no need to synchronize their movement.

Synchronized transitions of states from one arm to another indicate the fact that the dual wave structure inherent in the basic element-Dipole is magnetoelectrically integral, but is not a connection of two ball-particles as separate entities with each other by difficult to explain forces. Below are two illustrations to demonstrate what has been said.

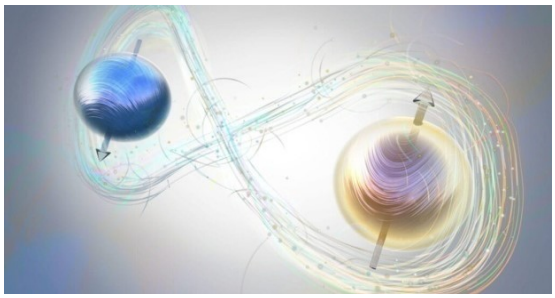


Illustration from [50].



Mobius Magnetic Dipole.

And, as illustrated, the Mobius Magnetic Dipole obtained as a result of the transformations is a dual element that has practically the same described basic characteristics in its **symmetric stage** as the bi-spinor in the P. Dirac equation. I believe that the Magnetic Mobius Dipole described by me geometrically, which in essence represents the **basis** of the dual "proton-electron" bond, can be a geometric equivalent of the bi-spinor described algebraically in the Dirac equation.

We should focus on the following fact. P. Dirac analyzed his equation in the format of symmetries of nature and, as a result, believed that there must be a positively charged particle symmetrical to the ***electron*** – the same in mass, but opposite in charge. This particle was subsequently discovered and named the ***positron***. However, its lifetime is very short and it annihilates with the electron. In this regard, attempts to create a basic element of nature using an ***electron*** and a ***positron*** – **positronium** – were unsuccessful. The reason for this experimental failure lies precisely in the fact that the hydrogen atom, although it has charge symmetry, unlike the symmetrical base element, it contains a **gravitational-mass asymmetry**, which creates an **orbital revolution** of one arm around the other – the arm with a smaller mass around the arm

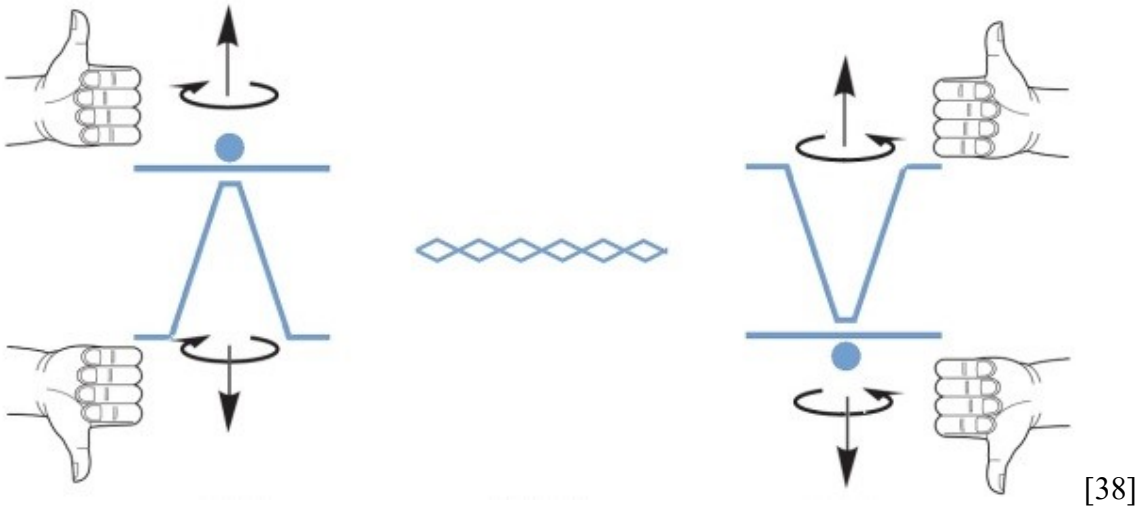
with a larger mass, which will be shown schematically below. In the asymmetric version, the universal "***Center-Periphery***" scheme is actualized.

Nevertheless, the failed attempt to create an atom based on an «***electron-positron***» formation gives an understanding that the atomic structure is formed not by the compression of "particles" by using unknown forces, but by a universal method of **bifurcation with doubling of the InfoGenome**, in which the actualization of the interrelations that hold the system formation together occurs. And this is illustrated geometrically with the application of GM.

Based on the facts presented, it can be seen that the geometric elements that make up the Mobius Magnetic Dipole pulsated in the thought field at the historical stages of the development of theoretical physics. And in the outstanding discoveries of today's theorists, the same forgotten ideas of P. Dirac and W. Pauli are hidden, not completed by them for a number of objective reasons.

As already discussed above, the rhythmodynamics of the MMD is similar to pulsating spheres. And the reversal of the topological charge in MMD as an oscillating process associated with the phases of quantum breathing can be displayed in a different three form.

The three illustrations below show the same process.

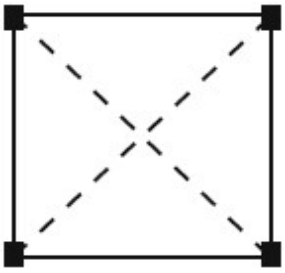


[38]

INHALE EXHALE INHALE



Mobius Magnetic Dipole.



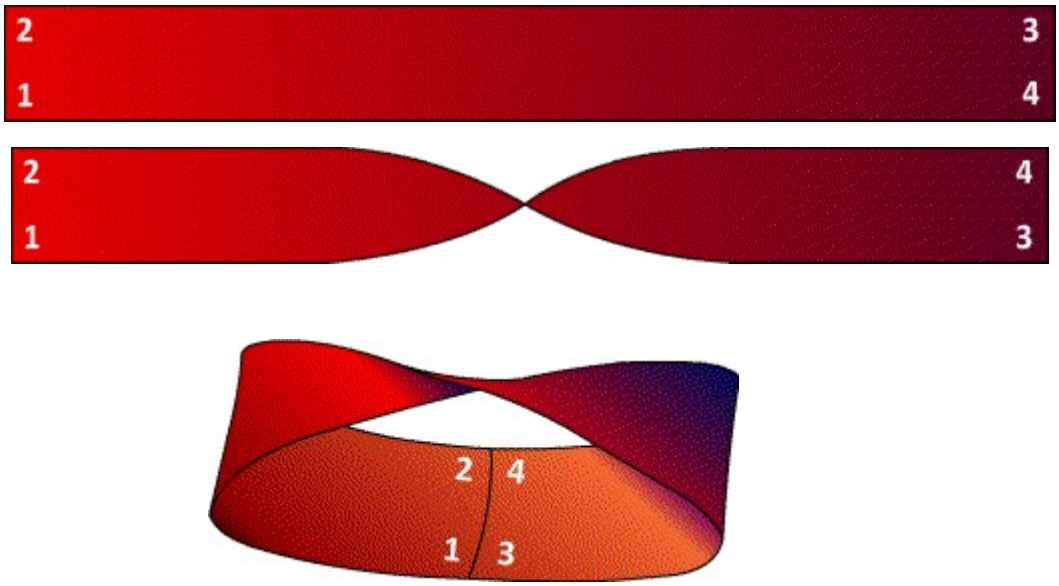
"***Pauli square***"

In the history of quantum physics, such a scheme of oscillating "***quantum breathing***" arose in the "***Pauli square***" variant, and then much later in the "***Kitaev ladder***" scheme.

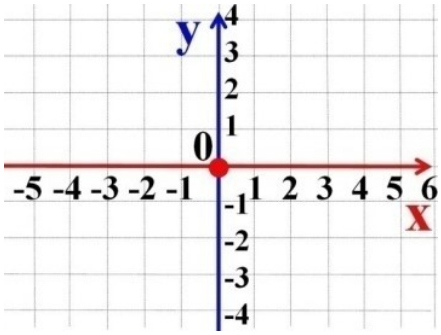
In general, according to the "***Pauli square***" scheme, four components constantly change places. In essence, the dynamics of the movements of the 4 components of the "***Pauli square***" demonstrates a mirror-asymmetric flip of the helicity of two components grouped "**two by two**", i.e. four in total.

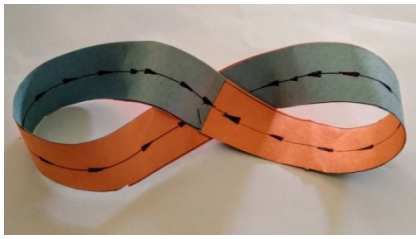
These "**two by two**" components are displayed in the Mobius Magnetic Dipole scheme, namely, each of the two inversions has two mutually inverse components, i.e. the Mobius Dipole is a ***four-point function*** organized in a "**two by two**" manner.

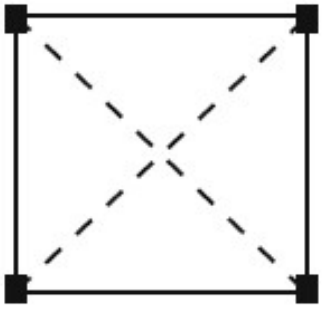
This **four-dot** "two by two" InfoGenetically is transmitted in the method of fibration of the Mobius Magnetic Monopole, in which it is expressed as follows, if we use a paper experiment and number the extreme points of interaction – **1, 2, 3, 4.**



It is necessary to focus attention on what scientists do not notice and do not think about, but what is the **simplest proof** that all geometric constructions from school desks we conduct in a coordinate system, which is the same **four-point platform**, and that the coordinate system usual for us, introduced by R. Descartes, is a Mobius strip laid out on a plane. R. Descartes not only proposed a vortex and cellular structure of the ether, but also for centuries gave mathematics its **volumetric Mobius four-point in a two-dimensional planar version**.



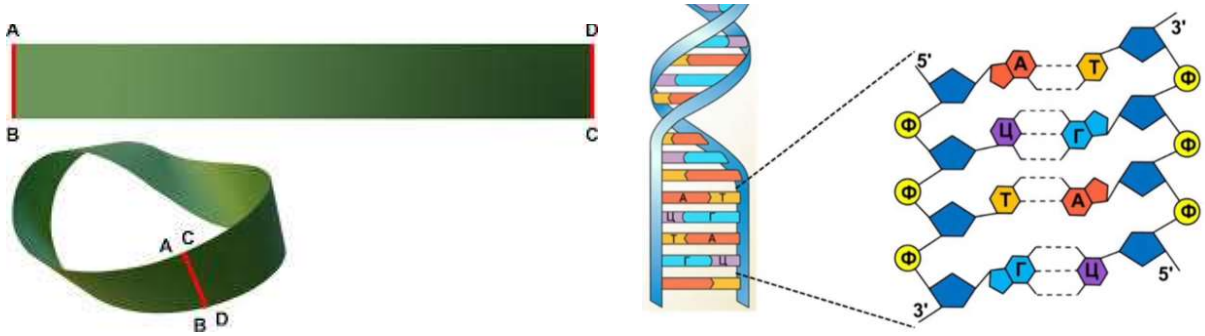




At one time, in quantum physics, together with the birth of the first wave equations, the concept of a particle of matter as an oscillating "***connected colon***" of P. Alexandrov appeared. The same dual principle can be seen both in the structure of the **fermion** particle, following from the **Dirac equation**, and in the **Majorana fermion** with its oscillon physics and the essence of its nature as a dipole, which displays precisely a bifurcated object.

This speaks in favor of the fact that **bifurcation** as a dipole or duality, arising in theories, has a single source of the Mobius Magnetic Monopole in the structure of the unit of the Quantum Medium, generating both objects based on its **four-point duality**, grouped in twos, and theories in the minds of scientists. After all, all ideas are drawn from the ethereal medium.

This principle of the four-dot "two by two" ("linked colons") is embodied in the method of transferring genetic material in the method of DNA replication: opposite A there will always be an inverted T, and opposite C there will always be an inverted G, that is, two colons A-G and C-T. **Four nucleotides** are linked in a mirror-asymmetric pairs – "**two by two**". In this case, each linked pair will be an element of the binary coding system, which is also sewn into DNA along with triplet coding on the same carrier. [37]

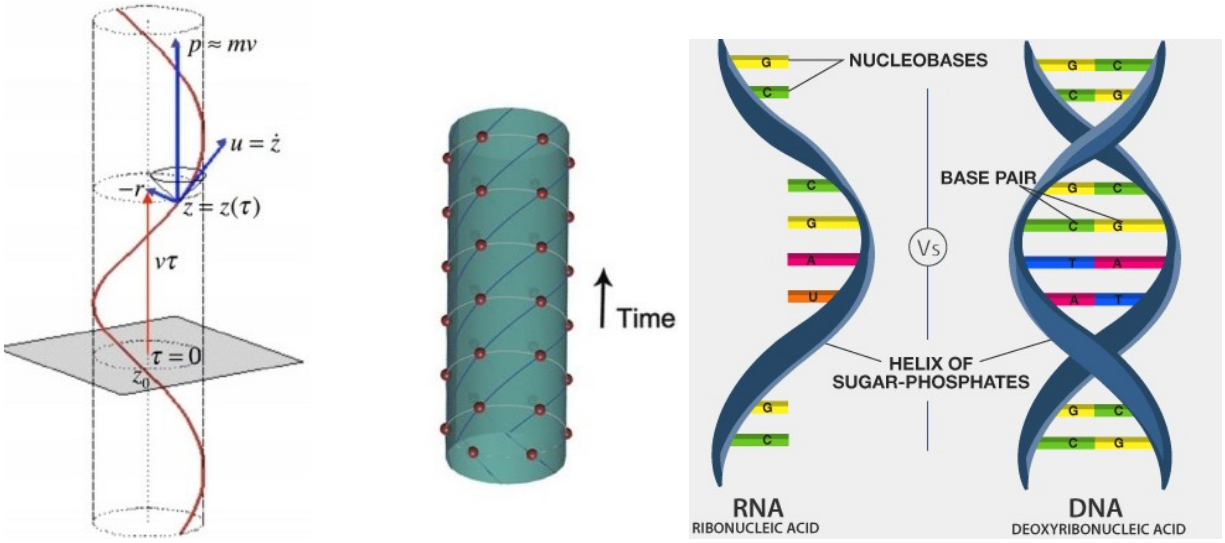


This is the answer to the question about the mysterious structure of DNA in biology, where scientists have not yet been able to find an answer to the reason why nature uses exactly four basic nucleotides to encode all the information in the double helix of the "memory molecule". [37]

Some progressive scientists, although they do not yet directly point to the identification of the relationship between the structure of a particle of matter and the biology of the DNA molecule, nevertheless voice interdisciplinary relationships in their works. In this regard, one example is the report of M. Atiyah "***On the Unity of Geometry and Physics***" at the conference "Unity of Mathematics" **in 2003**. [73], [74]

The similarity with the structure of DNA is also clearly indicated by the peculiar materialization of the particle's trajectory in space-time in the form of a one-dimensional time crystal, twisted into a periodic cylindrical spiral in the illustration by Nobel laureate F. Wilczek [77], which is essentially the same as that of D. Hestens [76].

D. Hestens discovered in P. Dirac's equation a construction in which the phenomenon of particle spin is inextricably linked with the particle's orbital rotation around the time axis, as a result of which the particle's trajectory in space-time looks like a cylindrical periodic spiral. The parameters of this spiral are related to the physical properties of the particle, such as its natural oscillation frequency, mass, and so on. [76]



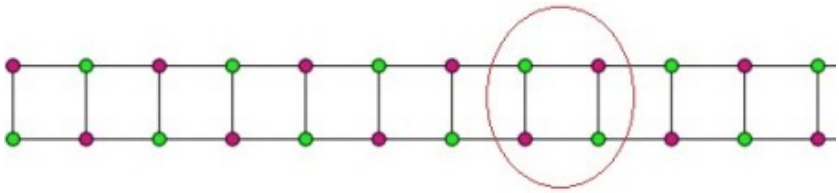
In the illustration: on the left is the particle's spiral trajectory in time, according to the Dirac equation and Hestens' calculations, in the middle is the spiral of the time crystal for a system of particles, according to Wilczek's calculations. (Illustrations are taken from the source [73]) On the right is DNA.

The illustrations show how the same ***universal pattern*** manifests itself in different spheres, taking an individual form in each of them.

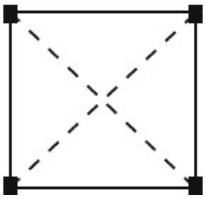
The diagonal crossing in the "***Pauli square***" indicates the geometry of the Magnetic Dipole, with the help of which stability is organized on the one hand, and dynamism with constant change of places of opposite pairs in two inversions, which forms the basis of the non-stop process of continuous oscillations.

In addition, this is the basis of the ***principle of self-copying***, carried out through the method of fibration, substantially embedded in a closed structure based on ***Clifford`s parallels***, a special case of which is the Möbius strip.

If we follow the latest theoretical proposals (the review is taken from the source [55]), then the same four-dot scheme of the "***Pauli square***" is present in the "***Kitaev ladder***", the basis of the construction of which is formed by "two pairs of antipodes", regularly repeated over and over again. This is a very important configuration, because when Alexey Kitaev found a solution for SYK based on fours of particles, it soon became clear that they themselves are laid out exactly as "ladder diagrams". Below is an illustration from the work "on spontaneously forming crystalline structures of quantum holography" [51],



"***Kitaev ladder***". [51]



"***Pauli Square***".

"In projection onto the SYK model with its ladder graph configuration, where the nodes are Majorana fermions, the concept of bilocality turns out to be quite convenient for theorists. The basic **four-point function** in the bilocal representation in the work "***Bi-Local Holography***

in the SYK Model" [52] becomes a two-point function, and the diagonal fluctuations of the fermion components between the "rail" levels become more visual." [55]

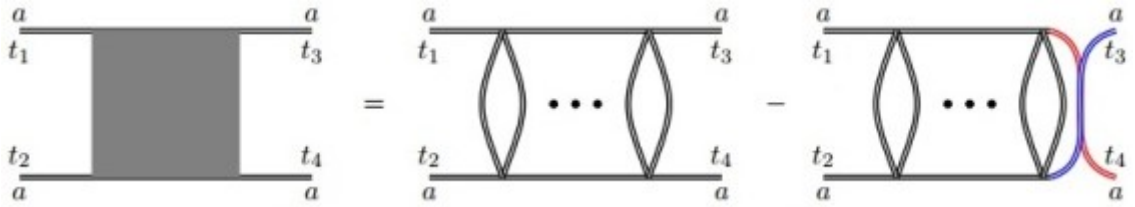


Figure 2. Two-point function of (diagonal) bi-local fluctuation. The double line represents the full propagator of SYK model. [52]

"If we perceive the diagonal fluctuations of the points on the SYK ladder as a "side view", then the "Pauli square" diagram should be viewed as a "cross-section" of the same picture, which shows why "four points" are "two points" in the bi-local representation." [55]

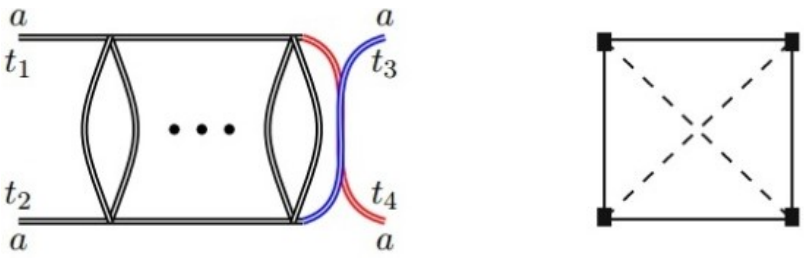


Illustration taken from [55].

This fact is illustrated by the diagram from the article by D. Polchinski and W. Rosenhaus "***The Spectrum in the Sachdev-Ye-Kitaev Model***". [53]

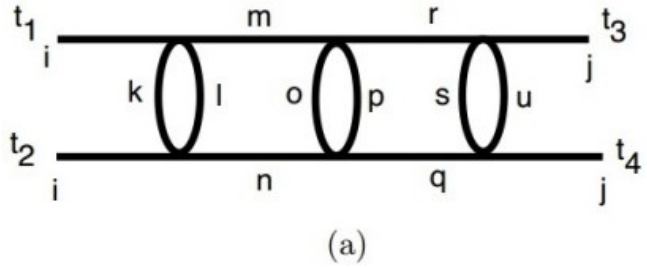


Figure 2. ***(a) The four-point function is given by a sum of ladder diagrams, such as the one shown.*** [53]

An even more illustrative explanation of the same idea can be found in the article by J. Maldacena and D. Stanford "*Comments on the Sachdev-Ye-Kitaev model*" [54].

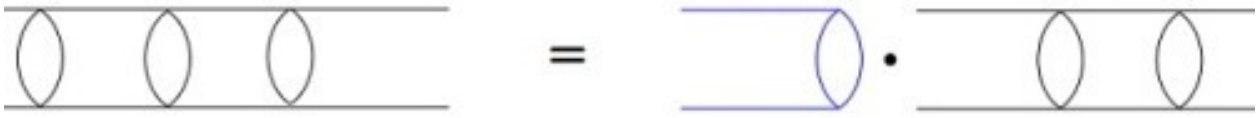


Figure 4: ***The (n+1)-rung ladder Fn+1 can be generated from the n-rung ladder by "multiplication" with the kernel K, shown in blue. We call the vertical propagators a "rung" and the horizontal ones a "rail".*** [54].

"If we note that in this diagram the "core" is formed by two Majorana fermions, and each of them is a dipole, which is naturally denoted as two antipodal points, then it is clear that a more adequate reflection of the core could be a combination of four points – as in the very first picture of this set, option (c) – ***Kitaev's ladder***. And the horizontal rails of the ladder would also naturally be reflected by double lines, as well as the vertical crossbars." [55]

"Majorana fermions under SYK conditions self-organize into a double or "bilocal" configuration of the so-called "ladder diagram" of interactions. And this, under minimum-dimensional conditions, is not only the basis for the emergence of SL(2,R), but also a direct prototype for "parallel sheets of space" in the Horava-Witten model. Moreover, the configuration at the base of SYK also has the characteristic features of BCFT - "boundary conformal field theory." And this is precisely the structure in which Polchinski and Thorlacius discovered the tachyon crystal. [56], [57]

"Another undoubtedly important aspect of the "Pauli square" is the quite obvious interrelations of this diagonal dynamics with the "chessboard" model of Richard Feynman. It is easy to see that when considering the jumps of a single particle, the physics of the systems looks quite similar. However, for the further development of the SYK model, the bifurcated nature of the Majorana fermion plays a fundamental role. And in the Feynman model, this key feature was not considered. This was the reason why the theorist suffered a complete failure with increasing the number of dimensions.

"The SYK also contains the most important keys to understanding the structure of the 4-component Dirac fermion in the subtleties of transitions between the 2-point and 4-point representations of a single structure. And here, due to the constant oscillations of the system along two different axes, the mechanism for generating the spin of a particle as its own self-motion is also revealed." [55]

If we return to the historical period of the beginning of the creation of quantum physics, then according to P. Dirac's own stories, when he thought about what an equation that would provide answers to questions about the structure of a particle might look like, he was visited by the idea that the general description of a particle should contain **four wave functions**.

As soon as Dirac wrote down this idea in the form of a matrix operator, then, according to his own expression, it turned out that the new 4-component equation in its solutions gives correct predictions for the results observed in experiments with electrons. Despite its predictiveness, this discovery puzzled P. Dirac with its mathematics, since it followed from it that the particle has four components, two of which have positive energy, and two have negative energy, that is, the components are grouped "**two by two**". And it was unclear how to interpret the negative energy.

As demonstrated above using the illustration based on the Mobius strip, the issue is not at all about the presence of positive and negative energies, which can be considered an incorrect interpretation in view of the existing paradigm dividing the whole into separate "parts", but the whole point is that the whole has an antiphase combination of its components relative to each other, which is reflected in the equation of P. Dirac. If this discovery were to occur today, there would be every reason to call it an emergent phenomenon of breathing, arising as an effect of the collective behavior of two pairs of 4 components, paired in pairs and interacting diagonally in the geometry of the space of the square of the world wave function.

The **Mobius geometry** shows that these components are not separate entities subject to collective motion in the MMD, but these components belong to one whole, therefore their

"collective behavior" is determined by this. Such behavior is a **self-synchronized spinning** of the components of the whole.

Regarding the **four-point function**, substantiated by MG, it should be added that in his time W. Pauli emphasized the importance of the Pythagorean **tetractys:** “The leading symbol of this magical perception of nature is the **fourfold**, the so-called **tetractys** of the Pythagoreans, consisting of **two pairwise polar beginnings**.” [71. P. 286].

As shown, the images of the dual construction of the ***basic element of Nature*** were expressed to varying forms in the mathematical proposals of a number of predecessors: as **phase changes** of oscillations in the "**Pauli square**", as a **bi-spinor** in the relativistic equation of P. Dirac, in the **twistor** in the theory of R. Penrose, in the **ladder** of A. Kitaev, in the **vortex operator** of Joe Polchinski, in the **loop operator** of E. Witten.

And in its essence, this **bipolar generator of reality** on the ontology of the original and all-encompassing Principle of Complementarity is present in everything that exists. All the mathematical definitions listed above, in their characteristics, converge on the **universalism of one dual entity** – the original Mobius Pattern, its properties and its phase transformations.

Also the **rhythm-dynamics** of the Magnetic Mobius Dipole can be better understood using the model of Yu. N. Ivanov. At the 29th minute of his report [80], Yu. N. Ivanov demonstrates a model of boat motion, at the ends of which two people stand with their backs to each other and with their backs to the center of the boat and alternately throw a load out of the boat, while the boat moves linearly-translationally in one direction. The vector of the load ejection is directed along the length of the boat.

According to a similar scheme, the two arms of the Magnetic Dipole function as two emitters of quanta. They synchronously eject and absorb magnetoplasm quanta. This is how the Mobius Dipole will function as a basic element of Nature, while maintaining the symmetry of its arms.

To form an atomic structure according to the universal scheme "***Center-Periphery***", the basic dipole element undergoes a decrease in symmetry according to the principle of the golden section. If we now consider the basic element in the variant of decreasing symmetry, then **one of the arms** will play the role of the Center (core), its mass will be significantly higher and the CBT will be located closer to it, thereby forming a stronger gravitational stress tensor near it. The radiation of this arm will form a nuclear **quantum center**.

The **second arm** will have a smaller mass and will be more distant from the CBT according to principle of gravitational balancing. The radiation of this arm and its absorption capacity will play a **peripheral role** or the role of a **membrane**, ensuring ***quantum symbiosis*** of the atom with the etheric Quantum Medium. With such an interrelation of symmetry and asymmetry, the basic element of Nature becomes the first element of the Periodic Table – **hydrogen** or **protium**.

If we return to the rhythmodynamics of Yu. N. Ivanov [80] and turn each passenger 90 degrees, still leaving them in a position with their backs to each other, then in this version the load will be thrown out in a vector perpendicular to the line running along the length of the boat, then the boat will obviously perform a **rotational motion**, possibly continuing to move linearly at the same time. This is an analogy with how the **emitters** of the "proton" and "electron" arms function in a hydrogen atom.

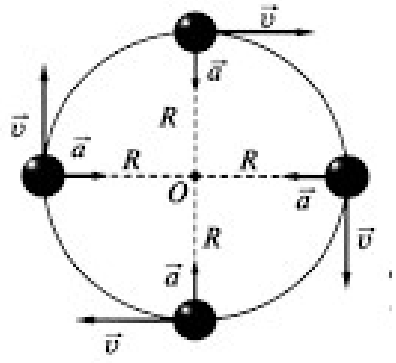
Now, if in this situation we take into account the radiation vector of the peripheral arm of the Magnetic Dipole, then the peripheral arm with a smaller mass will perform **orbital**

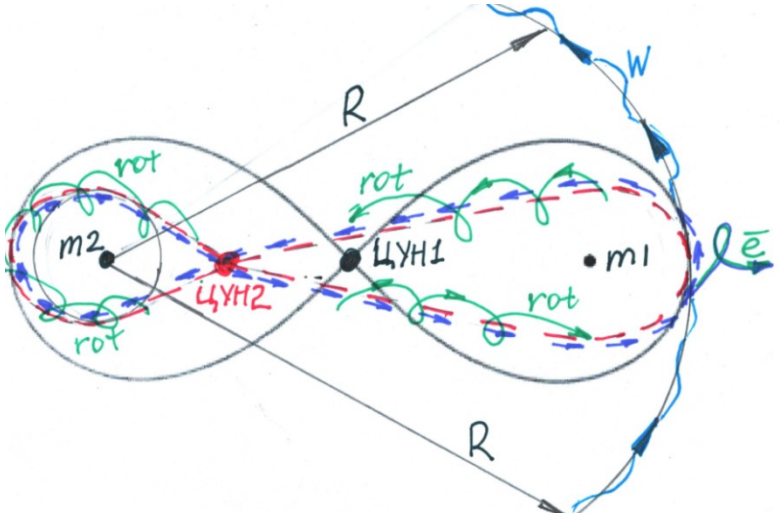
revolutions around the arm with a larger mass. The pusher of this rotation will be the vector of the direction of rotation of the inverse turn and the bladed capture of magneto-plasma with its simultaneous ejection, that is, the peripheral arm will move in a wave-like and helical manner with its vibration level, forming a stable **soliton-like wave**.

Such a wave, with all the complex of its movement, will have a strictly defined distance to the center-core, which is stably maintained by the gravitational interrelation with the center-core, as well as a strictly stable level of its vibration, which is demonstrated by the ***line atomic spectra***.

The level of rotational vibration determines the speed of orbital rotation. Thus, the peripheral arm will rotate around the center with a greater mass – the **core** – just as a planet rotates around a star. In this regard, the second arm – the core – is also a participant in this movement, which synchronously facilitates the movement of the peripheral arm, being with it in the same act of spinning and at the same time feeds it, being an external source for it. As can be seen, this scheme is equally extrapolated to the level of stellar-planetary structure, explaining the same role of gravitational interaction on a macro-cosmic scale as on a micro-cosmic scale.

I have provided an illustration that helps to visualize the movement complex described verbally.





Rotational motion. ***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 is the Center of Balancing and Tension with symmetry,
CBT2 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 environment, 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 it is not possible to explain why a rotating electron-particle does not fall on a proton-particle, it is also impossible to explain where the electron-particle gets the energy for its orbital rotation, and it is also impossible to explain the lack of correspondence of such a structure to the obtained **line atomic spectra** and other casuistic difficulties.

The approach based on Mobius Geometry gives an understanding of the unified physics for the components of the Atomic Magnetic Dipole – "***proton-electron***" – 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 symmetry shift is the starting point from which the roles of the shoulders are redistributed while maintaining a complete gravitational balance between them and the basic element of the Magnetic Mobius Dipole (MMD) begins to play the role of a **building block** – an ATOM.

The magnetic Mobius Dipole, as well as the atom based on interconnected Mobius Dipoles, are **self-consistent systems**, which, 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 plasma** and the mechanism of interaction of atomic components in one 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.

If we keep in mind the fact that at one time R. Feynman noted that "an elementary particle must simultaneously rotate relative to two or three of its own internal axes of rotation" [24], then in the proposed model of the atom, the dipole element "proton-electron" performs a complex type of motion, which has at least three internal axes. In addition, such a structure will also be characterized by **precession** and **nutation**.

In the approach I am highlighting, the “nucleus-electron” structure is a single, interconnected structure. I will cite a work by S. I. Yakushko, which is in tune with my proposals and conclusions.

“The “nucleus-electron” system is an indivisible whole that cannot be considered in terms of composite particles. This is the main and essential difference of the proposed approach.

The proton and electron should not be considered as independent units, but as inseparable parts of a whole. That is, the nucleus and the electron moving around it are a one whole, they are interconnected by a common vortex flow... One cannot exist without the other. And if this is so, then it is physically incorrect to consider the motion of a separate particle (electron) around another separate particle (proton of the nucleus)!” [23]

As can be seen from the atomic diagram I proposed above, the motion of one arm around the other is evident, but not in the form of separate particles. The division into particles created those difficulties that are still insurmountable, no matter what artificial postulates are introduced. **As it shown a variant of natural geometric transformations is required.**

According to the Polish nuclear and plasma physicist M. Gryzinsky (1930-2004), such a model of the atom, in which some particles move relative to others, is a mistake. Gryzinsky developed the "free-fall atom model". He calculated that the electron in the atom does not move in a circular planetary orbit, but radially, back and forth between the nucleus and the boundary of the atom. [23]

As can be seen from the diagram I have proposed, both movements are present in the atomic diagram: **radial** (along the lemniscate trajectory) and **orbital** (planetary).

Below is a more detailed diagram of the structure of the hydrogen atom, which illustrates the rotation of the dipole wave along the lemniscato-shaped dipole, which is the radial base of the imaginary «electron» (**m1**) in the form of an inversion along the trajectory of the **figure eight**, which includes the imaginary «proton» (**m2**). At the same time, the orbital rotation of the component **m1** around the component **m2** occurs, as well as the formation of a wave-like **membrane** (a hollow and a hill) as a stable **soliton-like wave** running along the conditional circle of an atom in accordance with the **vibrational level** and emitting and absorbing portions of magneto-plasma with its blade mechanism.

Conclusion. The proposed approach based on MG includes both the scientifically established fact of the planetary structure of the atom, and the value of thoughts that were introduced by other scientists into the detailing of the atomic model, which is consistent with the universal "***Center-Periphery***" scheme, to which the planetary atomic model belongs.

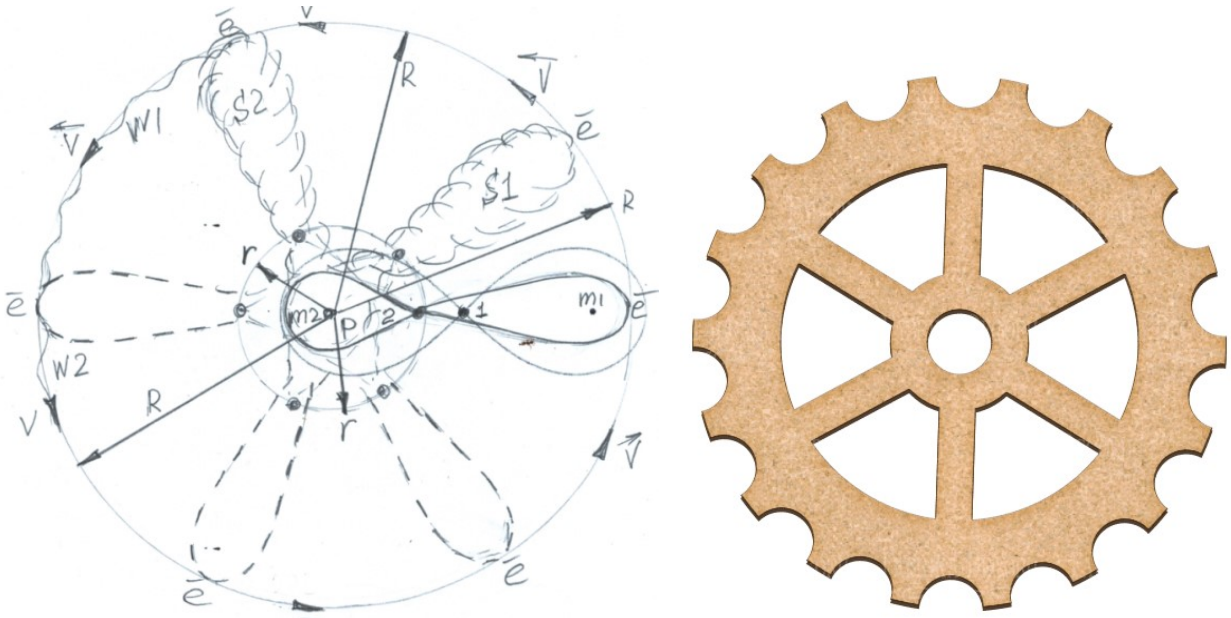


DIAGRAM OF GEOMETRY OF HYDROGEN ATOM DYNAMICS.

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 mutual spinning of the dipole components 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 ...***" [2]

An **atom** is a stable **quantum-mechanical formation** with a wave-vibrational rhythmodynamics of life activity, conducting a quantum exchange with the ethereal Quantum Medium and allowing the stability of matter to be maintained, as well as entering into chemical interactions with other atoms based on frequency-vibrational characteristics.

According to the diagram of atomic rythmodinamics above, one can see exactly what M. Gryzinsky called a "***radially oscillating electron***" – this is a dynamic vibrational-oscillatory process of spinning of a lemniscate-shaped dipole structure, which occurs along its entire eight-fold length from the peripheral region to the core and back. Moreover, nothing moves along this length, only a wave illusion of such movement is created, but the entire structure rotates (vibrates) entirely.

From the above, it can be seen that the dynamics of the internal atomic process are essentially created by the nature of the interrelations and wave movements, which are not related to particles, but can create this illusion of the mind. And if the Nobel Prize of 1906 was awarded to J. J. Thomson in recognition of his theoretical and experimental research devoted to the conductivity of electricity by gases, then it is necessary to return to his experiment with the understanding that electricity is quanta of magneto-plasma emitted by gas atoms and Thomson made the discovery of the **emitted quantum of magneto-plasma**, which was called an «electron», but which in fact is not a particle as part of the structure of an atom. [60]

Such **quantum-electrons** are emitted during various types of impacts on matter and in the symbiosis of the atom with the etheric Medium, absorbing and transforming its magneto-plasma. But this quantum-electron is not a particle, and even more so does not belong to the atom as a part that makes up its structure. This is a quantum formed from magneto-plasma by the internal mechanism of the atom and emitted by the peripheral arm of the atomic dipole. The same quantum emissions occur during nuclear decay. A ***positron*** is a mirror copy of an ***electron*** with a short pause in existence. **Electron-quantum** is not a particle and is not a corpuscular part of atom structure. Atomic structure contains **vortex-wave dipoles** which can form and emit portions of magneto-plasma such as ***electron*** and ***positron***.

The issue of J.J. Thomson's experiment is given more detailed attention in a separate article "***Time Out***". [60]

Regarding the question of the existence of particles – proton and electron – with a long lifespan, this is related to the fact that these objects of the micro-world are the result of the decay of atomic structures. Electrons and protons, which are in a free state, are formed from the ether magneto-plasma during the generation of a specific atom by the method of bifurcation/fibration, have a high degree of stability, but it is impossible to perform the reverse action on them – to combine them again into an atomic structure. This question is considered in detail in the method of fibration. Therefore, free protons and electrons and the components of the whole-connected structure – the atom, – called "proton" and "electron", are not, in essence, absolutely equivalent objects.

As can be seen from the proposed scheme of the structure of the atom based on wave MMD and schemes of fibration phases, each atom is a formula from a set of MMD as a mechanism for processing and holding inside the etheric magneto-plasma structured according to the formula with the formation of different types of matter on its basis.

It should be noted that in the current period in experiments on stellarators, with the help of the effect of a magnetic field on the plasma flow, this flow is wrapped precisely according to the configuration of the Mobius strip, which ensures stable retention of the plasma flow inside the walls of the equipment. That is, what has been found for stellarator technologies is nothing other than what Nature uses itself. And the course of technical thought not only repeats the natural template, but also confirms the facts that are present in the theoretical reasoning of the proposed concept and practical transformations based on the geometry of the Mobius strip.

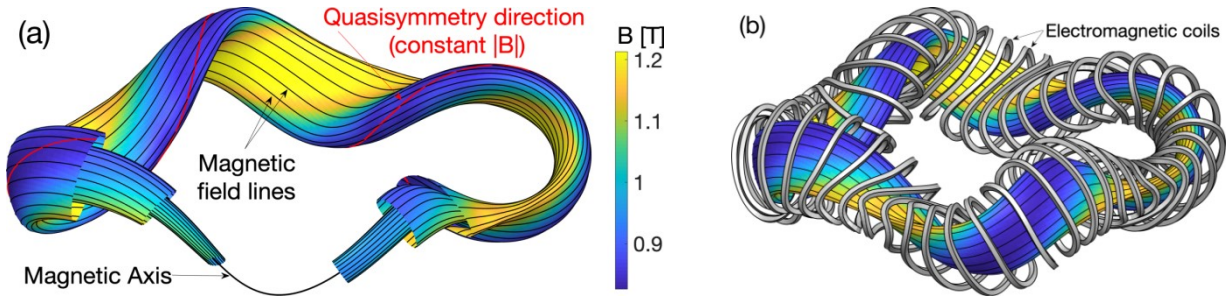
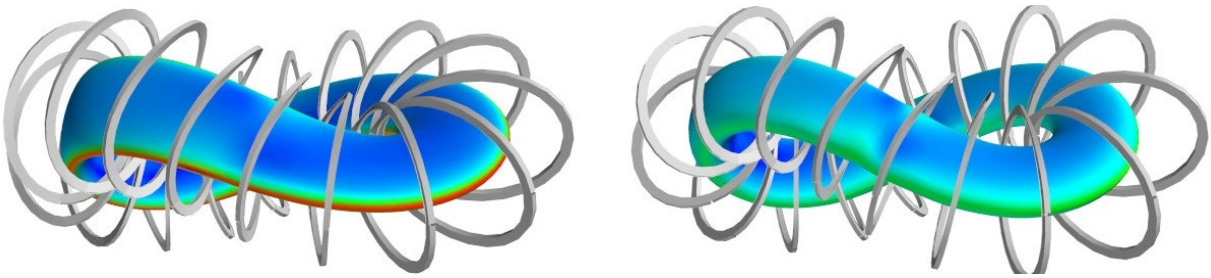


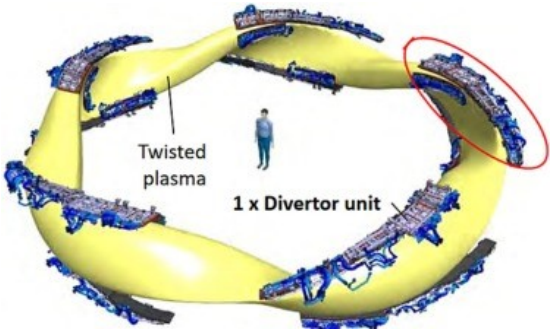
Figure a). A quasisymmetric magnetic field. *Figure b). The same quasisymmetric magnetic field as in figure a), now showing the electromagnetic coils that produce the magnetic field.*
A more detailed introduction to quasisymmetry can be found here. [45 UMD]

«In the *stellarator*, which is the leading alternative to the tokamak, the confining magnetic field is mostly produced by external current-carrying coils. In contrast to the tokamak, stellarators *rely* on symmetry breaking to realize the magnetic field needed to confine particles.

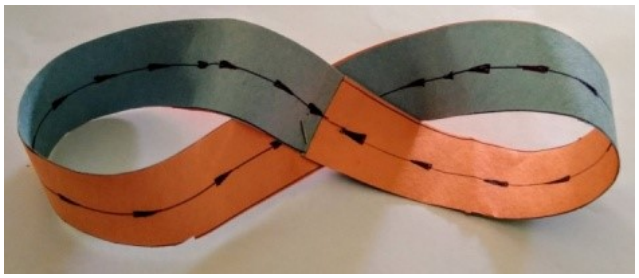
Over the last few decades, a new concept has emerged in the design of stellarators, giving rise to a renaissance—the remarkable discovery that it is possible to design 3-D magnetic confinement devices with *hidden symmetries* that can have the same virtues as tokamaks while overcoming some of the inherent drawbacks of the latter.



***Above**: Two stellarator configurations with coils that produce confining magnetic fields. The color shows the curvature of a magnetic surface filled ergodically by field lines. One configuration has higher torsion (right), and the other has higher ellipticity (left), but both have the same magnetic field-line pitch on the axis.* [47]



STELLARATOR. [46]



MMD

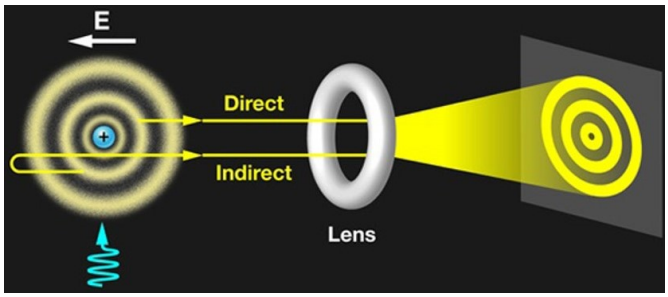
The configurability of Magnetic Mobius Dipoles (MMD) with two 180 degree turns ensures both the retention of magnetoplasm flows in the atom and its transformation.

In addition, the retention of magneto-plasma in the Mobius Dipoles of an atom and the formation of a certain type of crystalline structure of matter in accordance with the dipole formula of an atom is a natural phenomenon that is essentially and generally schematically similar to the vital activity of a ***biological cell*** with its basic processes that are essential for maintaining vital activity. These are ***respiration***, ***metabolism*** and ***symbiosis***.

The issues of quantum respiration and quantum symbiosis with the ethereal Quantum Environment are given more attention in work "***1. Quantum Environment. Mobius Geometry. Magnetic Monopole***".

Quantum metabolism is precisely those interactions in the internal atomic structure which, including the phases of quantum respiration and symbiosis with the etheric Medium, allow the atom not only to maintain its structure, but also to react to the effects of both the etheric Quantum Medium and other objects and radiations surrounding the atom.

In May 2013, the results of an experiment on obtaining an image of a hydrogen atom using photoionization microscopy with layer-by-layer superposition of a large number of images on top of each other were published in *PHYSICAL REVIW LETTERS*. [25]



A newly-developed "quantum microscope" uses photoionization and an electrostatic magnifying lens to directly observe the electron orbitals of an excited hydrogen atom. [25]

The result of the experiment [25] 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 the atom interacts with the external environment does the electron manifest itself with some 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."

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

«To describe the microscopic properties of matter, quantum mechanics uses wave functions, whose structure and time dependence is governed by the Schrödinger equation. In atoms the charge distributions described by the wave function are rarely observed. The hydrogen atom is unique, since it only has one electron and, in a dc electric field, the Stark Hamiltonian is exactly separable in terms of parabolic coordinates (η, ξ, φ). As a result, the microscopic wave function along the ξ coordinate that exists in the vicinity of the atom, and the projection of the continuum wave function measured at a macroscopic distance, share the same nodal structure. In this Letter, we report photoionization microscopy experiments where this nodal structure is directly observed. The experiments provide a validation of theoretical predictions that have been made over the last three decades». [25]

The description of the experiment is about torn-off photoelectrons that create a 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 demonstrates this cloud.

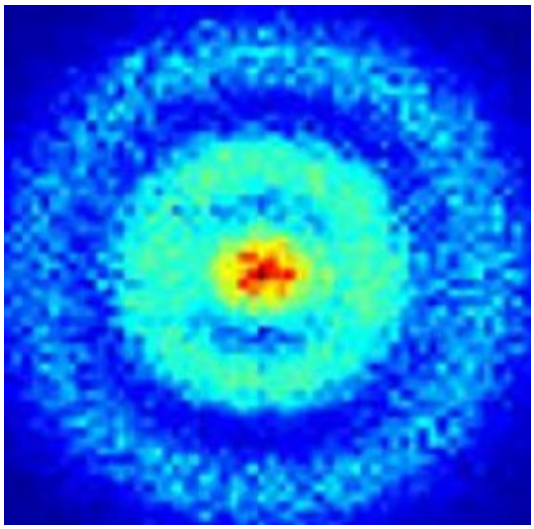
According to the approach I proposed, the interpretation of this experiment will be as follows. Photoelectrons are not particlis-electrons torn from the atom by laser action. Photoelectrons are magneto-plasma quanta (electron quanta, as described above), emitted by the peripheral arm of the atomic hydrogen 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.

As shown and illustrated in the proposed descriptive approach based on MG, the emission of energy quanta by an atom is a natural process of the functioning of the atomic mechanism. This is evidenced by the linear atomic spectra of emission-absorption. With different types of external influence: friction, impact, microwave radiation, high-voltage voltage, exposure to ultrasound, alpha particles, laser radiation and others, an atom can emit magneto-plasma quanta more intensely and in the same direction. [60], [70]

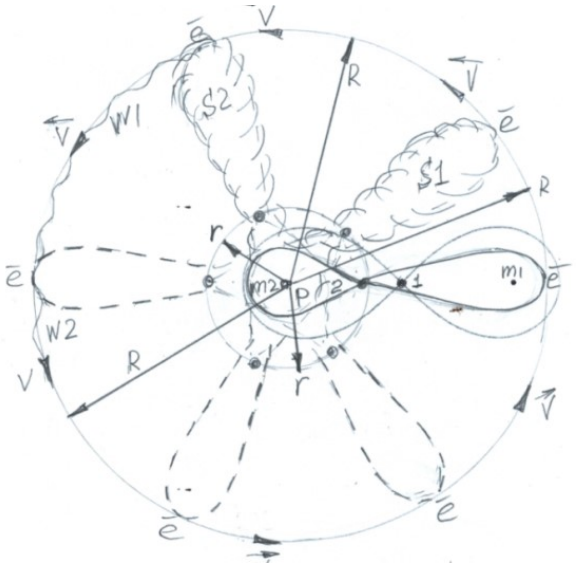
In the experiment under consideration, the impact was produced by laser radiation and at the moments of impact, the peripheral membrane, within which (the radius of the atom) the peripheral arm rotates orbitally, gave a radiation pulse. The point of emission depended only on the vibration frequency of the dipole arm and the moment of impact on it.

The figure below shows an experimental image of a hydrogen atom (on the left), which was obtained as a result of the experiment [25], and on the right is my proposed scheme of the dynamics of the internal movements of the hydrogen atom

.



Experimental image. [25]

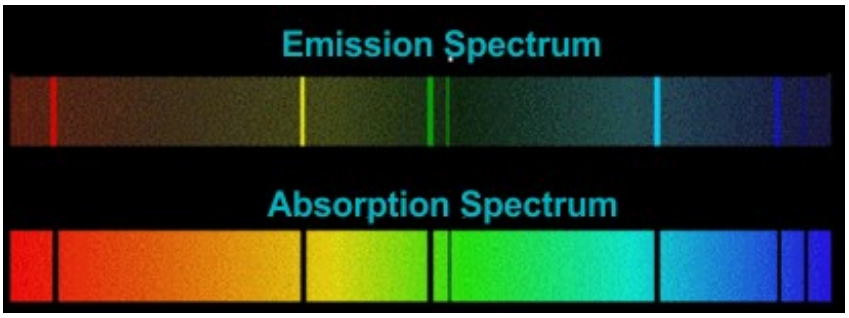


Dynamics of the hydrogen atom.

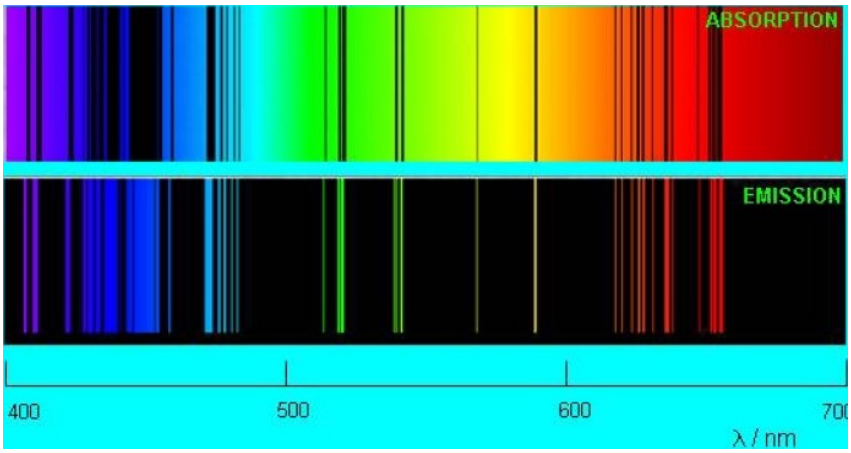
If we consider the atom outside this experiment, then the sub-micro-quantum flash is present around the atom constantly, but not as a random or probabilistic phenomenon, but as a result of the regular stable rhythmodynamics of the atom, reflected by its line spectrum. In the experiment, a more intense flash depended on the degree of exposure to laser radiation.

If we do not mean the multiple superposition of thousands of images in the indicated experiment, but imagine that it is possible to consider the movement of the shoulder-"electron" around the center of mass of the shoulder-"nucleus" in the dynamics of orbital motion, in which along the orbital line the quantum states of "radiation" of the dipole alternate with pauses or states of "absorption", then on the basis of the model of the atom proposed by me, each light flash is assessed as a rhythmic emission of an energy quantum by the shoulder-"electron" in accordance with the vibration level of the atomic Dipole.

Despite the fact that the Copenhagen interpretation in QM is based on the uncertainty principle and within the framework of this principle one can only speak about the probability of the location of an electron in a particular region of space, but not about the movement of an electron along a certain trajectory, I **undertake to assert** that according to the wave model of the atom proposed by me based on the basic dipole element, the atom has a ***Center-Periphery*** (planetary) structure and its peripheral region is that **vibrational membrane** that has not a probabilistic characteristic, but a **certain level of vibration with a strictly synchronized frequency**, according to which the process of emission-absorption of magneto-plasma quanta occurs, which is reliably confirmed by the ***line atomic spectra***.



Emission and absorption spectra for helium.



Absorption and emission spectra for sodium.

These spectral lines correspond to the frequencies of natural oscillations in atomic structures, and each atom has its own individual spectrum of radiation and absorption, and the frequency patterns of the spectral lines of absorption and radiation completely coincide. Such a coincidence can only be based on the fact that the **same internal structure** with its own strictly **individual vibrational level** of the mechanics of movements or frequency range absorbs and emits.

It is also clear that the line spectra indicate the wave nature of internal atomic processes, but which are strictly synchronized and stable. This indicates that the atomic mechanism cannot be the type of system formation in which **some random appearance of its component in the orbit occurs**, **subject to a certain probability function**, how it is interpreted in QM and the Copenhagen interpretation. This is the scientific nonsense that requires a radical revision.

The atom as the basis of materiality maintains the stability of matter due to the clearly synchronized **rhythmodynamics** in it, as well as the presence of **energy dynamics** caused by symbiosis with the supporting etheric Medium and in its strict range of radiation and absorption frequencies.

If we consider the atom, firstly, as consisting of spheres-particles, and secondly, without the presence of a supporting etheric medium and the interaction of the atom with it, then it is impossible to answer the question of where and due to what radiation occurs, in other words, where the atom gets energy from, performing its continuous and non-stop internal spinning. Based on the paradigm of particles, an explanation for this will never be found, no matter how many artificial postulates are introduced.

That is, the internal dynamic mechanism of the atom must be considered in the format of a constant and permanent energy symbiosis of the atom with the etheric Quantum Medium. In essence, the atom is a converter of etheric magneto-plasma. Each type of atom is a certain set of Magnetic Dipoles (MMD), in other words, an **atomic formula for processing ether**. And MMD is a quantum-mechanical vortex structure that produces a material mass from etheric magneto-plasma according to the type of atom.

Depending on the quantitative set of MMD in the atom and the alternation of the states of "***protons-electrons***" and "***neutrons***" in its structure, one or another type of materiality with certain properties is obtained. The atomic mechanism transforms magneto-plasma into the kind of matter whose formula is embedded in it as a set of dipoles.

The rupture of dipole components does not imply the fact that the torn parts can be reconnected into an atom. The atom as a whole-connected organism is generated by the method of fibration with doubling and as a process of growth of formo-genesis from within out with the actualization of system-forming interrelations. The destruction of these interrelations and the rupture of components is NOT a reciprocal process.

In addition to explaining the unified physics of the "***proton-electron***", it is necessary to supplement the structure of the atom with the physics of the "***neutron***". I draw attention once again to the fact that in the format of Mobius Geometry there are only geometry transformations that, with their general schematic implementation, are similar in different applications when implementing fractal-identical transfer. In this format, there are no different "particles", there are states and transformations based on a universal template mediated by the ontology of the principle of complementarity and the fractal-holographic structure of the Universe.

In all my articles where this topic is covered, I show that the Magnetic Mobius Dipole can be in **two geometric states** that are transformed into each other and change the properties of the Magnetic Dipole:

- the state of the **lemniscate-"eight"** – bi-polar condition;
- the state of the **double Mobius pseudo-ring –** neutral state.

Understanding these geometric transformations is of great importance for the parallel explanation of many phenomena that have not yet been adequately treated in theoretical physics, and also have **no geometric visualization**. In particular, these two states and their transformations into each other provide a visualization of the atomic components that in the current paradigm of physics have received the names "***proton-electron***" and "***neutron***".

The illustrations below show a two-loop Mobius Dipole in two states: on the left – the lemniscate-"eight" ("***proton-electron***"), and on the right – a double pseudo-ring ("***neutron***").

The double Mobius pseudo-ring is obtained by a geometric transformation of the dipole-"eight" when its arms are **coaxial inserted into each other**. [41], [42]



Lemniscate-like Dipole. ***Transformation into a Mobius pseudo-ring***. [41]

Conclusions from the transformations:

1. The Mobius Dipole in **the lemniscates-like configuration** with mirror-asymmetric arms of different chirality is a basic element of nature and the basis for the atomic component "***proton-electron***". The arms of the Dipole play the roles of the components of the atom, which in the current paradigm of physics are called "***proton***" and "***electron***".

2. The Mobius Dipole in the configuration of a **double pseudo-ring** is the basis for the state of "***neutron***", when the dipole arms are coaxially nested into each other and the structure again acquires internal polarity, but already in a doubled version and such an element is neutral outwardly. As a stable element, "***neutron***" exists only as part of an atom. Outside the atom, its lifetime is about 15 minutes and it decays into a "**proton-electron**". In the words of the GM format, the coaxial insertion of the shoulders is released and the dipole takes the form of a lemniscate.

3. These transformations are important for creating visualizations when considering issues of ***hydromagnetic dynamo***, ***beta decay***, and others in which calculations using algebraic formulas include the states of "proton-electron" and "neutron", which in the format of Mobius Geometry are considered as components geometrically transformable into each other.

Thus, with the help of illustration, we can come to the conclusion that the constructions that in the current paradigm of physics we call "***proton-electron***" and "***neutron***" are nothing more than just different **geometric transformations** of the same **quantum-mechanical unit**, which ideally corresponds to how Nature conducts its constructions, reducing its transformations to the presence of a minimum of entities and using universal elements of geometric transformations of one into another, changing algorithms in fractal repetitions and actually using only one basis for algorithmic transformations.

It follows that each atom is an algorithmic combination of these two MMD states, geometrically transformable into each other.

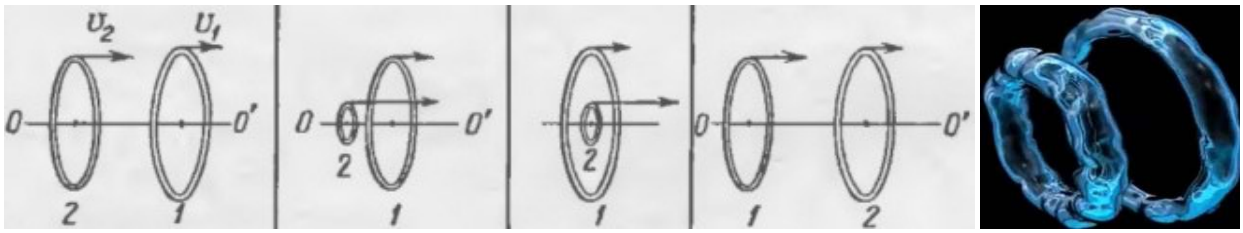
As is known, beta decay is a process in which the states of "***proton-electron***" and "***neutron***" are transformed into each other with the emission of an "***electron***" or "***positron***" respectively, accompanied by "***neutrino-antineutrino***". In fact, both decay processes **β−** and **β+** could be even described without involving antipodes based on geometric transformations in the format of Mobius Geometry.

And it can also be considered that the decay process in both variants is accompanied by the release of so-called "smoke rings", which are ***neutrino-antineutrinos***, taking into account their ***coaxial oscillations*** of transformation into each other. These oscillations have an analogy with the “leapfrog” of smoke rings in the experiments of G. Helmholtz [34], and in modern theoretical views they are called the “***Seesaw***” mechanism in the mathematical description of the phases of neutrino-antineutrino oscillations.

In 1857-1858, the physicist and mathematician **Hermann Helmholtz** published the work "***On the integrals of hydrodynamic equations to which vortex motions correspond***." [34]

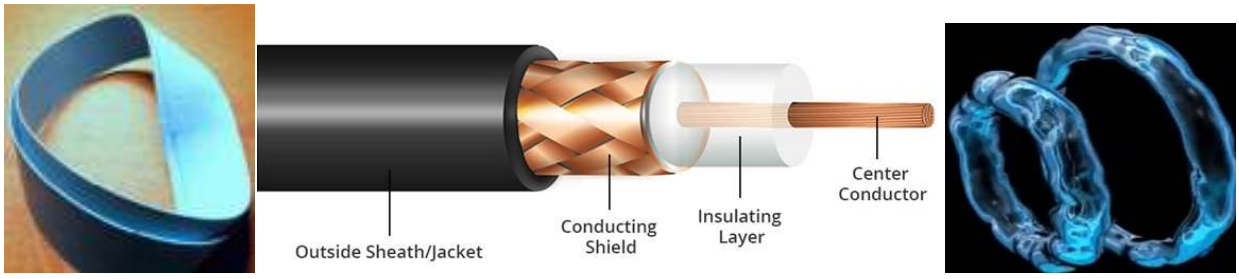
In this article, Helmholtz described the physics of vortices. Among the variety of effects generated by the hydrodynamics of vortices, Helmholtz was interested in vortex rings and the features of their interactions. In particular, the joint dynamics of the behavior of a pair of coaxial rings turned out to be quite nontrivial. Purely theoretically, solving the equations of hydrodynamics of an ideal fluid, the scientist discovered the effect of the joint dynamics of the

behavior of a pair of coaxial rings, called "***leapfrogging vortex rings***" or in the modern version – Leapfrogging vortex rings.



The connection of the "leapfrog" of vortex rings in hydrodynamics with the "Seesaw" mechanism in the basis of the mathematical description of the phases of the oscillations of "neutrino-antineutrino".[29], [33]

The group of illustrations below shows a Mobius pseudo-ring ("***neutron***"), a coaxial cable and a ***neutrino-antineutrino***. These three illustrations in combination can create the necessary image of the ***beta decay process***, in which the elements of these illustrations participate: coaxial insertion of the dipole arms of atom and coaxial oscillations of the neutrino-antineutrino, along with how coaxial insertions in technical execution are used in the manufacture of cable.



Meb. Pseudo ring ("neutron"). Coaxial cable. Neutrino-antineutrino.

At this point, it is important to emphasize that in spatial geometry there are only natural transformations from one state to another.

The paradigm of particles still has its place due to the fact that at the stages of cognition, scientific thinking creates a vector of dividing a whole spatial structure into separate fragments, which are much easier to cognize and describe by the apparatus of algebra separately. But it is very important to note that it is possible to understand what place each component occupies and what function it performs only when the complete picture of the whole is visualized. Feeling and describing the whole in detail, like an elephant, is already the end of this stage.

The fullness of time comes when differentiation has already exhausted itself, the fragments are cognized and a feeling of impasse and a state of crisis arises. It is then that the stage of integration and synthesis of what has already been worked out into that general picture begins, which is most clearly visible at the current stage of cognition. This picture forms a new **fundamental theory**, which requires both a **new monistic platform of generalizations** and a **new mathematics**.

Thus, the most important result in the application of Mobius Geometry to the issue of forming a "***unified theory for the physics of the "proton-electron"together***", designated by

Nobel laureate W. Heisenberg, is the possibility of obtaining explanations for a number of phenomena, in explaining which the current paradigm of physics in the format of its assumptions has difficulties.

Once again, it should be emphasized that Mobius Geometry ties explanations to reality precisely on the basis of ontology and the universality of the principle of complementarity and points to the fact that in physics there is a discrepancy between a number of step-by-step judgments and the true Nature of things. Getting explanations on a new platform points to a path that can lead to geometrization and, as a result, to a general Theory of Everything.

Let us continue the logic of the step-by-step bifurcation/fibration of the Mobius Monopole. The results of the following stages of bifurcation show that the further process of fibration leads to an increase in the number of similar Magnetic Mobius Dipoles, which remain connected into **one topological knot**. In the growing structure, a universal «***Center-Periphery»*** scheme is formed due to the **polarization orientation** of the dipoles in the **radial direction**: the connected arms of the dipoles form the Core, and the mirror-image asymmetric ones form the Peripheral shell (membrane).

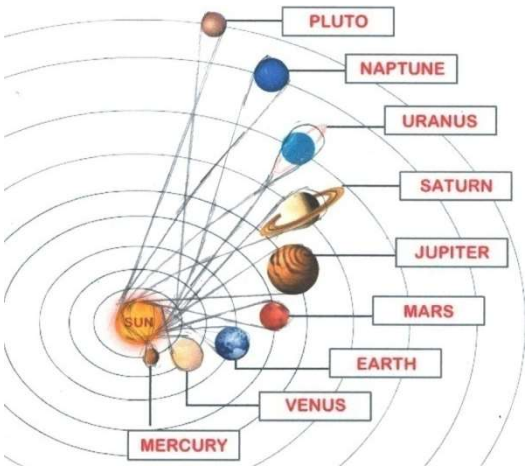
As already indicated, the effect of tension and balance between the Center and the Periphery is provided by the **gravitational** interrelation. **Quantum entanglement** connects the Dipoles into a topological knot. Thus, both interrelations based on the original magnetoelectric provide a balanced retention of the structure as a whole.

The dynamics of co-movements in the system formation according to the scheme of the topological knot "Center-Periphery" is synchronized based on the property of quantum entanglement, in which objects entangled in a topological knot interact as a whole, i.e. instantly. This property is mediated by the fact that, firstly, the original Mobius ring spins entirely, and, secondly, before fibration, all the components formed were one whole. Due to the inversion, the dipoles copied during fibration remain "entangled" and instant synchronization is maintained between them. The illustrations below show examples of subsequent bifurcations/fibrations with the formation of the "Center-Periphery" scheme, below is one of the variants of the basis of this scheme for an atom, as well as the Mobius-Dipole representation of a stellar-planetary system.









Proposing a new format for applying Mobius Geometry to the physics of atomic structure and explaining atomic components in terms of the indivisibility of the atom into particles, and presenting it as a single geometric structure based on the ontology and fundamentality of the complementarity principle, it should be noted once again that the original proposal of the atomic structure as **planetary** should be considered correct, since such a model corresponds to the universal "**Center-Periphery**" scheme, which is transferred fractally-identically to scaling levels but on each has its own form of representation. Understanding this scheme based on particles led to the consequences that are well known. A little bit of history, in connection with what events this happened.

The result of the proposal of the planetary model is a synthesis of Eastern and Western scientific thought, since even earlier than E. Rutherford, the planetary model was proposed by the Japanese scientist Hantaro Nagaoka. [27] Such a result of combining coinciding thoughts indicates that the choice of the general structural scheme is correct.

On December 5, 1903, H. Nagaoka presented a paper to the Tokyo Mathematical and Physical Society in which he described the "***actual structure of the chemical atom***." Using complex mathematical calculations, H. Nagaoka demonstrated that the atom must consist of a group of negatively charged particles, or electrons, that revolve around a massive "positively charged particle." Nagaoka compared this to a model of Saturn: the positively charged particle in the center was like a planet, and the electrons revolving around it were rings. What is especially important is that H. Nagaoka was able to show that this "Saturnian system" was physically stable.

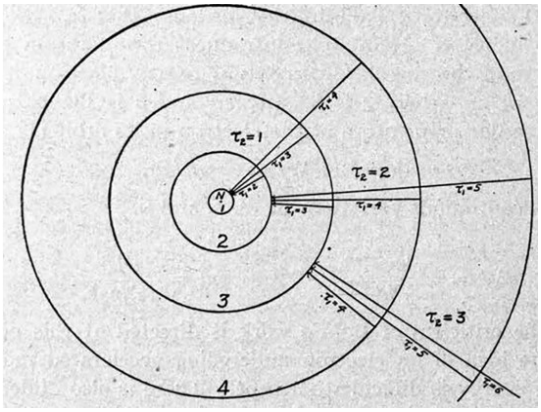


Fig.32 [28]

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. At the center is a positively charged nucleus surrounded by orbits of revolving electrons.[28]

In 1905–1906, H. Nagaoka published two articles in which, combining ideas from physics and chemistry and relying on the experience gained in Japan and Europe, he proposed his atomic model at the turn of the century.

E. Rutherford's article describing the planetary model of the atom was published **in 1911 after H. Nagaoka** had written a series of articles on the same topic.

E. Rutherford was aware of H. Nagaoka's research. He met with his Japanese colleague to discuss ideas. **In September 1910**, E. Rutherford invited him to his laboratory at the university, and in February 1911, H. Nagaoka received a letter from him in which E. Rutherford announced the upcoming publication of his article: "***You will find that the structure of the atom proposed by me is somewhat similar to what you proposed in your article several years ago***." Rutherford included a reference to the original 1904 article by H. Nagaoka in his work. [27]

As history shows, the experiments conducted by E. Rutherford with alpha particles and the conclusions drawn from them played a decisive role in who was credited with the authorship of the planetary model in history.

However, the history of physics as a science is still ongoing and it does not exclude the possibility that the interpretation of the experiments of both J. Thomson and Geiger-Marsden in terms of detailing the structure of the atom may be completely different, since the literal transfer of the “Center-Periphery” scheme from the macro-world of space to the micro-world of the atom and the presentation of the components of the atom as individual particles in the literal likeness of a planet and its satellites or a star with its planets is not the right move that scientific thought followed.

Detailing the atomic structure based on individual particles did not justify itself even with the introduction of N. Bohr’s “corrections”. The path of "particles", as further development of scientific events shows, is a dead end. Nevertheless, it was passed and conclusions can be drawn. I have reviewed the results and conclusions of the experiments of J. Thomson and Geiger-Marsden and proposed interpretations in the format of the described model of the atom based on the topological knot of the Mobius Magnetic Dipoles. [60], [70]

It should be emphasized that both the atom and the stellar-planetary system are system formations generated by the etheric Quantum Medium. The process of generation from the inside out by means of fibration is **universal** and its development comes from the "generative seed" as a priming element, which can be a region of space in which a powerful collective high-speed division of the generative granules of the medium arises, the role of which is played by Magnetic Monopoles (the effect of the ***hydromagnetic dynamo***). The generative area can remain in the state of a “black hole” for a long time, into which the exhausted spatial suspension flows until a certain moment of time’s fullness, until, according to the CosmoGenesis algorithm, the accumulation process is completed and the antiphase process of renewed generation begins.

This process is usually in an asymmetrical interrelation with the opposite process, which goes in the opposite direction in another region of space. Thus, spatial complementary pulsations occur in sub-micro-small and gigantic sizes and the Universe is constantly in such non-stop oscillations, renewing and preserving its essence. [35], [36]

The **Mobius inversion** is the geometric link that pulls the chain of all subsequent fractal-holographic universal constructions, being their most **minimal dual detailing** and **phase portrait**.

This minimal dual detailing can be expressed in digital form by binary coding symbols "0" and "1", an analog equivalent in the form of a sine wave and geometric equivalents in the form of a Mobius strip.

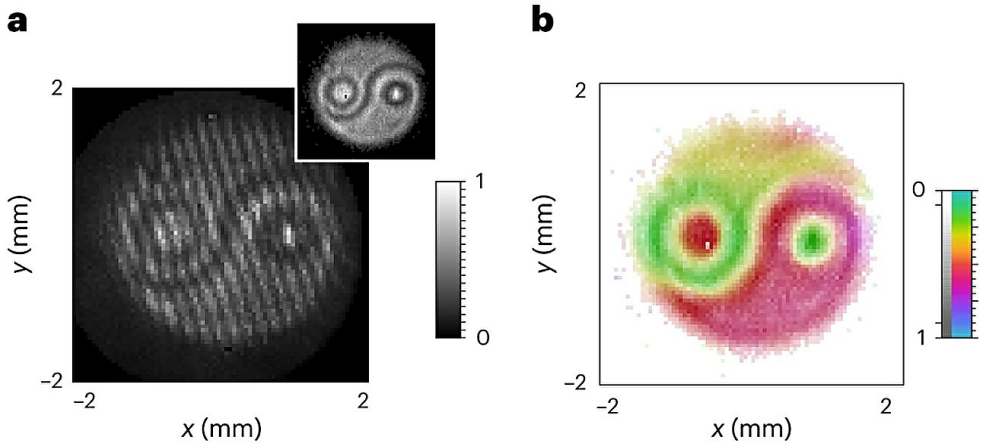
Due to the universality of magnetism and its properties to transmit its InfoGenetics to all creations, its original InfoGene of complementarity as a **universal duality template** will create a variety of forms and be present both in a photon and in an atom, both in a cell and in an organism, both in a stellar-planetary system and in a galaxy.

This **universal template** of complementary duality is transmitted from ancient times through the geometry of the "Yin-Yang" symbol. Until recently, it could be considered that the Yin-Yang pictorial symbol does not represent a category of precise scientific information, but is nothing more than a kind of philosophical display of the Two Principles of Cosmogenesis, figuratively expressed in the form of a pictorial symbol, which nevertheless represents a clear and sufficiently capacious information-graphic composition.

However, new research methods in one of the latest experiments convince us that the Yin-Yang symbol is an absolutely clear visualization of the geometric interrelations of objects in the micro-world, in particular two entangled photons, and accordingly represents strictly scientific information.

In August 2023, the authors of the publication "***Interferometric imaging of amplitude and phase of spatial biphoton states***" [26] reported the results of an experiment in which the geometric configuration of quantum entanglement of the wave function of two photons in the form of the "Yin-Yang" symbol was revealed. The article provides a holographic reconstruction of the two-photon state and the reconstructed image.

Fig. 6: Image reconstruction. [26]



a, Coincidence image of interference between a reference SPDC state and a state obtained by a pump beam with the shape of a Ying and Yang symbol (shown in the inset). The inset scale is the same as in the main plot.

b, Reconstructed amplitude and phase structure of the image imprinted on the unknown pump. [26]

The matching image in the form of the ancient Yin-Yang symbol leads to the following logical conclusion that the ancient Yin-Yang symbol is an exact **quantum copy** of the phenomenon of quantum entanglement of photons, which was obtained experimentally by the quantum holography method.

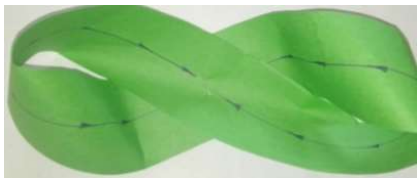
Taking into account the universality of the Yin-Yang symbol schematic, its geometric configuration fractally identically reflects the principle of universal duality and can be transferred to other planes according to holographic principle.

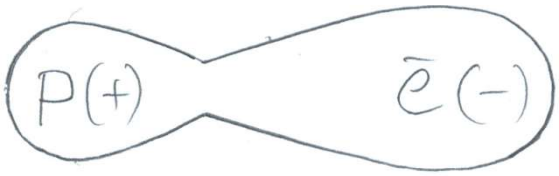
As shown in the previous work "***2. Quantum Entanglement. Mobius Geometry. "Yin-Yang" Symbol. Fibration Phases***", the Yin-Yang symbol is a two-dimensional planar display of the volumetric configurability of the Mobius strip and includes all its geometric elements. This indicates the fact that this experiment speaks in favor of the fact that Mobius Geometry is the basic foundation of nature constructions and, as noted above, is a universal template.

Offering a detailed general universal scheme "***Center-Periphery***" in the micro-world of the atom and making an application of Mobius Geometry to the atomic structure, I made with my own hands models of atomic elements of the first two periods of the Periodic Table of Chemical Elements from hydrogen (plus isotopes) to fluorine and include them in this work to visualize what I have logically deduced on the basis of the ontology of the principle of complementarity and its geometric analogue.

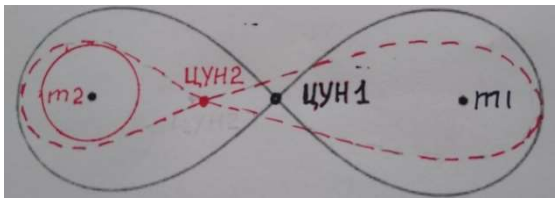
SYMBOLS ON THE SCHEMES OF ATOMIC ELEMENTS.

1. **MOEBIUS DIPOLE.**



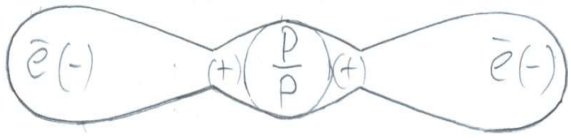






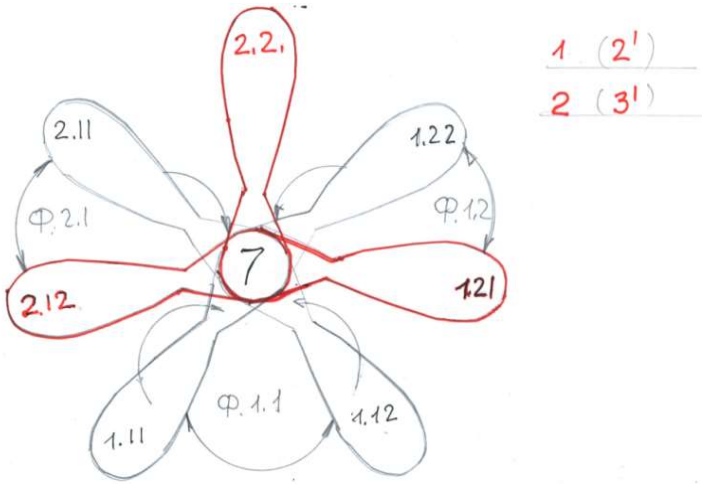
2. **LINKAGE OF TWO MOEBIUS DIPOLES.**



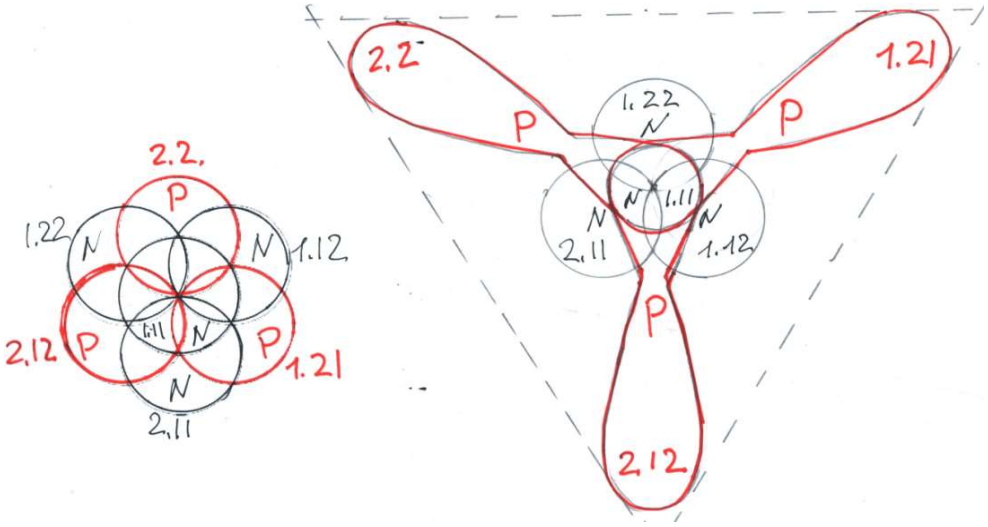


3. **N – NEUTRON.**

4. **FIBRATION** and the number of electrons of different levels using the example of a LITHIUM atom.



5. **DIAGRAM OF AN ATOM AND A NUCLEUS USING THE EXAMPLE OF A LITHIUM ATOM.**





1 (2`) и 2 (3`) – quantum levels of "electrons".

How to read the diagrams.

Dipoles (1.) or (2.) are the result of the first phase of magnetic monopole 0 fibration,
Dipoles (1.1, 1.2, 2.1, 2.2) are the result of the second phase of two dipoles fibration (1 and 2),
Dipoles (1.11, 1.12, 2.11, 2.12, 2. 21, 2.22) are the result of the third phase of fibration, etc.

The number of digits in the dipole number indicates the **fibration phase**.
Using the example of the lithium atom.
Dipole 2.1 underwent a fibration phase and formed two dipoles 2.11 and 2.12.

Before this phase, dipole 2.1 was the result of the fibration phase of Dipole 2., which formed two dipoles 2.1 and 2.2.
Dipole 2. was the result of the very first phase of fibration, in which Dipoles 1. and 2. are formed as a result of fibration of Monopole 0.

Thus, the number of digits in the Dipole designation indicates the number of fibrations and forms the number of fibration and dipole.

The General Table of Fibrations is located at the end of the atomic diagrams.

It should also be noted that the diagram of fibrations of each atom visualizes the formation of a gravitational grid around the "core", which is laid out from the gravitational tensors of the Mobius Dipoles in the "proton-electron" state.

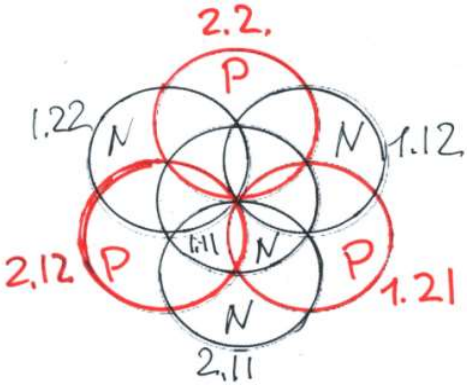
I also draw attention to the fact that the quantum levels of electrons indicated in the table of the Periodic Table of Elements in the lower left corner and the number of electrons at different quantum levels in the proposed diagrams of atomic elements coincide.

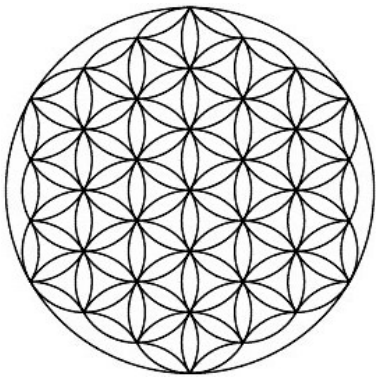
An example of a LITHIUM atom.

In the lower left corner of the Table there is 1 "electron" with one quantum level and 2 "electrons" with another quantum level.

According to the Lithium atomic scheme based on Mobius Dipoles, the fibration number will indicate the quantum level of the "electron". Lithium has 1 "electron" with a level of two fibrations – 2.2, [marked 1 (2`)] and 2 "electrons" with a level of three fibrations – 2.12 and 1.21, [marked 2 (3`)]. In total, there are 3 "electrons".

The ***proton-neutron*** packing of the nucleus will represent an alternation of "protons" and "neutrons" and, as shown by the atomic schemes, the packing will correspond to the structure of the anciently known symbol "***FLOWER OF LIFE***".



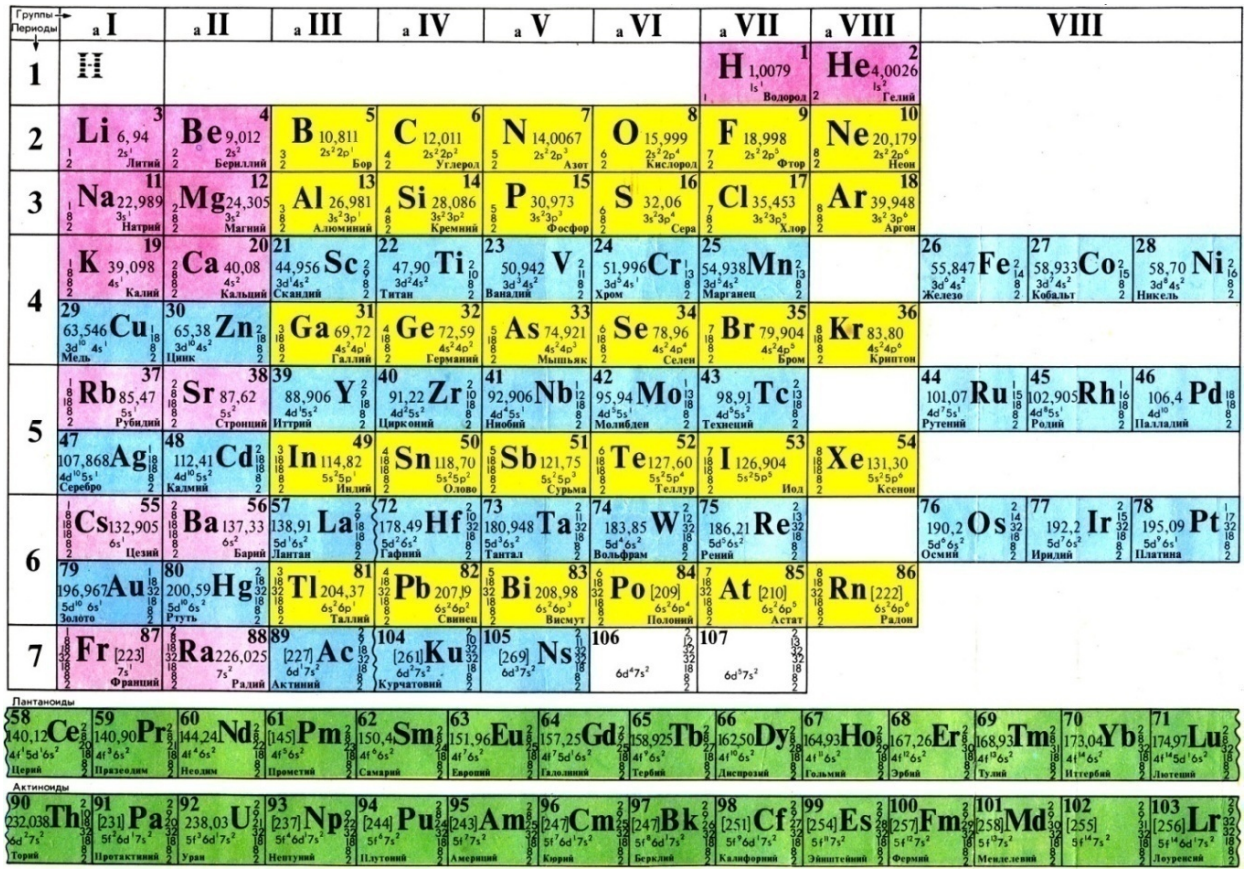


THE NUCLEUS OF THE LITHIUM ATOM. «FLOWER OF LIFE».

Each atom fills its part of the "FLOWER OF LIFE" scheme. The complete "Flower of Life" diagram of 19 circles corresponds to the element Fluorine (**F**) with an atomic weight of **19**, equal to the sum of the protons and neutrons of the atom. As this is clearly illustrated, the traditional "***Flower of Life***" diagram includes those elements of the periodic table that form the atomic "skeleton" of planetary biological life.

It should be noted that in the flat images of the atomic diagrams, the "PLATONIC SOLIDS" are captured, which have been applied to the foundations of the world order since ancient times.

PERIODIC TABLE OF CHEMICAL ELEMENTS.



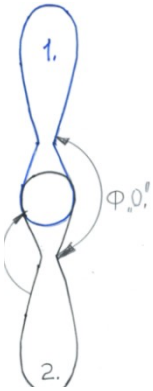
Let us illustrate the formation of atomic elements using the example of the formation of the chemical element hydrogen (PROTIUM), its isotopes – DEUTERIUM and TRITIUM, as well as the element HELIUM.

H (HYDROGEN) 1=A=Z(P)+ N=1+0; P=1, N=0

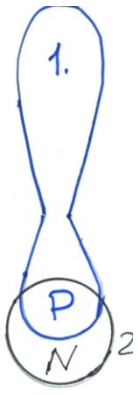
PROTIUM, `H = 1P + 1e **DEUTERIUM, ``H = 1P + 1N + 1e**







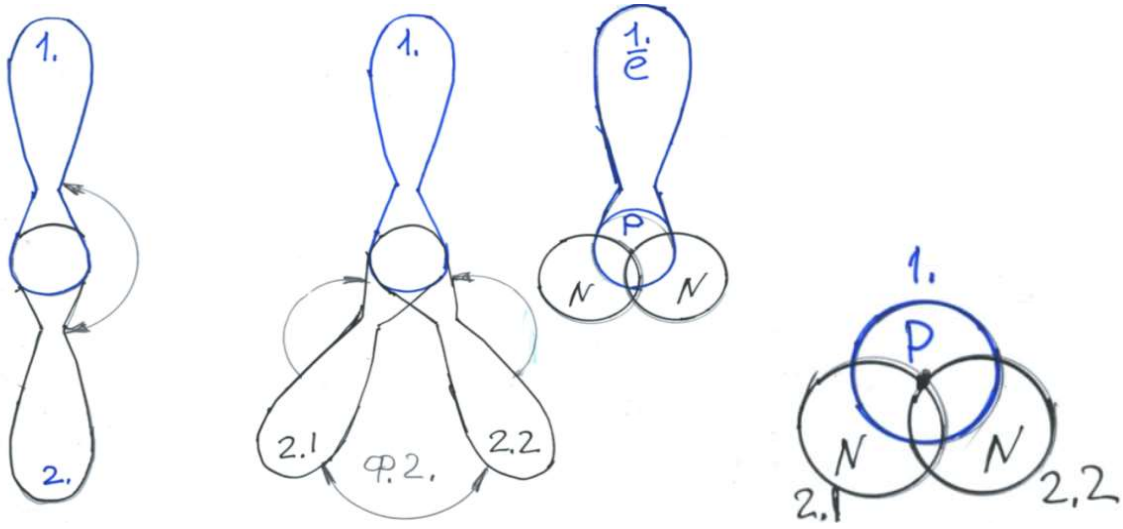




FUSION INTO NEUTRON,

PROTIUM. **FIBRATION.** **DEUTERIUM.**

TRITIUM, ```H = 1P + 2N + 1e



As illustrated, the formation of the hydrogen isotope **Deuterium** occurs during the second phase of fibration, when two bound dipoles are obtained in the "proton-electron" state. One of the bound dipoles is transformed into the "***neutron***" state, and the second remains in the unfolded "***proton-electron***" state.

The formation of the hydrogen isotope **Tritium** occurs during the fibration of one of the two Dipoles after the second phase of fibration. In this case, two of the three dipoles form two "***neutrons***", and one remains in the "***proton-electron***" state.

All fibration processes are determined by certain conditions under which the process of bifurcations launched and maintained to a certain level. From these examples it is clear that the geometric transformations of the original Magnetic Monopole determine the formulas of the resulting chemical elements, the quantization of charges and their multiplicity to the minimum charge, internally "folded" in the structure of the Magnetic Monopole. Actualization of the "charge" and its InfoGenetic copying during the sequential process of fibrations gives the charge number "Z" in the sum of the received Dipoles in the "***proton-electron***" state.

He (HELIUM),4=A=Z(**P**)+ N=2+2; **P=2**, N=2

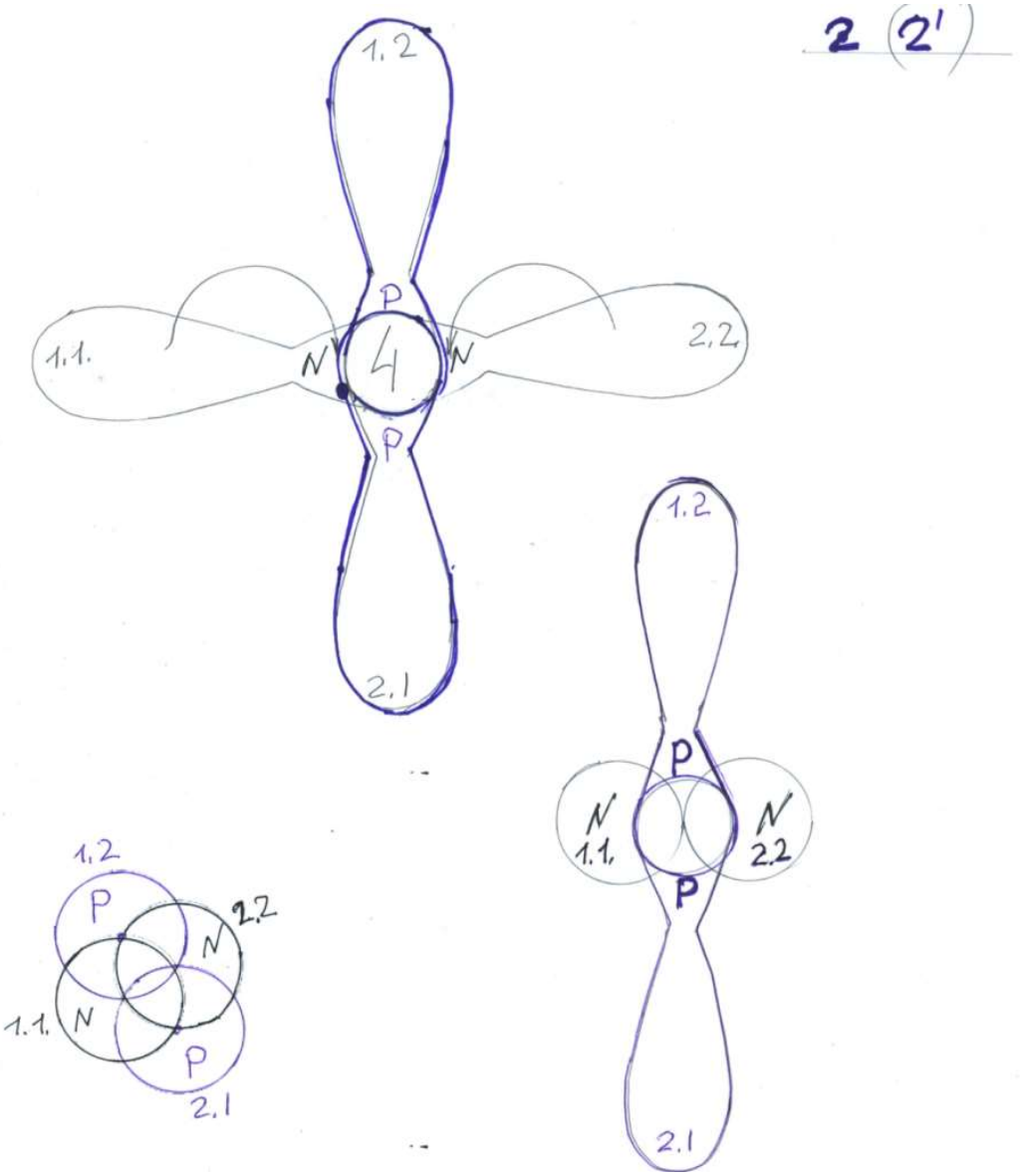


>>>>>>>>



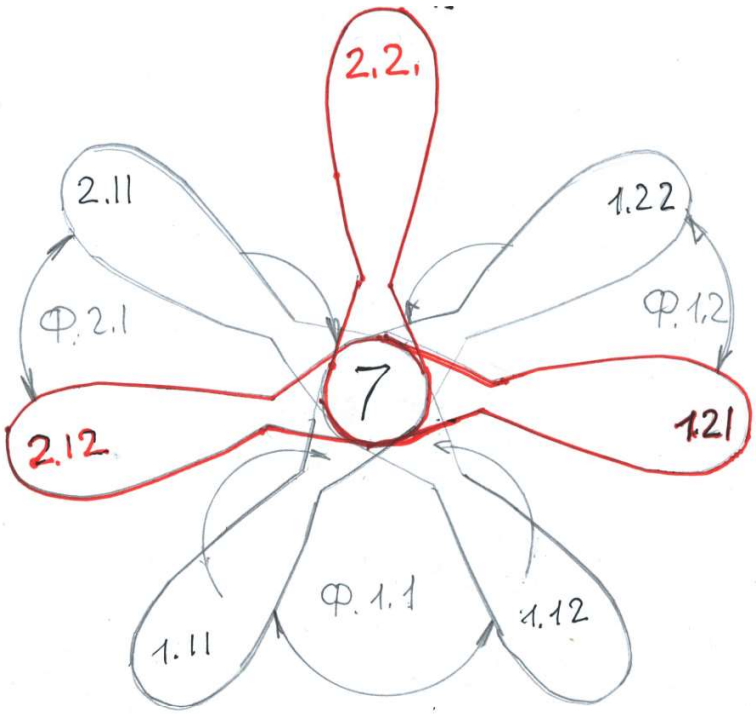
The formation of Helium is the third phase of fibration of two Dipoles, of which two remain in the "***proton-electron***" state, and two in the "***neutron***" state.

H							H 1,0079 $1s^1$ Водород	He 4,0026 $1s^2$ Гелий
Li 6,94 $2s^1$ Литий	Be 9,012 $2s^2$ Бериллий	B 10,811 $2s^2 2p^1$ Бор	C 12,011 $2s^2 2p^2$ Углерод	N 14,0067 $2s^2 2p^3$ Азот	O 15,999 $2s^2 2p^4$ Кислород	F 18,998 $2s^2 2p^5$ Фтор		Ne 20,179 $2s^2 2p^6$ Неон



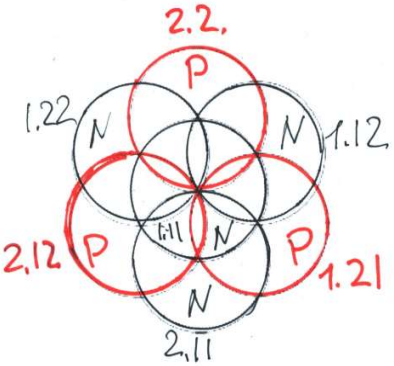
Li (ЛИТИЙ), 7=A=Z(P)+ N=3+4; P=3, N=4

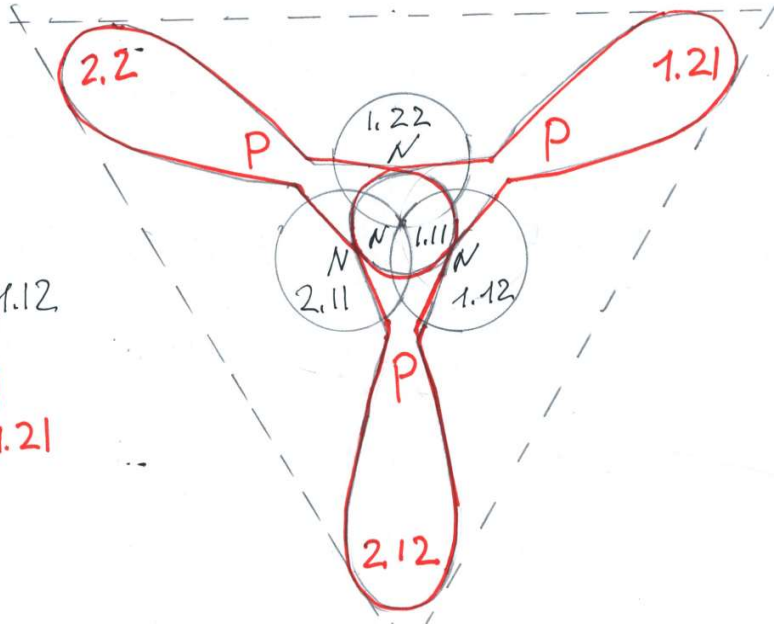
H						H 1,0079 1 $1s^1$ Водород	He 4,0026 2 $1s^2$ Гелий
Li 6,94 3 $2s^1$ Литий	Be 9,012 4 $2s^2$ Бериллий	B 10,811 5 $2s^2 2p^1$ Бор	C 12,011 6 $2s^2 2p^2$ Углерод	N 14,0067 7 $2s^2 2p^3$ Азот	O 15,999 8 $2s^2 2p^4$ Кислород	F 18,998 9 $2s^2 2p^5$ Фтор	Ne 20,179 10 $2s^2 2p^6$ Неон



1 (2¹)

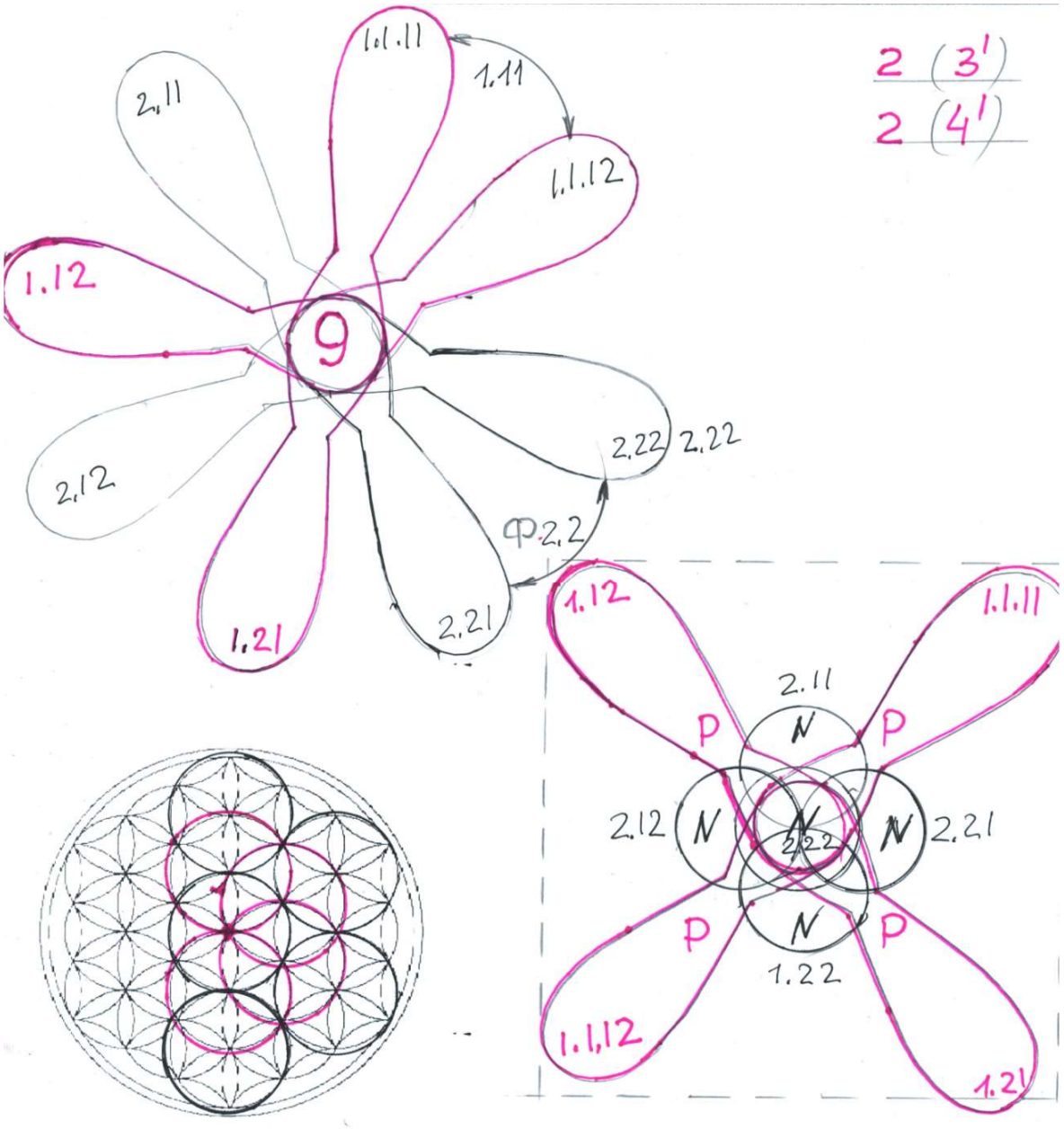
2 (3¹)





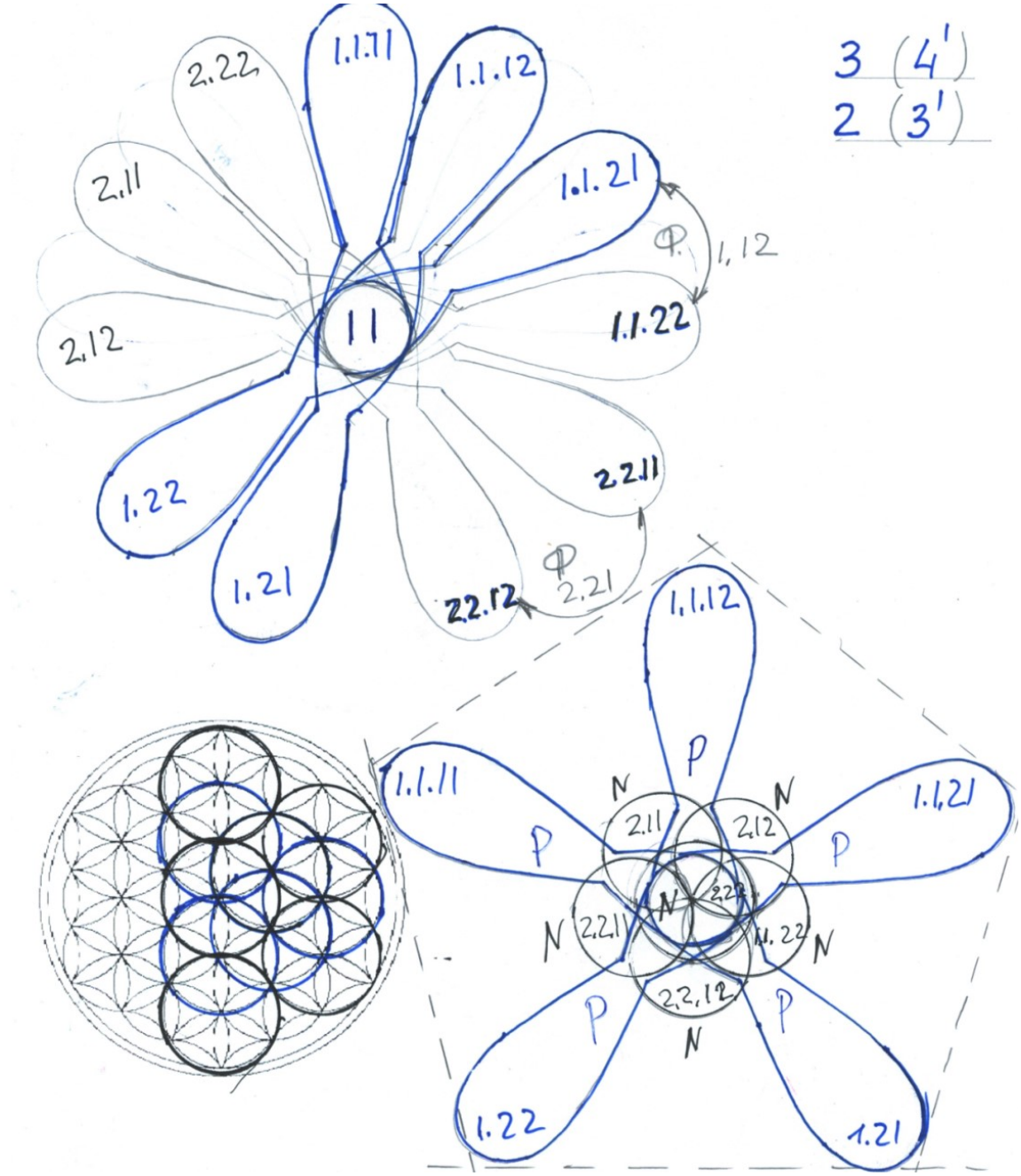
Be (БЕРИЛИЙ), 9=A=Z(P)+N=4+5;P=4, N=5.

H						H 1,0079 1 $1s^1$ Водород	He 4,0026 2 $1s^2$ Гелий
Li 6,94 3 1 2 $2s^1$ Литий	Be 9,012 4 2 2 $2s^2$ Бериллий	B 10,811 5 3 2 $2s^2 2p^1$ Бор	C 12,011 6 4 2 $2s^2 2p^2$ Углерод	N 14,0067 7 5 2 $2s^2 2p^3$ Азот	O 15,999 8 6 2 $2s^2 2p^4$ Кислород	F 18,998 9 7 2 $2s^2 2p^5$ Фтор	Ne 20,179 10 8 2 $2s^2 2p^6$ Неон



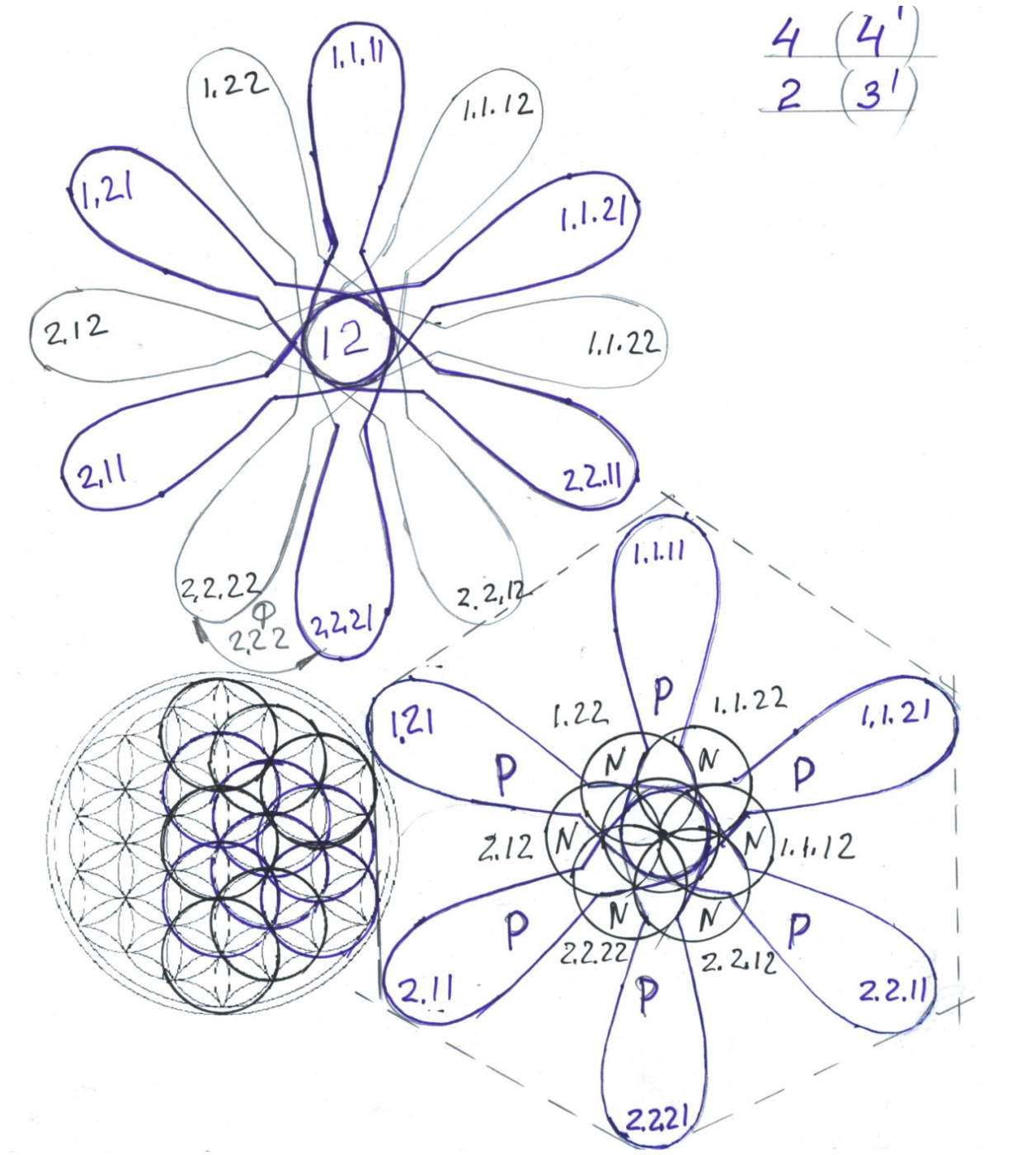
B (БОР), 11=A=Z(P)+N=5+6; P=5, N=6.

Li	Be	B	C	N	O	F	Ne
3	4	5	6	7	8	9	10
6,94	9,012	10,811	12,011	14,0067	15,999	18,998	20,179
1 2 $2s^1$ Литий	2 2 $2s^2$ Бериллий	3 2 $2s^2 2p^1$ Бор	4 2 $2s^2 2p^2$ Углерод	5 2 $2s^2 2p^3$ Азот	6 2 $2s^2 2p^4$ Кислород	7 2 $2s^2 2p^5$ Фтор	8 2 $2s^2 2p^6$ Неон



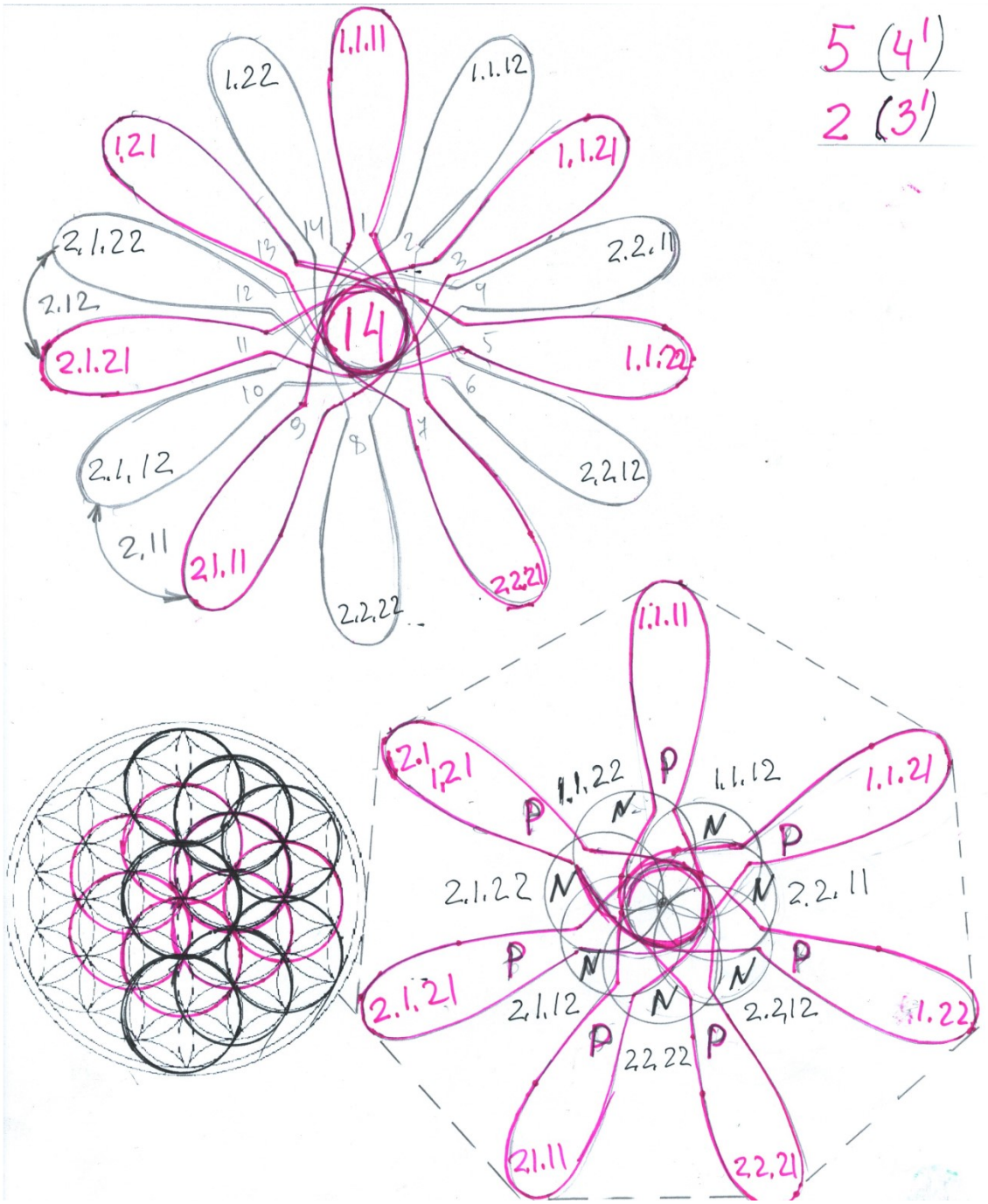
C (УГЛЕРОД),12=A=Z(P)+N=6+16; P=6, N=6.

Li	Be	B	C	N	O	F	Ne
3	4	5	6	7	8	9	10
6,94	9,012	10,811	12,011	14,0067	15,999	18,998	20,179
1 2 $2s^1$ Литий	2 2 $2s^2$ Бериллий	3 2 $2s^2 2p^1$ Бор	4 2 $2s^2 2p^2$ Углерод	5 2 $2s^2 2p^3$ Азот	6 2 $2s^2 2p^4$ Кислород	7 2 $2s^2 2p^5$ Фтор	8 2 $2s^2 2p^6$ Неон



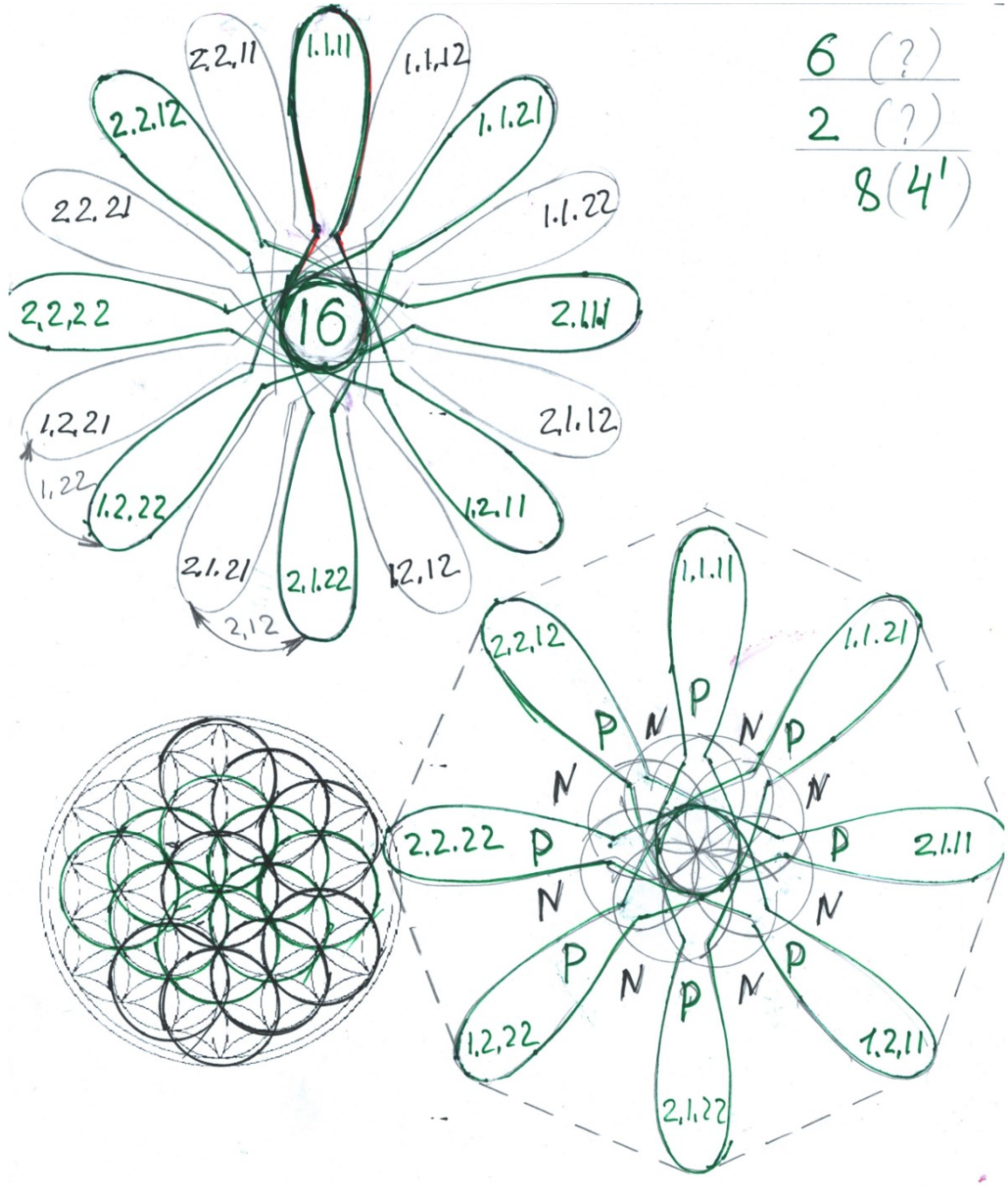
N (АЗОТ), 14=A=Z(P)+N=7+7; P=7, N=7.

Li 6,94	Be 9,012	B 10,811	C 12,011	N 14,0067	O 15,999	F 18,998	Ne 20,179
3	4	5	6	7	8	9	10
1 2 $2s^1$ Литий	2 2 $2s^2$ Бериллий	3 2 $2s^2 2p^1$ Бор	4 2 $2s^2 2p^2$ Углерод	5 2 $2s^2 2p^3$ Азот	6 2 $2s^2 2p^4$ Кислород	7 2 $2s^2 2p^5$ Фтор	8 2 $2s^2 2p^6$ Неон



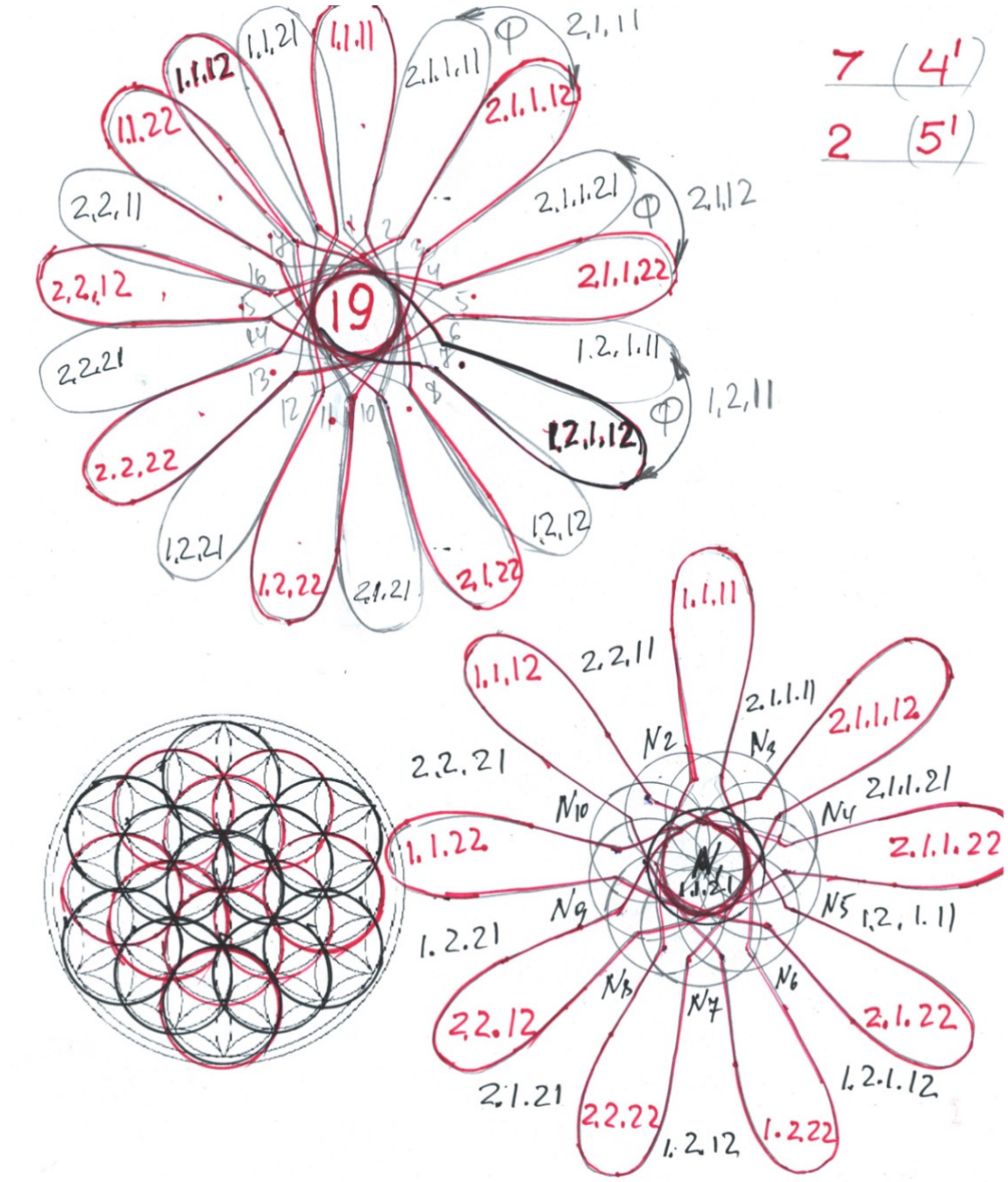
О (КИСЛОРОД),16=A=Z(P)+N=8+8; P=8, N=8.

Li	Be	B	C	N	O	F	Ne
3	4	5	6	7	8	9	10
6,94	9,012	10,811	12,011	14,0067	15,999	18,998	20,179
1 2 $2s^1$ Литий	2 2 $2s^2$ Бериллий	3 2 $2s^2 2p^1$ Бор	4 2 $2s^2 2p^2$ Углерод	5 2 $2s^2 2p^3$ Азот	6 2 $2s^2 2p^4$ Кислород	7 2 $2s^2 2p^5$ Фтор	8 2 $2s^2 2p^6$ Неон



F (ФТОР), 19=A=Z(P)+N=9+10; P=9, N=10.

Li	Be	B	C	N	O	F	Ne
3	4	5	6	7	8	9	10
6,94	9,012	10,811	12,011	14,0067	15,999	18,998	20,179
1 2 $2s^1$ Литий	2 2 $2s^2$ Бериллий	3 2 $2s^2 2p^1$ Бор	4 2 $2s^2 2p^2$ Углерод	5 2 $2s^2 2p^3$ Азот	6 2 $2s^2 2p^4$ Кислород	7 2 $2s^2 2p^5$ Фтор	8 2 $2s^2 2p^6$ Неон



The diagrams of atomic nuclei in the form of the Flower of Life show only the sequence of filling the flower, but this diagram is not a direct reflection of the complete ordering in the nucleus, which requires additional knowledge and thought.

When considering atomic schemes, one should not make the mistake of thinking that one element can be transformed into another, standing next to it, by adding or subtracting the required number of protons and neutrons. The formation of each atom is an algorithmic process of division with doubling. It should be understood that a certain number of fibrations of the original base occurs under certain conditions.

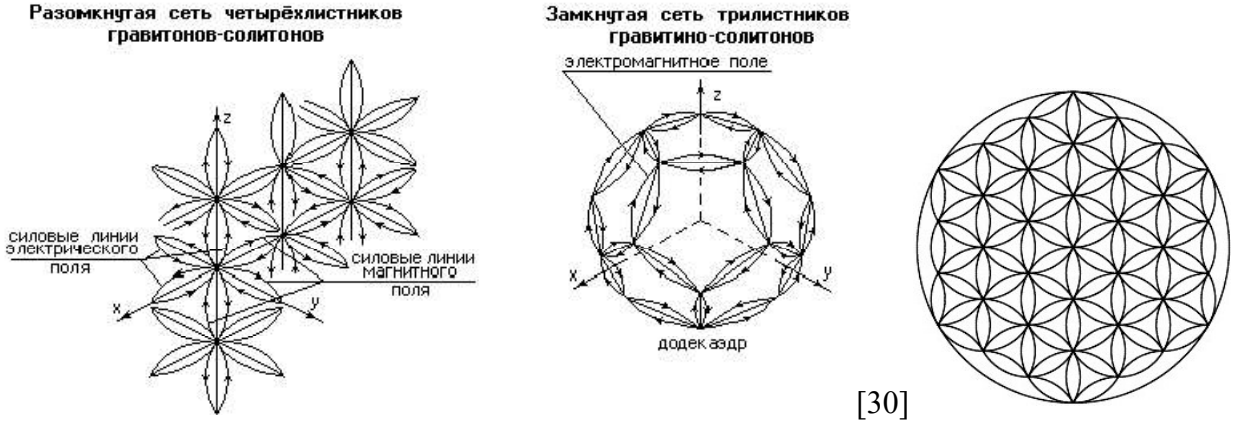
As far as science already knows, the process of formation of atoms of the first period of the Periodic Table of Chemical Elements – hydrogen and helium – mostly occurs in high-temperature generative zones of the Quantum Ethereal Medium – stars. The formation of atoms of subsequent periods occurs mainly in the layered domains (“blast furnaces”) of planetary bodies, and on the surface of the planets there are their birthplaces, that is, deposits.

The generation of matter occurs from the inside out. This process is universal and is performed according to a single general scheme by the method of bifurcation/fibration with doubling of magnetic flux. It also occurs in the cores of cosmic bodies, which are those discrete areas of magnetism (domains) where the gravitational tensor has an extremely powerful voltage.

The process of doubling of magnetic flux (magnetic loops-Monopoles) is called self-generating/self-exciting **hydromagnetic dynamo**, studied in plasma physics and in large-scale cosmic processes. **Hydromagnetic dynamo** is the method of formation of atomic elements through a high-speed continuous process of division of magnetic loops (Magnetic Monopoles). This topic is covered in the following work "***4. Hydromagnetic Dynamo. Mobius Geometry. Formation of Atoms"***.

I suggest paying attention to the illustrations of gravitons-solitons from the work of Smelov M.V. "Practical Application of Electromagnetic Solitons of Vacuum". Preprint No. F3 1-01-7, published on the website of the Academy of Trinitarianism. [30]

As can be clearly seen, the details of gravitons-solitons are based on Mobius patterns and a number of details also correspond to the pictorial symbol “Flower of Life”.



[30]

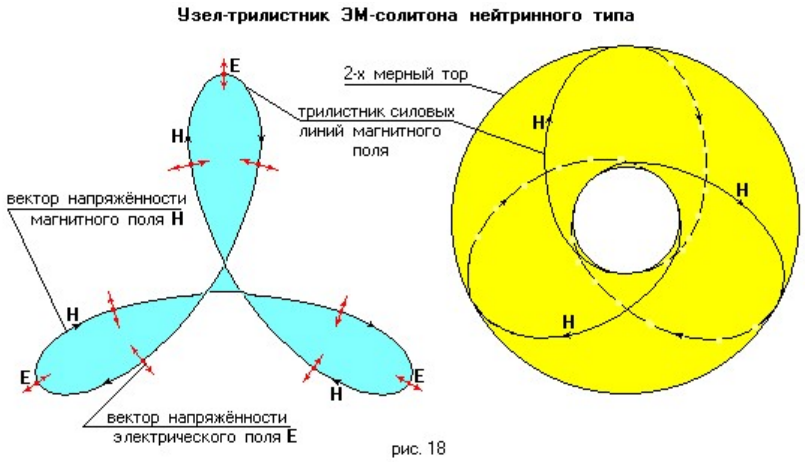


рис. 18 [30]

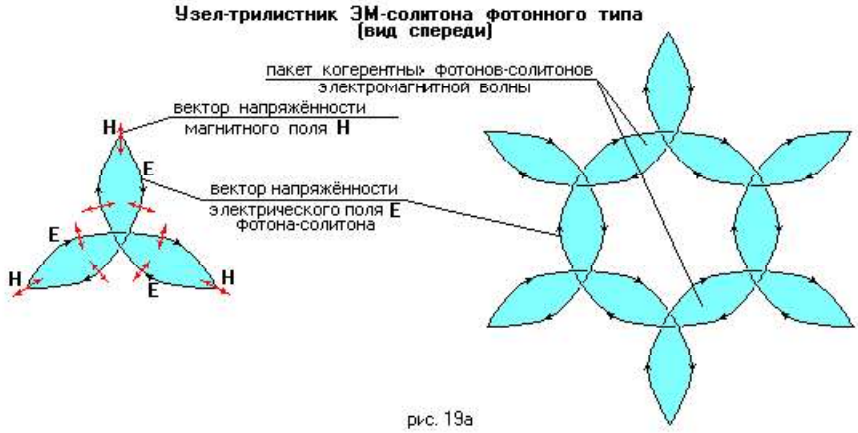


рис. 19а [30]

TABLE OF PATTERNS OF MÖBIUS DIPOLES FIBRATIONS.

		I	II	III	IV	V	VI
0	1	2	4	8	16	32	
M 0	D 0	D 1	D 11	D 111	D 1111	D 11111	
						D 11112	
					D 1112	D 11121	
						D 11122	
				D 112	D 1121	D 11211	
						D 11212	
					D 1122	D 11221	

						D 11222	
			D12	D 121	D 1211	D 12111	
						D 12112	
					D 1212	D 12121	
						D 12122	
				D 122	D 1221	D 12211	
						D 12212	
					D 1222	D 12221	
						D 12222	
		D 2	D 21	D 211	D 2111	D 21111	
						D 21112	
					D 2112	D 21121	
						D 21122	
				D 212	D 2121	D 21211	
						D 21212	
					D 2122	D 21221	
						D 21222	
			D 22	D 221	D 2211	D 22111	
						D 22112	
					D 2212	D 22121	
						D 22122	
				D 222	D 2221	D 22211	
						D 22212	
					D 2222	D 22221	
						D 22222	

If we continue to state the facts about the state of theoretical thought in physics today regarding what the concept of an “elementary particle” represents, it is worth quoting from the review "***What Is a Particle***?", published in November 2020 in the well-known web publication "Quanta Magazine". [6]

This review reflects not only all that is essential that science today can offer as incomplete answers to this question "***What is a particle?***", but also those numerous questions in the nature of particles, the answers to which, as scientists themselves admit, they do not know. The fact is that the approaches to understanding "particles" are so different that the answers can differ to such an extent that the theorists themselves, developing models, find it difficult to say whether these models complement each other or are in contradiction.

"... ultimately, the central question of science - what is a particle as a basic building block of the universe - still has one short answer: "We do not know" ..." [6]

Nevertheless, there are those achievements of science that, for a number of reasons, do not fall into such high-quality reviews of prestigious journals – this is, **firstly**. **Secondly**, even if they did, in the current period of scientific development, the types of research operate mostly in isolation and there is no interdisciplinary institute that would attract specialists capable of integrative thinking to bring together the results of both theoretical and experimental research into a single picture of the presentation. And **thirdly**, there is something that often becomes an obstacle to connecting already known elements and comprehending the real nature of what science classifies as an elementary particle. These are precisely those different tools of mathematics that often describe the same thing in different ways.

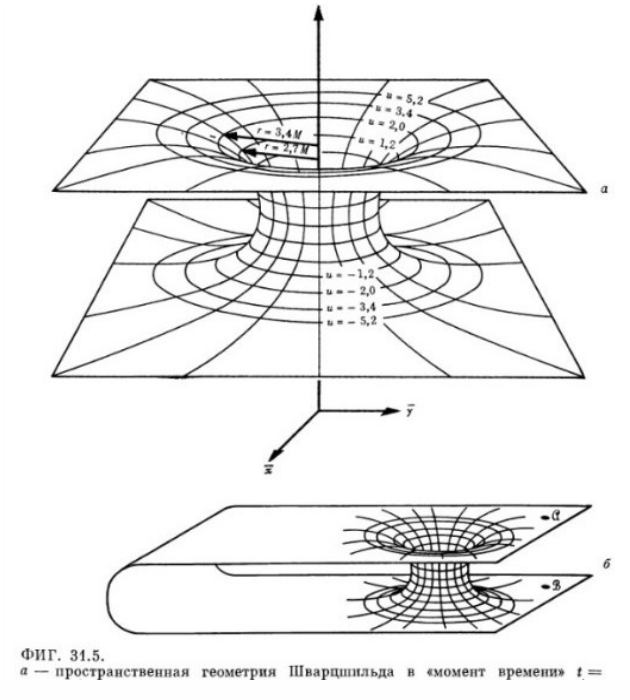
If we summarize the general mathematical calculations regarding the dual natural structure, which underlies the concept of an elementary particle or, in other words, the basic element of nature, then its details are present in the mathematical descriptions of the “**ER bridge**”, the “**Pauli square**”, the **bi-spinor** in the relativistic equation of P. Dirac, the **bound colon** of P.S. Alexandrov, the **twistor** in the theory of R. Penrose, the Majorana **fermion**, the graph “A. **Kitaev’s ladder**”, the **operator** of G. Hooft, the **vortex operator** of Joe Polchinski, the **loop operator** of E. Witten, the **time crystals** of F. Wilczek, the **construction** of D. Hestens and much more.

Despite the fact that in this regard there are achievements obtained with the help of different instruments of the algebra apparatus, although different from each other, but in mathematics there continue to be no geometric pictures of representation that would speak clearly enough about an adequate **mechanical model** of the basic element of nature. In this regard, the Geometry of Mobius quite clearly demonstrates that all the above-listed mathematical definitions in their characteristics converge on the universalism of one dual essence – the original Mobius Pattern, its properties and its phase transformations. And in its most internal essence, this dual **generator of reality** on the ontology of the original and all-encompassing Principle of Complementarity is **substantially** present in everything that exists.

It must be said that although clear pictures of the representation of the basic element of nature and its mechanics are absent in theories, nevertheless, attempts have been made in the history of science to create a visual pictorial representation. These pictures of representation are present in theories to this day, passing with some small changes from previous theoretical works to subsequent ones, since, besides them, no other authoritative opinions have yet been proposed.

If we rewind history a century back, then **in 1915** A. Einstein published his equations of general relativity. [61]

A few months later, the German astrophysicist K. Schwarzschild found a simple and beautiful solution for them, which became known as the "Schwarzschild space". The geometry of the solution indicated that the space has the form of two parallel sheets connected to each other by a bridge in the form of a "neck" or a double vortex funnel in the place where the mass-energy is concentrated. [62]



ФИГ. 31.5.
а — пространственная геометрия Шварцшильда в «момент времени» $t =$

[62]

Then, based on this geometry, A. Einstein and N. Rosen made a mathematical discovery, which boiled down to the fact that Schwarzschild's construction is a solution not only for the equations of gravitation of GTR, but also for Maxwell's equations of electromagnetism. This pointed the way to understanding not only how elementary particles of matter are structured, but also how gravity and electromagnetism turn out to be different sides of the same physics.

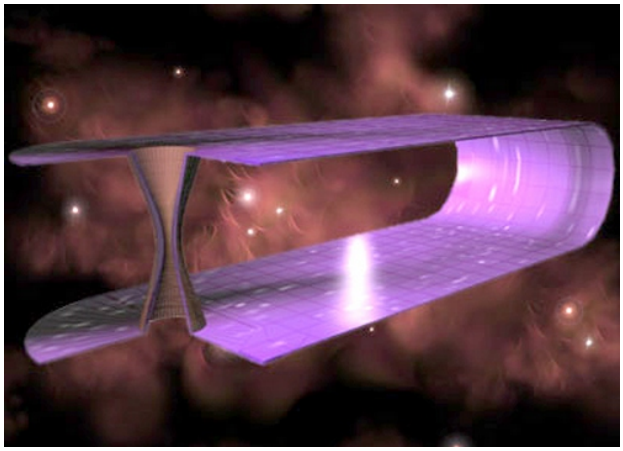
In July 1935, an article by A. Einstein and N. Rosen was published with this discovery: "***The Particle Problem in the General Theory of Relativity***". [8]

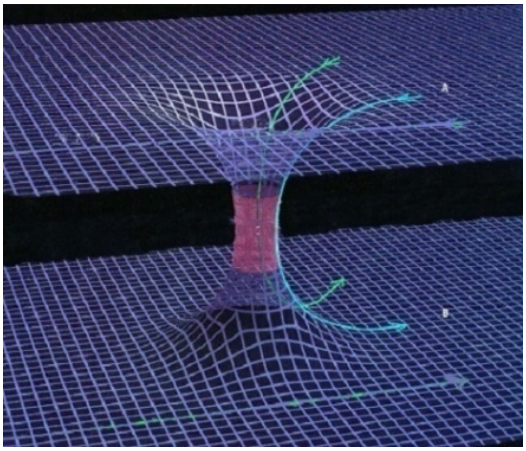
The Einstein-Rosen article was devoted to the physics of the microworld. However, in many sources, for a number of reasons, it is believed that it deals with cosmological phenomena. In search of more natural and comprehensible alternatives than quantum mechanics, which did not provide figurative representations, the authors explored ways to describe particles based on an organic unification of the equations of electromagnetism of J. Maxwell and the equations of the general theory of relativity (Einstein's equations of gravity). In the course of this search, scientists managed to find a solution. The abstract to this article says the following:

«The writers investigate the possibility of an atomistic theory of matter and electricity which, while excluding singularities of the field, makes use of no other variables than the $g\mu\ \ \nu$ of the general relativity theory and the $\phi\mu$ of the Maxwell theory. By the consideration of a simple example they are led to modify slightly the gravitational equations which then admit regular solutions for the static spherically symmetric case. These solutions involve the mathematical representation of physical space by a space of two identical sheets, a

particle being represented by a "bridge" connecting these sheets. One is able to understand why no neutral particles of negative mass are to be found. The combined system of gravitational and electromagnetic equations are treated similarly and lead to a similar interpretation. The most natural elementary charged particle is found to be one of zero mass. The many-particle system is expected to be represented by a regular solution of the field equations corresponding to a space of two identical sheets joined by many bridges. In this case, because of the absence of singularities, the field equations determine both the field and the motion of the particles. The many-particle problem, which would decide the value of the theory, has not yet been treated». [8]

As can be seen from the abstract, the calculations in the article demonstrated that if we consider physical space as a set of two identical sheets (or membranes), then the elementary particle of matter is a "bridge" connecting these two sheets. The illustrations below show two later modifications of the display of this idea of a "particle" as a bridge-tube connecting two opposite sheets of space. But in essence, we should be talking about the "***basic element of nature***", that substantial bookmark, which in the current paradigm of physics is associated with the concept of "***particle***".





As noted by the authors, the special appeal of this construction was that it managed to get rid of singularities. Thanks to the original solution of the equations using the "ER bridge" and in the absence of singularities, it turned out to be possible to determine not only the field, but also the motion of particles in this field.

From the general logic of the proposed construction, it naturally followed that the atoms of matter as systems of many particles should be represented similarly - by the usual solution for the field equations corresponding to a space of two identical sheets connected to each other through many "ER bridges".

But the facts of history are such that the authors were unable to solve the problem with many particles. Also, this two-sheet concept of space and matter could not incorporate the experimentally established effects of quantum physics.

Where did the physics of "particles" go next after this? Because of this failure, the connection between the "***ER bridge***" and the world of microphysical particles faded into the background, and this phenomenon of GTR, at the instigation of J. Wheeler, entered the history of science as a short tunnel in space-time or a cosmic "wormhole".

And to this day, this work by A. Einstein and N. Rosen is usually referred to as the very first scientific study where the possibility of the existence of so-called "wormholes" in space-time, called the "Einstein-Rosen bridge" or "ER bridge" for short, was mathematically rigorously demonstrated. And with all the talk about "wormholes", almost no one ever remembers what exactly the original article by the authors was called and in what specific context the authors' idea about the "***ER bridge***" was born.

For the reasons stated, the original illustration from Schwarzschild's work with a few modifications became the visual basis for subsequent cosmological theories and has been marching for more than a hundred years along new theoretical proposals that consider not so much models for the micro-world, but mostly for mega-objects of outer space: [81], [82], [83], [84], [85], [86], [87].

If we return to the original idea of the "***ER bridge***" as a goal to describe and graphically display the original elementary particle, then we can say that the authors of the article, considering two sheets and their interrelation through the "neck", were close enough to understanding the universal template of the structure of the World Order and came close enough to the geometry of its display using Mobius strip, even if they did not receive the final result on this unfinished image.

The following fact in the history of science should be added to the question of the geometric representation of an elementary particle in the form of an “ER bridge”. At one time, the question of representing the process of correlating **two sides of a plane** (sides of being – real and hidden) was studied by **Florensky P.A**. (1882-1937) and his works are known, where he introduces the concepts of imaginary and real sides of a plane. “**The choice of a plane as the initial element of physical space, using the concepts of projective geometry, allows us to move on to matter, to a particle**.” [17], [18]

"Soon, the work of P.A. Florensky [39] was discovered, in which he proved that the physical plane consists of an imaginary part (side) and a real part (side). In his understanding of the physical plane, P.A. Florensky saw a connection between the "basic ideas of "imaginaries" with theoretical concepts of **electrical engineering**" and pointed out that "the theory of imaginaries will find physical and, consequently, technical application."

It is indicative that he indicated that "if the area of an ordinary loop is proportional to the energy lost in one cycle of a periodic process, then the area of a mirror loop serves as an indicator not of the energy withdrawal from the original energy source, but of its introduction into this source." [17], [18]

Thus, Florensky reasoned about the direct connection of these plane reversals with the radiation-absorption phases in the electromagnetic phenomenon. And the reversals of the triangle figure described by Florensky P.A. with a change in the sign of the area occur precisely in the Mobius strip. And, as Florensky pointed out, in the sequence of combinations of triangular "loops" of the Mobius strip, the fundamental possibility of energy emission-absorption arises. This is essentially the described principle of quantum breathing. And it is the geometric properties of the Mobius template that can clearly demonstrate this, and in reality - ensure the implementation of this reciprocal process. In fact, in the above reasoning of Florensky P.A. the principle of the universal process of Mobius oscillations is reflected, which functions in the "radiation-absorption" mode, producing radiation (loss of energy) and absorption (introduction of energy) in a topological reversal. This principle is mediated by the Mobius blade inversion and is reflected in a number of existing technical inventions, such as the Archimedes screw, the

meat grinder auger, the screw and others, which can be a clear illustration of this reciprocal process.

In addition, Florensky P.A. considered the puncture-diapir as a form of connecting two sides of one plane. [17], [18]

Thus, the "***ER bridge***" is a form of connecting two sheets with a jumper tube. And the ***puncture-diapir*** is a form of connecting two sides of one plane according to Florensky. The ***jumper tube*** and the ***puncture-diapir*** are similar in their function, display the same element and generally represent the same thing – an element of the interrelation of two sides of a plane or two planes as membranes. That is, in both cases an attempt was made to display the dual interrelation, which in its essence is the basic element that complementarily connects two opposites.

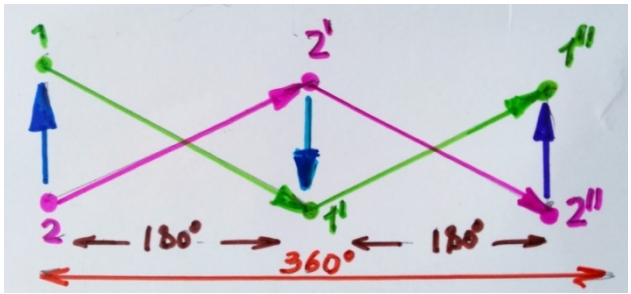
Based on the above, it is clear that scientists independently considered and tried to illustrate a form that has a mirror-asymmetric **dualism** in its geometric basis. If we combine these results of thought, then the conclusion suggests itself – two sheets of the "***ER bridge***" must be connected mirror-asymmetrically into one topology of the Mobius strip, similar to those flips of **triangular planes** that Florensky studied.

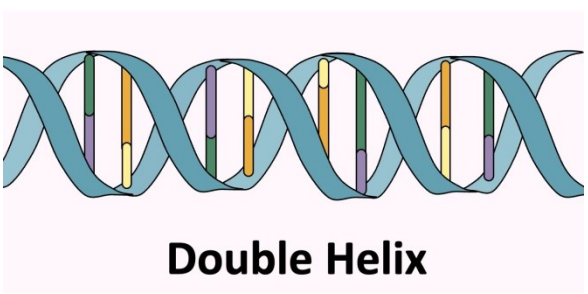
The Mobius strip with a minimum ratio of sides is laid out precisely in three equilateral triangles, which in this regard are ideally symmetrical, but have differently directed vectors of the dynamics of the internal movement (spin). In the Mobius strip, the role of a puncture or tube that implements a dual interrelation is performed by an inverse 180-degree turn, through which two sides of the plane or two membranes are connected into one topology. In this case, the transition from one side to the other is carried out dynamically smoothly and non-stop, due to the properties of magnetism.

The universal process of bifurcation/fibration allows for a continuous transfer from the state of unmanifested matter to the state of manifested matter by a universal method of copying, which is based on the same Mobius Geometry.

The idea of "bifurcation" of space, which exists in theories, can be considered reliably correct, since it reflects the universality of duality. The reason why it does not receive its final completion is the lack of a figurative representation of the bifurcation process, the implementation of which is visualized by Mobius Geometry, taking as its basis the universal method of copying through bifurcation (fibration). The correctness of such visualization is confirmed by Nature itself by the fact of the embodiment of the principle of bifurcation in its form constructions, which has been known to science since 1953, when the double helix of DNA was discovered and then the method of its replication was studied. Using DNA as an example, one can see how the principle of bifurcation is realized and works.

SELF-COPYING SCHEME AND DNA.





So far, the physics of the micro-world does not take this method into account, since the universalism of the basic element of nature has not yet been revealed and studied in the focus of the fractal-identical transfer of its general scheme from one plane of being to another or from one level of scaling to another.

As described in this work, as well as in the previous one "***2. Quantum Entanglement. Mobius Geometry. Yin-Yang Symbol. Phases of Fibration***", "***ER bridge***" and "***EPR effect***" are different in their function phenomena that are equally inherent in the micro-, macro- and mega-levels of being and between them it is impossible to put an equal sign: **ER ≠ EPR**.

Mobius Geometry helps to see the difference between these phenomena and their actualization in the phases of fibration of the original Mobius Magnetic Monopole. According to the holographic principle, gravitational interrelation and quantum entanglement are dual interrelations mediated by the universalism of the complementary principle. But these interrelations are the product of different phases of fibrations and perform different functions both in the micro-world and in the macro- and mega-. They are both equally inherent in these worlds and are system-forming interrelations in them.

Transformations in the format of Mobius Geometry help to put in their place the questions related to the historical facts of the "***ER bridge***" [8] and the "***EPR effect***" [7].

In 2015, D. Lin, M. Marcolli, H. Ooguri and B. Stoica, using the mathematics of holographic duality, obtained a result that was interpreted as proof of a certain connection between Quantum Entanglement and Gravity. [9].

The author of the article "***Philosophical Interpretation of Modern Approaches to Creating a Quantum Theory of Gravity***" Karpenko I.A. gives the following interpretation of these results, which is that quantum entanglement and gravity are dually related, namely: what manifests itself as quantum entanglement in a low-dimensional space becomes gravitational interaction in a higher-dimensional space. Then, based on the holographic principle, it becomes possible to show that gravity and entanglement are dually related, i.e., they are, as it were, an expression of the same thing, but in different-scale worlds. [63]

My comments. Despite the obtained mathematical calculations and conclusions made with the help of the mathematics of holographic duality, as well as the subsequent interpretation of the obtained data, I make a firm assertion that gravity and quantum entanglement are not equivalents from different worlds, but are fundamental interrelations that equally belong to all worlds, as well as to all levels and spheres of Being. They are actualized in different phases of fibrations and perform different functions. This is confirmed by the illustration of the phases of fibrations and the identification of interrelations based on them in format of MG.

The proposed format of Mobius Geometry in the application to the question "What is a particle?" gives quite clear answers and their illustration based on the ontology and fundamentality of the complementarity principle, starting from the visualization of the Magnetic Monopole structure, then the formation on its basis of the basic element of Nature in the configurability of the Magnetic Dipole and the construction of an atomic model based on the interrelation of the Mobius Magnetic Dipoles in the topological node of the "Center-Periphery" scheme, formed in the method of fibration of the Magnetic Monopole through its bifurcation with the actualization of the gravitational interrelation and quantum entanglement.

To the question "***What is a particle?***" the Mobius geometry format gives the following answer: the minimum formed particle of matter should be considered an ATOM, which

determines the properties of a specific chemical element and is INDIVISIBLE in its physical essence.

An **atom** is formed according to the transformations of the etheric monopole pre-substance in the algorithmic process of bifurcation of the original magnetic loop (magnetic monopole) with its doubling. The components of an atom should be considered as particle-like formations of the ether magneto-plasma (quasi-particles), into which the atom can disintegrate, but the reverse process of assembling an atom from such quasi-like particles does not seem feasible. In a free state, atomic quasi-particles can be in accordance with their time of existence outside the structure of an atom.

In addition to atomic quasi-particles, the result of the quantum symbiosis of an atom with the supporting ether Quantum Medium (magneto-plasma), as well as the result of various types of impacts on the atom and transformation processes, is a wide class of radiations of a discrete nature – portions of quanta. These radiations do not belong to the category of particles in the sense that is embedded in the concept of "particle".

A **particle** is a part of a matter that retains the chemical properties of a given type of matter and enters into chemical interactions based on the vibrational mechanism of the outer atomic membrane. Such a mechanism can be imagined using an analogy with the mechanism of gear engagement.

The fragmentation of matter to some minimal "particle" in the sense that at a certain stage of the development of scientific thought was embedded in this word is not the natural fact that takes place in nature construction. A wide class of so-called "particles" obtained on the basis of mathematical achievements of the apparatus of algebra requires a renewed understanding and corresponding conclusions.

It should also be understood that in nature there is no such force that would connect a star with its planets or the atoms of the nucleus with its periphery, or would assemble a cell together forming a biological organism or assemble its organs together with the necessary interrelations. System formation as a single organism is the result of the process of generation from inside with the actualization of system-forming interrelations that mediate interaction and actively act within the system. Forces and interactions are not obvious entities. They are an act of manifestation of the corresponding interrelations.

Taking into account the range of issues covered in the presented works 1, 2 and 3, and the conclusions made regarding the **universal duality**, which is a substantial bookmark of magnetism for everything in the form of the geometry of the Mobius template, we can state the fact that both physics and philosophy receive an answer to the question of the presence of the original substance for everything. In this regard, the geometry of the Mobius template demonstrates the connection of two sides of being (spirit and matter) into a continuous topology of a dynamic process that transforms the original etheric magneto-plasma into other types of energy, and also demonstrates the reverse transformations.

Thus, the dialectic of spirit and matter in their mutual interpenetration generates the Triad Modeling Principle – the Trinity: spirit, quantum transition zone, matter – which suggests that in the philosophical teaching of dialectics, an important third component is missing. Mobius geometry shows that the unity of two dual opposites exists for energy transformations through the quantum transition zone, and therefore the development of the stages of CosmoGenesis, and not for the struggle for existence. Such a view of the substantial basis can radically change the consciousness of not only the scientific community, but each person individually and humanity

as a whole, if, going through the stages of education, the individual receives knowledge that reflects the natural foundation and essence of things.

After the first edition of the author's monograph [35] in January 2020, I created a series articles with the application of the Möbius geometry format to issues of theoretical physics. The articles were published on the resource available to me at that time https://www.trinitas.ru/ (on my personal page). Thanks to the work of this site, my paths crossed with a number of scientists whose articles covered topics involving elements related to Möbius geometry. Such findings increasingly confirmed me in the correctness of the direction in which the application of this geometry to the main theoretical questions of physics with obtaining the necessary answers found an ever-increasing expansion in each of my subsequent works.

I will cite some fragments from the work "Notes on String Theory: Topological Modeling of Quantum Reality" by the scientist Bugaev A.F. [90]

A.F. Bugaev expresses his summarizing conclusions in the spirit of J. Maxwell, who pointed out precisely the drawing of analogies with the material sciences, which are formed on the basis of knowledge in the Observed Reality:

“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” (the 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”. [90]

That is, our entire Manifested Reality is an “answer” to the “problem” of the unmanifested Quantum Reality. What is “below” is also “above”, as it has been briefly said since ancient times. In addition, Bugaev A.F. notes the fact that "knowledge of the topology of Quantum Reality and its laws is of vital importance for all people." Note, not for mathematicians and physicists, not for experimenters and theorists of academic science or free artists-inventors, but for all people. Why? Because in understanding the Source of everything and in the topological simplicity of the manifestation of everything lies the guarantee of harmonious and balanced development of universal Consciousness, united by knowledge and fulfillment of the Universal Laws of Nature.

"The change in the properties of the QR does not occur chaotically, but in a direction: from its original state to the opposite and back to the original (the law of change). Mathematically, such a law of double change, which has limits, is described by a hyperbolic dependence: **X * Y = const**, where: **X** is the change of the original property into its opposite, **Y** is the change of the opposite property into the original. But due to the fact that the QR medium is heterogeneous, the transition of the property does not lead to an identical initial state, but to a quasi-initial state, different from the initial one.

That is, there is always a shift in the parameters, leading to torsion and rotation of the trace of movement and, consequently, 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 in its opposite and back is comparable with a quantum of Planck energy and a photon of light, therefore the topology of a quantum of energy and a photon will have the form of a Mobius strip." [90]

Also Bugaev A.F. notes the fact of the presence of symbiosis of material and holographic bodies, and consequently (I then apply my thought here) and their mutual symbiosis with quantum reality. And since any material body of the Observed Reality consists of atoms, this

resonates with the conclusion I have repeatedly expressed about the “energy symbiosis” of the atom with the Quantum Medium and the model of the atomic mechanism I have proposed on this basis.

Together with the above, the processes of “atomic metabolism” should also be considered. Only then will the gluon-quark studies become clear, which should be classified as magnetoplasmic quantum phenomena, and not attribute the essence of elementary particles to these phenomena.

“Let us single out a separate “boiling” point of the Medium as the center of the impulse of changes. Let us call it a generating center or, in short, a ***gecen***.

Firstly, the impulse of changes spreads from the ***gecen*** to neighboring points of the Medium, the same ***gecen***, causing changes in them and a response that goes both back, to the selected ***gecen***, and forward/sideways to other points. Secondly, in the ***gecen*** itself there is a process of changing states, changing properties to the opposite. Moreover, this process is simultaneously doubled, conditionally, from plus to minus and, towards, from minus to plus. The process of doubled spiral interaction of the flow of "impulse" with the flow of "response" we will call Finslerian in honor of the mathematician of the early 20th century Finsler, and the stationary state of this process we will call the system of "***impulse-response***".

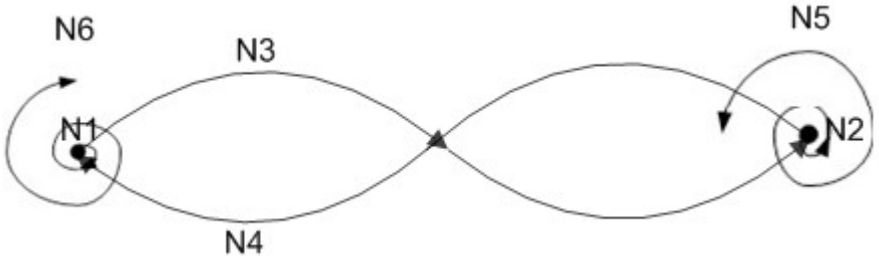


Fig. 2. Model of "impulse-response" or structure of Finslerian". [90]

Bugayev in his model points out the feature of its structure that creates a volumetric holographic whole, due to the presence in the described model of doubled flows of waves – direct and reflected.

Similar thoughts are expressed by me in the author's monograph, regardless of my acquaintance with Bugaev's works much later than the publication. But it is precisely these independently expressed conclusions that convince me that the path to understanding the structures of the World Order based on Mobius Geometry is the most direct.

"... double volume rotation of the impulse wave flows from the hetzen to the periphery of the growing sphere and the same rotating flow of response waves from the periphery to the hetzen, to the center of the "impulse-response" system. It is rotation, double-helix structure that creates the volumetric structures of this World and gives them stability, sustainability." [90]

This description is quite close in its nature to the descriptive paradigm I propose in the format of Mobius geometry. The formation of an atomic structure in my works is considered as the development of a generative granule of the Quantum Ethereal Environment, which in Bugaev's works is considered as a generalized "hetzen". A more detailed description of the model of A.F. Bugaev can be further studied in his works on his personal page http://www.trinitas.ru/rus/doc/avtr/01/1522-00.htm

As shown in the description of the Mobius Magnetic Monopole and Dipole, the connection of two opposite sides into one topology and the creation of continuous cyclo-rotations based on the properties of magnetism leads to the emission of energy quanta, that is, the

reconnection of antiphase magnetic flows in the Mobius magnetic loop leads to the release of energy. If we project the physics of this mechanism into the plane of philosophy, we can see the obvious that the connection of two conditionally separated sides of being - spiritual and material, which essentially constitute One indivisible Whole - leads to the process of generating energy, no matter in what form this energy is at the stages of development of CosmoGenesis.

The very fact that the complementary unity of antiphase opposites of magnetism, closed in one continuous topology, is the generator of reality that generates the entire visible world, creating its objects as concentrated and structured etheric magnetoplasm - the universal "plasticine" from which everything is molded according to the generation algorithm is important. Based on this, on such a visualized physical (natural) material-spiritual basis, the Hegelian philosophical paradigm of the unity and struggle of opposites is seen in a different quality, namely, not as dialectics - "division" and "conversation" (διά "through; separately" + λέγω "to speak, to communicate") - of two opposites, carried out in struggle, but as their continuous topological interconnection for the act of creation of the world according to the Triad Modeling Principle, in other words, according to the One and indivisible Trinity (spiritual, quantum transition zone, material).

A new approach to the dialectic of two opposites was once formulated as trialectic (the author of this term has not been found by me).

"... trialectics will literally mean a conversation of three, which cannot be divided into three dialogues, but at the same time a conversation in which three functionally different parts can be distinguished." [97]

"The concept chosen to designate the logic of the triune universal must reflect not just a formal division into three parts, but carry within itself the idea of integrity, which is realized through the interpenetration and mutual reflection of three unique components." [97]

The concept of the trialectic view was further developed by the scientist Sergienko P. Ya. In 1995, his book "Trialectics. A New Understanding of the World" was published [92].

On his personal page https://www.trinitas.ru/rus/doc/avtr/00/0019-00.htm works are published that cover the philosophical issues of trialectics and their connection with issues of topology.

I would like to emphasize that the approach I have proposed in the format of Möbius geometry, set out in the author's monograph, coincides with the citation given above [97] and the evolution of the thought of P. Ya. Sergienko, which he expressed when formulating the foundations of trialectical thinking:

"Trialectics is the science of the principles of a harmoniously self-developing cosmic substance, as a triune integrity of the being of EVERYTHING. The trialectics revived and developed by me is not only a philosophical, but also a mathematical system of harmonious self-development." [93]

In addition to the development of the philosophical and mathematical system of harmonious self-development, the revived Sergienko P. Ya. trialectics receives a real physical basis for the development of its principles within the framework of the monistic concept proposed by me in the format of Mobius geometry, since the template of the magnetic loop in the configuration of the Mobius strip and its properties act as a substantial basis for the above-mentioned integral trinity of the modeling principle of being.

"Trialectics as a method of scientific thinking restores substantial monism and sees the problem of ideality not in establishing the notorious dialectical "transitions" of consciousness

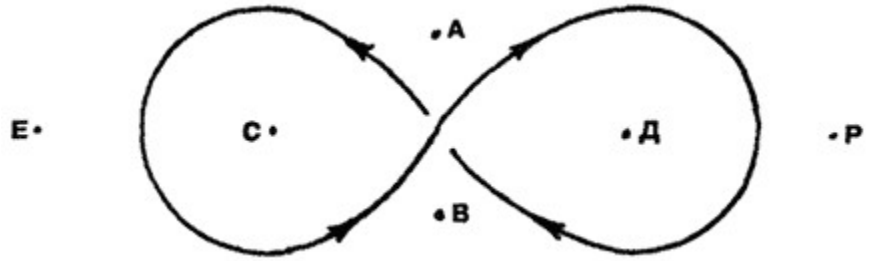
into being and back, but in revealing the mechanisms of the coexistence of material and ideal qualities of the universe." [93]

The format of the Mobius geometry allows us to obtain the disclosure of this mechanism and is covered by me consistently in the four proposed works. This disclosure is offered in as much detail as the collected cumulative knowledge allows us to do and clearly demonstrate. "The study of the discoveries of natural scientists led me to the conclusion that the fundamental beginning 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 (become stronger in geometric progression)." [95], [96]

The torsion model, personally made by Sergienko for visual illustration, was demonstrated to me by him personally in a Skype session.

Sergienko P.Ya. also suggests looking at the Universe from the perspective of the Mobius strip topology.

"... researcher P.Ya. Sergienko believes that the "expansion of the Universe" is nothing more than an optical illusion, and in this regard, many working "images of the world" recognized by modern physicists require rethinking. Considering the low accessibility of his ideas for a wide range of readers, below are extensive excerpts from his recently published work "Trialectics. A New Understanding of the World" (Pushchino: 1995, 76 p.) [92]: ... This model is a significant step forward to the truth of the space-time picture of the World, in which the movement of galaxies, stars and planets occurs along "geodetic curves" (world lines, trajectories)...



The linear space-time of the Universe, if we consider it as a system of galaxy motion, can be imagined as a moving eight-figure line of clusters of stellar galaxies. ... the direction of motion of a particular luminary (approaching us or moving away from us) can be determined by the spectrum of displacement (the Doppler effect). In accordance with this effect, galaxies are observed to be running away, stars describe intricate and incomprehensible trajectories from Earth.

Let us assume that we have the opportunity to observe from world space, at astronomical distances, a system (systems) of stars moving along the trajectory indicated by the arrows. From different observation points, the motion of the stars will be observed differently. To verify this, we will place observers at points A, B, C, D, E, P, which are located in the planes of the given trajectory of motion and at approximately equal distances from the moving stars (star systems). Obviously, different observers (we will call them by the name of the observation points), using the same method and the same observation devices, will observe different pictures of the motion of the stars. Observer "E" will see the line of motion of the stars from left to right, and the opposite observer "P" - from right to left. Observers "C" and "D" will see circular motions of the stars: one clockwise, and the other - counterclockwise. Observer "B" will watch with horror the

stellar collapse (stars running to one point), and observer "A" sees with relief that the law of universal gravitation does not work and the stars (systems of stars), instead of collapsing, run away." [94]

It should be added that the logic of the monistic concept proposed by me is in agreement with the teaching and is supported by the main conclusions of academician N.V. Petrov, the author of the work "Vitacosmology" and a number of works in which he revealed the same spectrum of the universal foundations of construction.

"There is one universal cosmic law of the conservation and development of life. One universal plan of the structure of all forms of matter and a single electromagnetic origin of all forms of radiation and matter. One universal principle of the oscillatory process. One principle of reproduction, one electromagnetic method of interaction. Such is the cosmic law of evolution through the reproduction of genetic memory. And therefore Life is the eternal mover of the divine intelligent Universe, which requires the continuous medium of ether." [98]

To the conclusions 1-20, stated at the beginning of this work, the following are added:

21. **The universal method** of bifurcation/fibration of the Magnetic Mobius Monopole and its transformation into a Magnetic Dipole provides the key to understanding the issue of charge quantization and its multiplicity to the minimum calculated one.
22. **The basic element of nature** in the format of the Mobius Magnetic Dipole visualizes the geometric transformations that constitute the essence of those atomic components that in the current paradigm are called "***proton-electron***" and "***neutron***" and demonstrates their mutual transformations.
23. **The basic element of nature** in the variant of the symmetrical Mobius Magnetic Dipole is the basis of the atomic structure and contains the physics of **opposite charges**, their **sign**, magnitude, the method of their interaction through the gravitational tensor of tension and balancing and the concept of **mass**.
24. **The basic element of nature** gives a visual representation of the natural four-dot, grouped "two by two" in the development of the duality principle, originally contained in the structure of the Magnetic Mobius Monopole.
25. **The basic element of nature** illustrates the **gravitational** interrelation, the principle of its actualization and functioning based on magnetism, as well as its action at all scaling levels.
26. **The basic element of nature** illustrates the process of reducing symmetry, which leads to the formation of a universal "***Center-Periphery***" structure, which is inherent in all scaling levels.
27. **The model of the atom** based on the described basic element of nature with a decrease in its symmetry creates a new visual representation of the planetary model of the atom, atomic quantum mechanics and rhythmodynamics of its functional components, their interrelations, corresponds to **line atomic spectra** and does not contradict the **classical laws** of electrodynamics.
28. **The formation** of the atomic weight and total charge of an atom are quite clearly visualized in the atomic model based on the Mobius Magnetic Dipoles connected in a **topological knot** and forming the “Center-Periphery” scheme.
29. The **atom** is a product of the generation of the etheric Quantum Medium in the process of bifurcation/fibration of the etheric vortex magnetic monopole (monopole macro-region)

and that minimal part of a certain type of matter, which preserves the stable nature and properties of this matter, i.e. its **minimal particle**. All other formations classified as particles are quantum formations of the vital activity of the atom in the process of its quantum respiration, metabolism and symbiosis with the ethereal Quantum Medium, as well as the result of processes continuously occurring in the cosmic environment.

30. **The internal mechanics** of the atomic mechanism is based on the functioning of vortex dipole components connected in a topological knot and synchronized by quantum entanglement. The balance of the asymmetric arms of each vortex dipole formation is maintained due to their gravitational interrelation.
31. **The internal atomic rhythmodynamics** is determined by the synchronized spinning of the ring vortex dipoles and their mutual interrelations. The product of the atom's vital activity is radiation, which is produced by the atom in its regular quantum symbiosis with the etheric Quantum Medium or with various types of impact on the atomic structure.
32. **Dipole atomic formations** can be destroyed, but it is impossible to perform the reverse action on them to connect them back. There is no method in nature for connecting individual «parts» into a stable and consistent atomic system formation (stellar-planetary), as well as forces for this. Any system is generated from the inside out and its growth is carried out in the same way. In the method of generation from the inside, the actualization of those interrelations occurs that are necessary for maintaining the system as a single whole.
33. The **basic element of nature** based on the FPC allows us to consider the physics of the micro- and macro-world in one geometric format and brings the scaling levels to one initial denominator.

According to the opinion of theoreticians of physics the goal of constructing a unified field theory and the goal of geometrizing physics are the same – constructing a **monistic concept of particle dynamics**.

Scientist Rylov Yu.A. proposes to fully describe the geometry of space-time using the distance function (world function), and this idea is quite relevant. As far-sighted physicists-mathematicians believe, this should be possible, since it is assumed that the geometry is fully and only fully described in terms of the world function. This geometry is considered physical and allows for a coordinate-free description.

In the proposed format of Mobius geometry, a geometric object is considered not an abstract mathematical point, but a unit of the matrix of the etheric Quantum Medium, which is the minimal region of physical space – a vortex formation in the form of a closed Mobius strip with a minimal ratio of its sides. This single vortex formation is a universal template of duality, according to which CosmoGenesis unfolds. In other words, this template is a framework for subsequent geometric transformations. The dynamics and form of movement of this framework in space is the implementation of the phases of a two-cycle revolution. Such spinning mediates continuous oscillations and creates a corresponding level of vibration. Also, in the descriptive approach to the issue of the magnetic monopole, geometric constructions are proposed and the diagonal interaction of the four-point function in the space of a square is described, which is presented in the work "***1. Quantum Medium. Mobius Geometry. Magnetic Monopole***".

The described unified picture forms a new fundamental theory, for which a new monistic platform of generalizations is used – the geometry of the Mobius strip.

Taking into account the above, one can ask the question: is there a need for a new mathematical apparatus or does the type of mathematical apparatus exist with the help of which it is possible to describe such a dynamic physical “point” of space with its mechanical and magnetoelectric properties, which form the framework of its parameters, or is a new mathematical apparatus necessary? Is this new apparatus in this case a well-forgotten old one, namely, is it possible to give a classical description?

"The direct connection between the geometry of space and dynamics was apparently well known to Isaac Newton. In his "Principia" he often described dynamics in geometric terms. However, he was unable to carry out the "geometrization" to the end due to the insufficient development of the mathematical apparatus of geometry. Descartes' invention of the coordinate description of geometry and dynamics made the coordinate system an intermediary between geometry and dynamics. After this, the coordinate system essentially became an attribute of geometry in the sense that the mathematical apparatus of modern geometry cannot do without a coordinate system. At the same time, there is an understanding of the fact that the coordinate system is only a way of describing geometry.

Nevertheless, there is no coordinate-free formulation of the geometry of space-time, although such a formulation should exist, since the coordinate system is only a way of describing geometry." [88]

Since September 2021, I have been exchanging ideas on some issues of theoretical physics, including the construction of a unified general theory, with Academician of the Russian Academy of Natural Sciences G.I. Shipov, the author of the Theory of Physical Vacuum. [17]-[22]

Scientific exchange helps in crystallizing one's own thoughts, significantly expands the area of attention and replenishes the knowledge base of both parties, and also stimulates the activity of scientific tone. G.I. Shipov is the author of the theory, the creation of which he devoted his entire life. His latest publication and book "***Fundamental Results of the Theory of Physical Vacuum***" [22] is the achievement of scientific thought that makes a significant contribution to the program for creating a unified field theory.

I made a short review of this book [22] in my first work "***1. Quantum Medium. Mobius Geometry. Magnetic Monopole***". Continuing the topic of our exchange of opinions, I provide a quote from personal correspondence with G.I. Shipov:

"I read your publication "Image of an Atom". It is wonderful when the presentation of the material is conducted by a person with imaginative thinking, as you are.

For many years I have been observing the stagnation of physical thought in theoretical physics, which has led to the flourishing of mathematical physics (this is not bad), but is accompanied by marking time due to the lack of imaginative thinking. What you do in your works using Mobius geometry has a beneficial effect on the minds of theorists who know a lot formally, but do not realize the essential things that formal calculations bring with them." ***Academician of the Russian Academy of Natural Sciences Shipov G.I. (***From personal correspondence on **Wednesday, April 3, 2024 at 11:45:56 AM EDT, Gennady Shipov** <warpdrive09@gmail.com>)

"I read your article "Fibration of the Mobius Energy Pattern and Hopf Fibration" on the trinitas.ru website, which surprised and pleased me very much. In other words, it resonates with

my thoughts. I am a theoretical physicist and I am engaged in the unification of physical theories in the spirit of Einstein's Unified Theory."
September 15, 2021.

"Your versatile creative abilities and strong intuition are amazing. I and a group of my followers are preparing the second international conference "Physical Vacuum – the paradigm of the 21st century". I have an offer to you to speak at this conference. The conference is scheduled for November 2021. In addition, we are starting seminars on this topic. The seminars will be held in Moscow City in the Empire Tower on the 52-nd floor. I invite you to speak at our seminar."
September 16, 2021.

"There are two ways of knowing Reality – inductive (from the particular to the general) and deductive (from the general to the particular). Modern Western physics uses mainly the inductive method, relying on a private scientific experiment and generalizing already developed and generally accepted physical theories. The deductive method is used by people with advanced Consciousness. They are given the opportunity to receive Knowledge through a communication channel from the Data Bank, which is a set of Laws by which the Universe exists and develops. It seems that you have just such a channel.
September 23, 2021.

"... personally, I like your views on the Mobius geometry, which is associated, as we know, with the spins (3D) and spinors (4D) of particles, with a clear entanglement of wave functions shown on the Mobius strips."
October 21, 2021

"Now about the Mobius geometry. This geometry is used in my work and in the work of other theorists and mathematicians. In physics, this geometry assumes the existence of a spinor frame of reference, which was first introduced in physics by Paul Dirac in 1928. Mathematicians know all this well, but physicists are silent about it. Why? Because it leads to a revision (obviously to a generalization) of the foundations of modern physics. In theoretical physics, this is the most difficult and highly skilled work. Part of your work is related to these issues. It is up to you to decide what to emphasize in your report. "
October 25, 2021.

"I received your articles and read them with great interest.

I believe that you have found the right way to generalize the theory of Physical Vacuum.

Your analogies and examples of the Clifford-Mobius-Hopf bundle have deep connections to modern physics. I especially liked the unification of symmetry-asymmetry on the image of the Mobius strip (monopole) and its generalizations. "
May 15, 2023.

"I am sending you my report at the conference on December 9, 2023 "**Fundamentals of Physics and Mathematics**" https://www.youtube.com/watch?v=FlqvQ258Fro&t=167s

60 people participated in the conference. Of these, about 30 in person and 30 in absentia. There were participants from other countries. As for the Mobius geometry, it is this that underlies the theory of Physical Vacuum. Mobius geometry requires a separate and rather serious conversation. Not all geometers know it, not to mention physicists."
March 8, 2024

Fri, Mar 8 at 7:49 PM (2024)

Dear Gennady Ivanovich!

Yes, Mobius Geometry is, let's say, an unplowed field, which must be walked through with a plow and more than once even after the Pioneer.

I believe that you have already read my work "Mobius Geometry on the Podium of Science", which outlines and describes the tendency of its penetration into science, as well as the peculiarity of the modern stage, when MG is pushing into all areas and storming brains.

It is very important, firstly, to be in the emerging flow of the new and, secondly, to be ahead, and not to drag along at the tail.

I believe that MG is a fundamental element that will most likely put all the unformed PUZZLES together.

And if not all geometers know it, and especially physicists, then those who have already "felt" it and understand its place and significance for explaining natural phenomena and creating new perspectives on its basis – the flag in hand.

You hold your flag in the wind and this is important!

I wave mine and pass on the "Morse code of MG" to those who can read it.

Your words are the main gift!»

ACKNOWLEDGEMENTS.

I thank E.M. Babosov, Doctor of Philosophy, Professor, Academician, Full Member of the National Academy of Sciences of Belarus for thoughtful review of my dissertation and review about the research work – monograph “Substance. Atom. Theory of Everything” – as well as for participating in a joint article. [89]

I thank (posthumously) A.G. Grivachevsky, Candidate of Technical Sciences, Associate Professor, Executive Director of the State Scientific and Technical Program “Information Technologies”, Head of the Laboratory of Modeling of Technological Processes, for comprehensive assistance and help in contacts and publications in the scientific collection of IAIT, scientific support and attention to my research results.

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