

Structures of the atomic nucleus

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Abstract.

There is no space without matter, and no matter outside of space. Dynamic space-matter is considered as a single entity. In dynamic space-matter, Euclidean space-time is a special case of a fixed state of dynamic space-matter. In such a dynamic space-matter, the mass spectrum of elementary particles is considered, and the charge of the proton and electron is calculated. The structures of stable atomic nuclei are examined.

1. Introduction.

Modern physics is confronted with numerous problems and facts that go beyond its theoretical concepts. The theoretical models and fundamental concepts themselves are largely contradictory. For example, they said that the Higgs field creates particle mass. But how the "Higgs field mass" creates the gravitational force of attraction between two masses is something they forgot to explain. There is no answer. Moreover, it is contradictory. Does mathematics answer the question HOW? Does physics answer the question WHY? We will seek physical causes. This is very important.

If (+) is the charge of a proton (p^+), in quark ($p = uud$) models it is represented by the sum: $q_p = (u = +\frac{2}{3}) + (u = +\frac{2}{3}) + (d = -\frac{1}{3}) = (+1)$, fractional charges of quarks, then the positron, or quarks, does not have exactly the same (+1) charge (e^+). This model and representation of the (+) charge does not correspond to reality. This is a fact. A proton does not emit a photon in the charge exchange interaction with an electron in an atom. This is also a fact. Electrons with the same (-) charge do not repel each other in the exchange interaction at close distances in the orbitals of an atom. However, electrons are attracted to the (+) charge of protons at distances 100,000 times greater, in the nucleus of an atom. Coulomb's law does not apply here. The Euclidean axiomatics itself has its own unresolvable contradictions. For example,

1. A set of points in a single "partless" point yields another point. Is this a point or a set of points, defined by their elements and their relationships?
2. A set of lines with the same "length without width" again yields a line. Is this a line or a set of lines, defined similarly?

Euclidean axiomatics provides no answers to such questions. While these axioms were generally accepted in BC times, for measuring areas, volumes, and so on, they simply don't work in modern research. This, and many other fundamental contradictions, remain unresolved in theories. For example: In Newton's law $F = \frac{GMm}{(R \rightarrow 0)^2} \neq \infty$, where (R) The distance between the centers of the spheres. Neither physics nor mathematics apply here (dividing by zero is impossible). If a small ball is dropped into the diametrical hole of a large, massive sphere, ($R \rightarrow 0$) the force does not increase to infinity. Hence, the simple conclusion that gravity only applies outside the sphere.

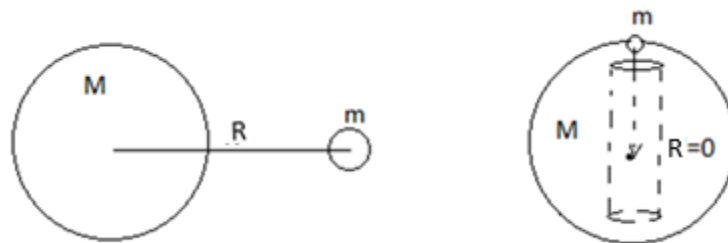


Fig. 4 a . Newton's law

And we have no reason to believe that protons, for example, are located in the center of the galactic core. On the contrary, mathematics suggests the existence of $(R < R_0) = \frac{2GM}{(v_i > c)^2}$ superluminal velocity space: ($v_i > c$), inside ($R < R_0$) such "black spheres (R_0)," called "black holes." There are no holes, ($M \neq 0$). A photon traveling at the speed of light ($v_i = c$) cannot enter superluminal velocity space ($v_i > c$). It will orbit such a (R_0) "black sphere."

The same applies to questions of zeros in division. $\frac{0}{0} = \frac{0=12-12}{0=15-15} = \frac{4(3-3)}{5(3-3)} = \frac{4}{5}$ A zero-point physical vacuum can contain anything we can't see. This applies to the mathematical truths of "black holes," and it applies to the various energy levels of the physical vacuum. This is what mathematics says. By "tuning to a certain frequency," we can penetrate deep into the physical vacuum. And we understand that the square of the frequency gives the density of space-matter.

The fundamental fact is that there is no matter outside of space, and no space without matter. Space and matter are one and the same.

The main property of matter, motion, is represented by dynamic space-matter, with non-stationary Euclidean space. It follows from the properties of Euclidean axiomatics. Straight lines of dynamic ($\varphi \neq const$) beam, do not intersect the original line ($AC \rightarrow \infty$) at infinity (Figure 1), that is, they are parallel.

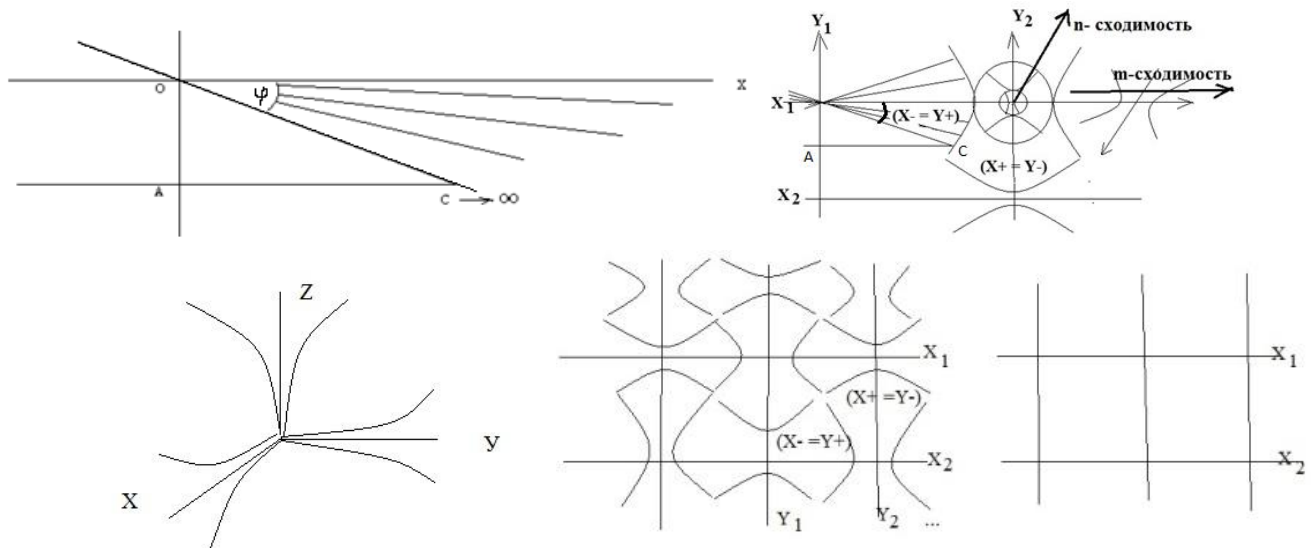


Figure 1. Dynamic space-matter.

This means that when moving along the line AC, there is always a space (X^-) that we cannot enter. Infinity cannot be stopped. Therefore, the dynamic (X^-) space-matter of a bundle of parallel straight lines always exists. The second point is that Lobachevsky considered his geometry, "pan geometry," to be imaginary, that is, real at large distances. In our case, at large OA, the angle of parallelism increases, and at small values of OA, at small distances, Lobachevsky's geometry transitions to Euclidean geometry. That is, the angle of parallelism converges to zero. But at small distances of the vector AC, in the microworld, on the contrary, the angle of parallelism is limiting, with the well-known uncertainty principle.

Orthogonal bundles of straight lines-trajectories (X^-) and (Y^-) have their own external (X^+) fields (Y^+). They form Indivisible Localization Regions ($X \pm$). ($Y \pm$) In this case, Euclidean space with a non-zero and dynamic angle ($\varphi \neq const$) Parallelism in each (XYZ) axis loses its meaning. But this is the real (X^-) space, along the (X^-) axis, of a dynamic bundle of straight lines, which we do not see in Euclidean space. In 2-dimensional space, a zero angle of parallelism ($\varphi = 0$) for (X^-) and (Y^-) lines yields Euclidean straight lines. This means that in the limiting case of a zero angle of parallelism ($\varphi = 0$) in each axis, dynamic space-matter transforms into Euclidean space, as a special case of dynamic space-matter. As we can see, any mathematical theory is limited by the limiting ($\varphi = 0$) case of Euclidean axiomatics. At the same time, in Nature, there are no two identical units in the number system. These are profound and fundamental changes in the very technology of theoretical research that shape our understanding of the world around us. As we can see, in the Euclidean representation of space, we do not see everything. Euclidean models provide only the framework of reality.

So dynamic ($\varphi \neq const$) space-matter has its own geometric facts, as axioms that do not require proof.

Axioms of dynamic space-matter

1. Non-zero, dynamic angle of parallelism ($\varphi \neq 0$) $\neq const$, a bundle of parallel lines, defines mutually orthogonal parallel lines (X^-) $\perp$ (Y^-) of the fields of lines - trajectories, as isotropic properties of space-matter.

2. Zero angle of parallelism ($\varphi = 0$) gives "length without width" with zero or non-zero (Y_0)- the radius of a sphere-point "having no parts" in Euclidean axiomatics.

3. A pencil of parallel lines with zero angle of parallelism ($\varphi = 0$), "equally located to all its points", gives a set of straight lines in one "widthless" Euclidean straight line.

4. Internal ($X -$), ($Y -$) and external ($X +$), ($Y +$) fields of non-zero trajectory lines $X_0 \neq 0$ or $Y_0 \neq 0$ material sphere-points, form an Indivisible Area of Localization $HOI(X \pm)$ or $HOI(Y \pm)$ dynamic space-matter.

5. In the unified fields ($X - = Y +$), ($Y - = X +$), of orthogonal lines-trajectories ($X -$) $\perp$ ($Y -$) there are no two identical spheres-points and lines-trajectories.

6. A sequence of Indivisible Areas of Localization ($X \pm$), ($Y \pm$), ($X \pm$) ... by radius $X_0 \neq 0$ or $Y_0 \neq 0$ sphere-point on one trajectory line gives (n) convergence, and on different trajectories (m) convergence.

7. Each Indivisible Area of Localization of space-matter corresponds to a unit of all its Evolution Criteria – KE, in a single ($X - = Y +$), ($Y - = X +$) space-matter on ($m - n$) convergences ,

$$HOI = K\mathfrak{E}(X - = Y +)K\mathfrak{E}(Y - = X +) = 1, \quad HOI = K\mathfrak{E}(m)K\mathfrak{E}(n) = 1,$$

in a system of numbers equal by analogy to units.

8. Fixing an angle ($\varphi \neq 0$) = *const* ($\varphi = 0$) a bundle of straight parallel lines, space-matter, gives Euclid's 5th postulate and the axiom of parallelism.

In this case ($X -$), the infinity of the trajectory is closed in the surface of the sphere-point on ($Y -$) trajectories and vice versa, on (n) convergence, under the conditions of symmetries: ($X -$)($Y +$)($X -$) = ($Y \pm$) and ($Y -$)($X +$)($Y -$) = ($X \pm$). Any point of fixed lines-trajectories is represented by local basis vectors of the Riemannian space:

$$\mathbf{e}_i = \frac{\partial x}{\partial x^i} \mathbf{i} + \frac{\partial y}{\partial x^j} \mathbf{j} + \frac{\partial z}{\partial x^k} \mathbf{k}, \quad \mathbf{e}^i = \frac{\partial x^i}{\partial x} \mathbf{i} + \frac{\partial x^j}{\partial y} \mathbf{j} + \frac{\partial x^k}{\partial z} \mathbf{k},$$

(Korn, p. 508), with the fundamental tensor $\mathbf{e}_i(x^n) * \mathbf{e}_k(x^n) = \mathbf{g}_{ik}(x^n)$, and topology ($x^n = XYZ$) in Euclidean spaces. Dynamic space-matter is a multidimensional ($m - n$) Convergences, the velocity space. Its projection onto the chosen directions $K = vt$ immediately yields $K = (v = \frac{K}{T})t$ time ($\frac{t}{T}$), as the number of periods of the dynamics (T) of the chosen quantum $\omega = \frac{1}{T}$. Thus, we immediately obtain ($K = K \frac{t}{T}$) the space-time of dynamic space-matter, as its special case. These basis vectors can always be represented as:

($x^i = c_x * t$), ($X = c_x * t$) linear components of space-time, then we obtain the usual potential $\mathbf{v}_i(x^n) * \mathbf{v}_k(x^n) = (v^2) = \Pi$, space-matter, as a certain acceleration along the length. That is, Riemannian space is a fixed ($\varphi \neq 0 = \text{const}$) state of the geodesic ($x^s = \text{const}$) lines dynamic ($\varphi \neq \text{const}$) Space-matter ($x^s \neq \text{const}$). Such a mathematics of Riemannian space with a variable $\mathbf{g}_{ik}(x^s \neq \text{const})$, a geodesic, does not yet exist. There is also no geometry of the Euclidean non-stationary sphere, nor is there a geometry of

Lobachevsky space with variable asymptotes of hyperbolas. A special case of negative ($K = -\frac{Y^2}{Y_0} = \frac{(+Y)(-Y)}{Y_0}$) curvature (Smirnov, Vol. 1, p. 186) of Riemannian space is the space of Lobachevsky geometry (Mathematical Encyclopedia, Vol. 5, p. 439). There are nine distinguishing features of Lobachevsky geometry from Euclidean geometry (Figure 1.2).

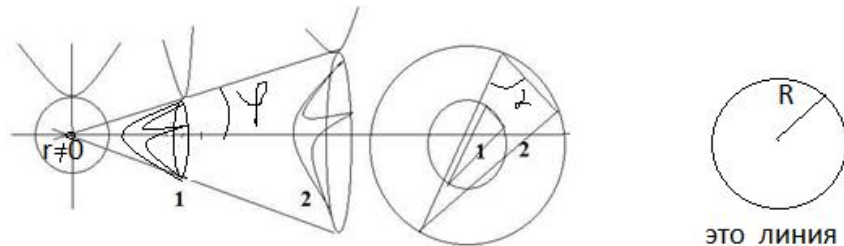


Figure 1.2 Isotropic dynamics.

One of the hallmarks of Lobachevsky geometry is the sum ($0^0 < \sum \alpha < 180^0$) of the angles of a triangle, as opposed to their Euclidean projection ($\sum \alpha = 180^0$) onto a plane. Equal areas $S_1 = S_2$ of triangles, or equal triangles in the space of Lobachevsky geometry, at equal angles of parallelism $\varphi_1 = \varphi_2$ of a pencil of parallel straight lines, yield projectively similar triangles in the Euclidean plane with equal angles at the

vertices. A circle in the Euclidean plane is a line in Lobachevsky geometry. Here, a Euclidean line, "length without width," is the radius of a circle in Lobachevsky geometry. The larger the radius, the longer the "line." Such circles on the surface of the Euclidean sphere are the set of straight lines in the Universe. In our case, the Euclidean sphere is also dynamic. How can one create theories of the "Big Bang" or "cyclic Universe" in such a sphere? The answer is: no way. It means nothing. The zero radius of such a circle ($r = 0$) indicates that such a circle does not exist, and there are no such lines. This is a conversation about nothing, they simply do not exist. This concerns questions of singularity with their infinite criteria and impossibilities. They do not exist in mathematics or in Nature. In the dynamic ($\varphi \neq const$) These Euclidean spheres of various radii, the space-matter, are one **sphere of non-stationary Euclidean space**, which is not present in Euclidean axiomatics. Riemannian space, however, has a dynamic topology. ($x^n = XYZ \neq const$), which is absent from the Euclidean ($x^n = XYZ = const$) stationary space of classical mathematics. The axioms of such a dynamic space-matter already solve the problems of the Euclidean axiomatics of a set of points in a single point "having no parts" and a set of lines in a single "length without width."

2.1. Unified Criteria of the Evolution of Space-Matter.

All the Criteria of Evolution of dynamic space-matter are formed in multidimensional (mn) convergences, space-time, as in the multidimensional space of velocities: $W^N = K^{+N} T^{-N}$.

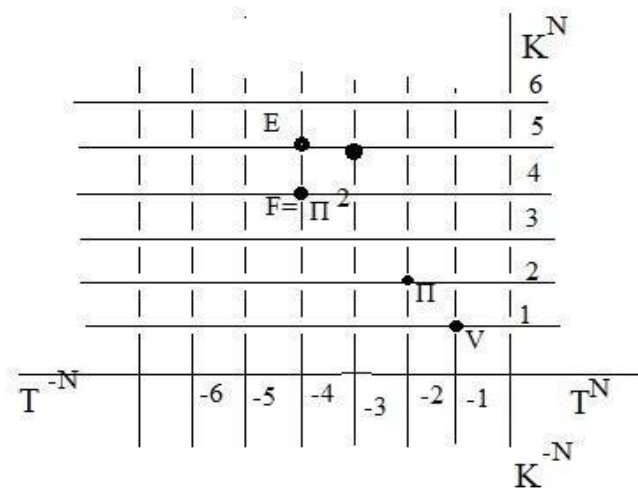


Figure 2.1. Criteria of Evolution in space-time.

Here for ($N=1$), $V = K^{+1} T^{-1}$ velocity, $W^2 = \Pi$ potential, $\Pi^2 = F$ force..., of the 2nd quadrant. Their projection onto the coordinate (K) or temporal (T) space-time gives: charge $\Pi K = q$ ($Y+ = X-$) in electro ($Y+ = X-$) magnetic fields, or mass $\Pi K = m$ ($X+ = Y-$) in gravitational ($X+ = Y-$) mass fields, then density $\rho = \frac{m}{V} = \frac{\Pi K}{K^3} = \frac{1}{T^2} = v^2$ is the square of frequency, energy $E = \Pi^2 K$, momentum ($p = \Pi^2 T$), action ($\hbar = \Pi^2 K T$), etc., of a single NOL = ($X+ = Y-$) ($Y+ = X-$) = 1 space-matter. Every equation is reduced to these Criteria of Evolution in $W^N = K^{+N} T^{-N}$, space-time. There are many other Criteria of Evolution in space-time which we do not yet use. For example, the Einstein energy $E = mc^2$ and the Planck energy $E = \hbar \nu$ are directly related through mass and frequency, as follows: $m = v^2 V$, and so on. But essentially, any energy $E = \Pi^2 K$ the ability of potentials $\Pi^2 = \Pi * \Pi$ to interact over a length K. Potential $\Pi = (K^{+1} T^{-2}) * K$ is the acceleration ($K^{+1} T^{-2}$) over a length K. The interaction itself produces work. For example, in fact, there are unknown to us Criteria for the Evolution $W^A = K^{\pm m} T^{\mp n}$ of the emergent properties of matter in various structural forms of matter. At the same time, in the sublevels of structures, their own Evolution Criteria, conservation laws, and properties of sublevels in this case are allowed.

2.2. Electro ($Y+ = X-$) magnetic and gravitational ($X+ = Y-$) mass fields.

In a single ($X+ = Y-$) ($Y+ = X-$) = 1, space-matter, Maxwell's equations 1 are derived for the electro ($Y+ = X-$) magnetic field. Within the solid angle $\varphi_X(X-) \neq 0$ of parallelism, there is an isotropic stress of the A_n component flow (Smirnov, vol. 2, p. 234). The total vortex flow through the intersecting surface $S_1(X-)$ is in the form :

$$\iint_{S_1} \text{rot}_n A dS_1 = \iint \frac{\partial(A_n / \cos \varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1$$

A_n The component corresponds to a bundle $(X-)$ of parallel trajectories. It is a tangent along a closed curve L_2 in the surface S_2 , where $S_2 \perp S_1$ and $L_2 \perp L_1$. Similarly, the relation follows :

$$\int_{L_2} A_n dL_2 = \iint_{S_2} \text{rot}_m \frac{A_n}{\cos \varphi_X} dS_2$$

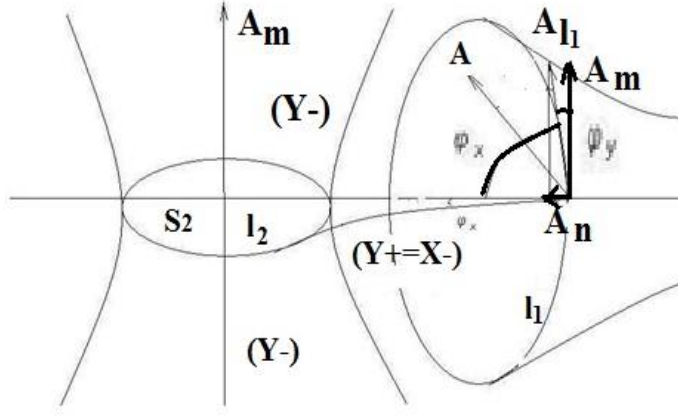


Figure 2.2-1. Electromagnetic $(Y+=X-)$ and gravitational $(X+=Y-)$ fields.

Inside the solid angle $\varphi_X (X-) \neq 0$ of parallelism the condition is satisfied

$$\iint_{S_2} \text{rot}_m \frac{A_n}{\cos \varphi_X} dS_2 + \iint \frac{\partial A_n}{\partial T} dL_2 dT = 0 = \iint_{S_2} A_m (X-) dS_2$$

In general, there is a system of equations for $(X- = Y+)$ field dynamics.

$$\begin{aligned} \iint_{S_1} \text{rot}_n A dS_1 &= \iint \frac{\partial(A_n / \cos \varphi_X)}{\partial T} dL_1 dT + \iint_{S_1} A_n dS_1 \\ \iint_{S_2} \text{rot}_m \frac{A_n}{\cos \varphi_X} dS_2 &= - \iint \frac{\partial A_n}{\partial T} dL_2 dT, \quad \iint_{S_2} A_m dS_2 = 0 \end{aligned}$$

In Euclidean $\varphi_Y = 0$ axiomatics, taking the voltage of the vector component flux as the voltage of the electric field $A_n / \cos \varphi_X = E(Y+)$ and the inductive projection for a non-zero angle $\varphi_X \neq 0$ as the magnetic field induction $B(X-)$, we have

$$\begin{aligned} \iint_{S_1} \text{rot}_X B(X-) dS_1 &= \iint \frac{\partial E(Y+)}{\partial T} dL_1 dT + \iint_{S_1} E(Y+) dS_1 \\ \iint_{S_2} \text{rot}_Y E(Y+) dS_2 &= - \iint \frac{\partial B(X-)}{\partial T} dL_2 dT, \quad \iint_{S_2} A_m dS_2 = 0 = \oint_{L_2} B(X-) dL_2 \end{aligned}$$

the well-known Maxwell equations apply.

$$\begin{aligned} c * \text{rot}_Y B(X-) &= \text{rot}_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+); \\ \text{rot}_X E(Y+) &= -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T}; \end{aligned}$$

The induction of a vortex magnetic field $B(X-)$ occurs in an alternating electric $E(Y+)$ field and vice versa.

$$\int_{L_2} A_n dL_2 = \iint_{S_2} A_m dS_2 \neq 0$$

For an open contour, L_2 there are component relationships L_2 . Under conditions of orthogonality $A_n \perp A_m$ of the vector components A , at nonzero, dynamic $(\varphi_X \neq \text{const})$, and $(\varphi_Y \neq \text{const})$

parallel angles, $A \cos \varphi_Y \perp (A_n = A_m \cos \varphi_X)$, there is the component dynamics $(A_m \cos \varphi_X = A_n)$ along the contour L_2 in the surface S_2 . Both relationships are represented in full form.

$$\int_{L_2} A_m \cos \varphi_X dL_2 = \iint_{S_2} \frac{\partial(A_m(X+) * \cos \varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2$$

Zero flux through the surface S_1 of a vortex $(rot_n A_m)$ outside the solid angle $(\varphi_Y \neq const)$ of parallelism corresponds to the conditions

$$\iint_{S_1} rot_n A_m dS_1 + \iint \frac{\partial A_m}{\partial T} dL_1 dT = 0 = \iint_{S_1} A_n(Y-) dS_1$$

In general, the system of equations of $(Y- = X+)$ field dynamics is represented in the form:

$$\begin{aligned} \iint_{S_2} rot_m A_m(Y-) dS_2 &= \iint_{S_2} \frac{\partial(A_m(X+) * \cos \varphi_X)}{\partial T} dL_2 dT + \iint_{S_2} A_m dS_2 \\ \iint_{S_1} rot_n A_m(X+) dS_1 &= - \iint \frac{\partial A_m(Y-)}{\partial T} dL_1 dT, \quad \iint_{S_1} A_n(Y-) dS_1 = 0 \end{aligned}$$

Introducing by analogy the $G(X+)$ field strength of the Strong (Gravitational) Interaction and the mass field induction $M(Y-)$, we obtain similarly:

$$\begin{aligned} \iint_{S_2} rot_m M(Y-) dS_2 &= \iint_{S_2} \frac{\partial G(X+)}{\partial T} dL_2 dT + \iint_{S_2} G(X+) dS_2 \\ \iint_{S_1} rot_n G(X+) dS_1 &= - \iint \frac{\partial M(Y-)}{\partial T} dL_1 dT, \quad \iint_{S_1} A_n(Y-) dS_1 = 0 = \oint_{L_1} M(Y-) dL_1 \end{aligned}$$

Such equations correspond to gravitational $(X+ = Y-)$ mass fields,

$$\begin{aligned} c * rot_X M(Y-) &= rot_X N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+) \\ M(Y-) &= \mu_2 * N(Y-); \quad rot_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T}; \end{aligned}$$

by analogy with Maxwell's equations for electricity $(Y+ = X-)$ magnetic fields. We are talking about the induction of mass $M(Y-)$ fields in alternating $G'(X+)$ A gravitational field, similar to the induction of a magnetic field in a variable electric field. There are no alternatives here. This is a unified mathematical truth of such fields in a single, dynamic space-matter. We are talking about the induction of mass fields around moving masses (stars), just as we are talking about the induction of magnetic fields around moving charges.

Thus, turns $rot_y B(X-)$ and $rot_x M(Y-)$ trajectories give dynamics $E'(Y+)$ and $G'(X+)$ the electric $(Y+)$ and gravitational $(X+)$ fields, respectively. And the turns $(Y+)$ fields around $(X-)$ trajectories and $(X+)$ fields around $(Y-)$ trajectories give the dynamics of the electromagnetic $rot_x E(Y+) \rightarrow B'(X-)$ field and mass $rot_y G(X+) \rightarrow M'(Y-)$ trajectories.

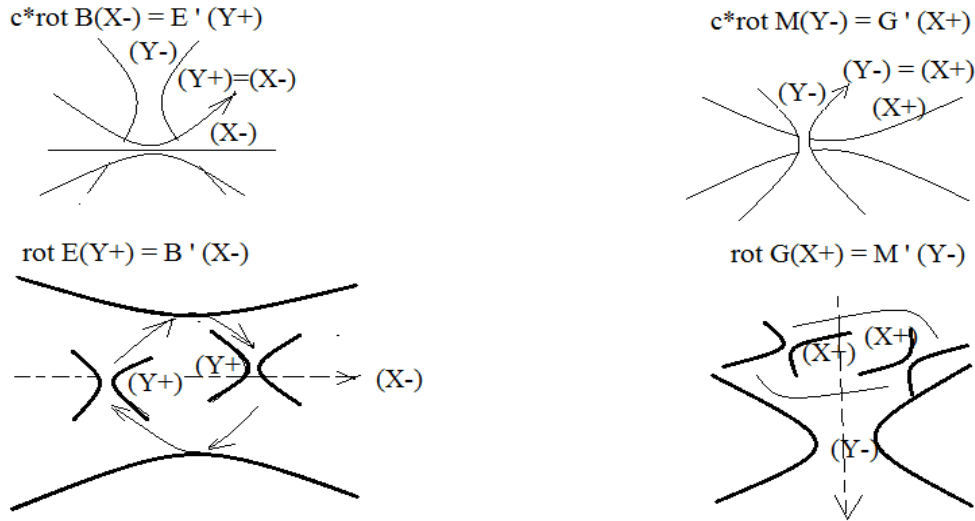


Figure 2.2. Unified fields of space-matter

The dynamics $E(Y+)$ of an electric field generates an inductive magnetic $B(X-)$ field, and vice versa. For example, a charged ball in a moving train car has no magnetic field. But a compass on the platform will show a magnetic field. This is Oersted's experiment, which observed $(X-)$ magnetic field of moving $(Y+)$ electrons of a conductor current.

And the same equations of the dynamics of gravitational $(X+=Y-)$ mass fields are derived in a unified manner:

$$c * \text{rot}_X M(Y-) = \text{rot}_X N(Y-) = \varepsilon_2 * \frac{\partial G(X+)}{\partial T} + \lambda * G(X+)$$

$$M(Y-) = \mu_2 * N(Y-); \quad \text{rot}_Y G(X+) = -\mu_2 * \frac{\partial N(Y-)}{\partial T} = -\frac{\partial M(Y-)}{\partial T};$$

The dynamics $G(X+)$ of the gravitational field generates inductive mass $M(Y-)$ field, and vice versa. Similarly, when $(X+)$ masses (stars) move, mass $(Y-)$ fields are generated in induction.

Here it's appropriate to dwell on Einstein's well-known formula ($E = mc^2$), which we'll discuss in more detail. A body with non-zero ($m \neq 0$) mass emits light with energy (L) in the (x_0, y_0, z_0, ct_0) coordinate system, with the law of conservation of energy: ($E_0 = E_1 + L$), before and after radiation. For the same mass, and this is the key point (**mass ($m \neq 0$) (The law of conservation of energy**

, which does not change, is written in a different (x_1, y_1, z_1, ct_1) coordinate system.) ($\gamma = \sqrt{1 - \frac{v^2}{c^2}}$)

Einstein wrote the law of conservation of energy with Lorentz transformations as ($H_0 = H_1 + L/\gamma$). Subtracting their difference, Einstein obtained:

$$(H_0 - E_0) = (H_1 - E_1) + L(\frac{1}{\gamma} - 1), \text{ or } (H_0 - E_0) - (H_1 - E_1) = L(\frac{1}{\gamma} - 1),$$

With the difference in radiation energy separated, both inertial coordinate systems are moving, but (x_1, y_1, z_1, ct_1) one is moving at a speed (v) relative to (x_0, y_0, z_0, ct_0) . And it's clear that blue and red light have an energy difference, which Einstein wrote down in the equation. Einstein wrote the equation itself as the difference in kinetic energies in the first expansion.

$$(K_0 - K_1) = \frac{L}{2} (\frac{v^2}{c^2} ..), \quad \text{or} \quad \Delta K = (\frac{\Delta L}{c^2}) \frac{v^2}{2}$$

Here ($\frac{\Delta L}{c^2} = \Delta m$) the factor has the properties of the "radiant energy" mass, or: $\Delta L = \Delta mc^2$. This formula has been interpreted in different ways. The annihilation energy $E = m_0 c^2$ of the rest mass, or:

$m_0^2 = \frac{E^2}{c^4} - p^2/c^2$, in relativistic dynamics. Here, a mass with zero momentum ($p = 0$) has energy: $E = m_0 c^2$, and a zero mass photon: ($m_0 = 0$), has momentum and energy $E = p * c$. But Einstein derived another law of "radiant energy" ($\Delta L = \Delta mc^2$), with mass properties. This is not the energy of a photon, and it is not the energy ($\Delta E = \Delta mc^2$) of the mass defect of the nucleons of the nucleus of an atom. Einstein saw what no one else had seen. Like a moving charge, with the induction of the magnetic field of Maxwell's equations, a moving mass (the mass ($m \neq 0$) does not change) induces mass energy ($\Delta L = \Delta mc^2$), which Einstein found. For example, a charged sphere inside a moving train car (**charge ($q \neq 0$) does not change**), has no magnetic field. But a compass on the platform will show the magnetic field of a sphere in a moving train car. It was precisely this inductive magnetic field, from moving electrons of a conductor's current, that

Oersted discovered. Then came Faraday's experiments, the induction of vortex electric fields in an alternating magnetic field, the laws of induction and self-induction, and Maxwell's equations. By analogy with the inductive energy of a magnetic field from a moving charge, Einstein derived a formula for the inductive, "radiant" energy of mass fields from moving non-zero masses (**mass ($m \neq 0$) does not change**), including stars in galaxies. And here Einstein went beyond the Euclidean ($\varphi = 0$) axiomatics of space-time. In the axioms of dynamic space-matter We ($\varphi \neq const$)'re talking about inductive $m(Y -)$ mass fields, in complete analogy with Maxwell's equations. This is what Einstein saw, and no one else. Newton presented the formula, but didn't say WHY the force of gravity arises. Writing the equation of General Relativity, Einstein took the gravitational potential of zero mass: $\frac{E^2}{p^2} = c^2$, in the form of

$\frac{L^2(Y-)}{p^2} = Gv^2(X+) = \frac{8\pi G}{c^4} T_{ik}$ the energy-momentum tensor. The misconception about Einstein's General Theory of Relativity is that it assumes that the equation represents a non-zero mass as the source of space-time curvature, as the source of gravity. In the equation of Einstein's General Theory of Relativity, as the mathematical truth of dynamic space-matter in its full form:

$$R_{ik} - \frac{1}{2} R g_{ik} - \frac{1}{2} \lambda g_{ik} = \frac{8\pi G}{c^4} T_{ik}.$$

There is no mass: ($M = 0$), in its classical sense. In mathematical terms, this is the difference in relativistic dynamics at two fixed points in Riemannian space, one of which is reduced to the Euclidean sphere, in the external, non-stationary ($\lambda \neq 0$) Euclidean space-time. In physical terms, in the equations of Einstein's General Theory of Relativity, and in the unified criteria of evolution, Newton's formula (law) is "embedded":

$$E = c^4 K, P = c^4 T, (c_i^2 - c_k^2 = \Delta c_{ik}^2) = \frac{E^2}{p^2} = (\frac{K^2}{T^2} = c^2), \Delta c_{ik}^2 = Gv^2(X+) \neq 0$$

$$\Delta c_{ik}^2 = \frac{c^4 c^4 K^2}{c^4 c^4 T^2} = \frac{G(c^2 K_Y = m_1)(c^2 K_Y = m_2)}{c^2 (c^2 T^2 = K^2)} = \frac{G m_1 m_2}{c^2 K^2}, \quad \Delta c_{ik}^2 = \frac{G m_1 m_2}{c^2 K^2}, \quad \Delta c_{ik}^2 c^2 = F$$

As we see, in Einstein's General Theory of Relativity equation, the force of gravity acts in fields with zero mass. This reads: the difference in mass flows $\Delta c_{ik}^2(Y-)$ in an external potential gravitational field $c^2(X+)$, with their Equivalence Principle. ($X+ = Y-$), gives force. This is a direct indication of the cause of the action of the force of gravity in Newton's law. Let's define how this approach works. For example, for the Sun and Earth ($M = 2 * 10^{33} g$) and ($m = 5.97 * 10^{27} g$), we obtain

$$(U_1 = \frac{(G=6.67*10^{-8})(M=2*10^{33})}{R=1.496*10^{13}} = 8.917 * 10^{12}) \text{ the gravitational potential at a distance from the Earth and}$$

$$U_2 = \frac{(G=6.67*10^{-8})(m=5.97*10^{27})}{R=6.374*10^8} = 6.25 * 10^{11}, \text{ the potential of the Earth itself.}$$

Then ($\Delta U = U_1 - U_2 = 8.917 * 10^{12} - 6.25 * 10^{11} = 8.67 * 10^{12}$), or ($\Delta U = 8.29 * 10^{12}$), we obtain:

$$\Delta U = \frac{8\pi G}{(c^4 = U^2 = F)} (T_{ik} = \frac{(U^2 K)^2}{U^2 T^2} = \frac{U^2 (UK=m)^2}{U^2 T^2} = \frac{Mm}{T^2}), \text{ or } \frac{\Delta U}{\sqrt{2}} = \frac{8\pi G}{F} \frac{Mm}{T^2}, F = \frac{8\pi G}{(\Delta U/\sqrt{2})} \frac{Mm}{T^2} = \frac{GMm}{(\Delta U * T^2 / \sqrt{2}) / 8\pi}$$

It remains to calculate $\frac{\Delta U * T^2}{8\pi \sqrt{2}} = \frac{8.29 * 10^{12} * (365.25 * 24 * 3600 = 31557600)^2}{8\pi \sqrt{2}} = 2.3 * 10^{26}$, which corresponds to the square of the distance ($R^2 = 2.24 * 10^{26}$) from the Earth to the Sun, or $F = \frac{GMm}{R^2}$, Newton's law. This approach corresponds to reality. Then, the gravitational potentials outside the masses have the form:

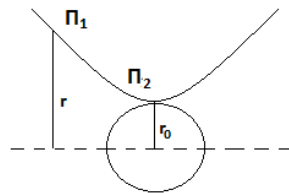


Figure 6b – gravitational potentials

$$\Pi_1 = c^2 (\frac{r}{r_0})^2: \Pi_2 = c^2 (\frac{r_0}{r})^2, \text{ with the energy-momentum tensor: } \frac{8\pi G}{c^4} T_{ik} = \frac{E^2}{p^2} = \frac{G(\Pi^2 K)^2}{(\Pi^2 t)^2} = \frac{G \Pi^2 \Pi^2 K^2}{c^4 \Pi^2 t^2},$$

$$\Pi_1 - \Pi_2 = \frac{G \Pi^2 K^2}{c^4 t^2} = \frac{G c^2 \Pi K^2}{c^2 \Pi t^2}, \quad \Pi_1 - \Pi_2 = \frac{c^2 G K^2}{c^2 t^2}, \text{ or:}$$

$$c^2 (\frac{r}{r_0})^2 - c^2 (\frac{r_0}{r})^2 = \frac{c^2 G K^2}{c^2 t^2}, c^2 (1 - (\frac{r_0}{r})^2) = \frac{c^2 G K^2}{c^2 t^2}, \quad (1 - (\frac{r_0}{r})^2) = \frac{x^2}{c^2 t^2},$$

$$(1 + \frac{r_0}{r}) (1 - \frac{r_0}{r}) = \frac{x^2}{c^2 t^2}, (1 + \frac{r_0}{r}) c^2 t^2 - \frac{x^2}{(1 - \frac{r_0}{r})} = s^2(x), s^2(x) = 0 \text{ at } (x = 0).$$

$$(1 + \frac{r_0}{r}) c^2 t^2 - (1 - \frac{r_0}{r})^{-1} x^2 = s^2, \text{ or: } ds^2 = (1 + \frac{r_0}{r}) c^2 dt^2 - (1 - \frac{r_0}{r})^{-1} dx^2.$$

These are the mathematical truths of the simplest model of radial relativistic space-time dynamics in a gravitational field without ($m_0 = 0$) mass: $\frac{E^2}{p^2} = c^2$, or: $\frac{E^2}{c^2} = p^2 + (m_0 = 0)^2 c^2$. The first thing to note is that ($r_0 \neq 0$) the radius is nonzero by definition. This is the radius of the sphere's circumference in the Schwarzschild solution. And this is the condition of ($Rg_{ik} \neq 0$) the Einstein equation, as a mathematical truth in its entirety. Here, talking about singularity is a waste of time. Singularity does not exist in principle and by definition. The second point is that Einstein's equation considers gravity outside the sphere. There are no "travels" into the sphere in Einstein's equation, just as there are ($r \neq 0$) in Newton's law.

5 Spectrum of indivisible quanta of space-matter.

The indivisible regions of localization of quanta ($X^\pm$) in ($Y^\pm$) dynamic space-matter correspond to stable quanta of space-matter. In both cases, we are talking about **facts** of reality. A stable ($Y^\pm = e$) electron emits a stable ($Y^\pm = \gamma$) photon and interacts with stable ($X^\pm = p$) protons and ($X^\pm = \nu_\mu$) neutrinos ($X^\pm = \nu_e$). In a single ($X = Y$) space-matter (OL_1), they form the first ($X = Y$) region of localization of indivisible quanta at their $m-n$ convergences (Figure).

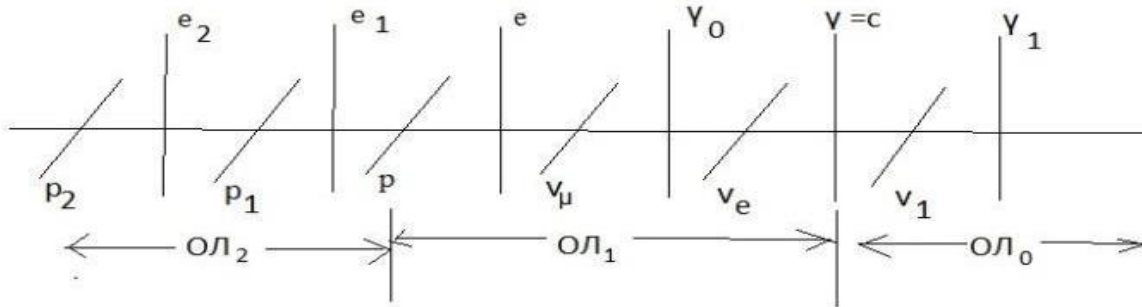


Figure 5.1 Indivisible quanta of space-matter.

To maintain the continuity of the single ($X = Y$), ($X = Y$) space-matter ($Y^\pm = \gamma_0$), a photon is introduced, analogous ($Y^\pm = \gamma$) to the photon. This corresponds to the analogy of the muon ($X^\pm = \nu_\mu$) and electron ($X^\pm = \nu_e$) neutrinos. Moreover, both neutrinos (ν_μ), (ν_e) and photons (γ_0), (γ), can be accelerated, like a proton or electron, to speeds (γ_1), (γ_2 ...), according to the same Lorentz transformations. Having a standard, field-free speed of an electron ($W_e = \alpha * c$) emitting a standard, field-free photon $V(\gamma) = c$, the constant $\alpha = W_e / c = \cos \varphi_Y = 1/137,036$ gives, by analogy, the calculation of speeds $V(c) = \alpha * V_2(\gamma_2)$ for superluminal photons in the form: $V_2(\gamma_2) = \alpha^{-1}c$, $V_4(\gamma_4) = \alpha^{-2}c$... $V_i(\gamma_i) = \alpha^{-N}c$, under standard, field-free conditions. An orbital electron with an angle of parallelism

$\alpha = \frac{W_e}{c} = \frac{1}{137} = \cos \varphi_{MAX}(Y-)$ to the trajectory does not emit a photon, as in rectilinear motion without acceleration. **This Bohr postulate, as well as the uncertainty principle of spacetime ($\cos \varphi(Y-) \neq const$), ($\cos \varphi(X-) \neq const$) and Einstein's equivalence principle for inertial $m(Y-) = m(X+)$ and gravitational masses, are already axioms of dynamic space-matter.** And we are already answering the

question of WHY this is so. The dynamics of mass fields within the limits $\cos \varphi_Y = \alpha$ of $\cos \varphi_X = \sqrt{G}$ the interaction constants yields the charge isopotential of their unit masses.

$$m(p) = 938,28 \text{ MeV}, G = 6,67 * 10^{-8}. m_e = 0,511 \text{ MeV}, (m_{\nu_\mu} = 0,27 \text{ MeV}),$$

$$\left(\frac{X=K_X}{K}\right)^2 (X-) = \cos^2 \varphi_X = (\sqrt{G})^2 = G, \quad \left(\frac{Y=K_Y}{K}\right) (Y-) = \cos \varphi_Y = \alpha = \frac{1}{137,036}$$

$$m = \frac{F=\Pi^2}{Y''} = \left[\frac{\Pi^2 T^2}{Y} = \frac{\Pi}{(Y/K^2)}\right] = \frac{\Pi Y=m_Y}{\left(\frac{Y^2=K^2}{K^2=2}\right)}, \quad \text{where} \quad 2m_Y = Gm_X,$$

$$m = \frac{F=\Pi^2}{X''} = \left[\frac{\Pi^2 T^2}{X} = \frac{\Pi}{(X/K^2)}\right] = \frac{\Pi X=m_X}{\left(\frac{X^2=\alpha^2}{K^2=2}\right)}, \quad \text{where} \quad 2m_X = \alpha^2 m_Y$$

$$(\alpha/\sqrt{2}) * \Pi K * (\alpha/\sqrt{2}) = \alpha^2 m(e)/2 = m(\nu_e) = 1,36 * 10^{-5} MeV, \quad \text{or: } m_X = \alpha^2 m_Y / 2,$$

$$\sqrt{G/2} * \Pi K * \sqrt{G/2} = G * m(p)/2 = m(\gamma_0) = 3,13 * 10^{-5} MeV, \quad \text{or: } m_Y = G m_X / 2$$

$$m(\gamma) = \frac{G m(\nu_\mu)}{2} = 9,1 * 10^{-9} MeV.$$

In a single $(Y \pm = X \mp)$ or $(Y + = X -)$, $(Y - = X +)$ space-matter of indivisible structural forms of indivisible quanta $(Y \pm)$ and $(X \pm)$: $(Y \pm = e^-) = (X + = \nu_e^-)(Y - = \gamma^+)(X + = \nu_e^-)$ electron and $(X \pm = p^+) = (Y - = \gamma_0^+)(X + = \nu_e^-)(Y - = \gamma_0^+)$ proton, we separate the electric and $(Y + = X -)$ magnetic fields from the mass fields $(Y - = X +)$ in the form:

$$(X +)(X +) = (Y -) \text{ and } \frac{(X +)(X +)}{(Y -)} = 1 = (Y +)(Y -); (Y + = X -) = \frac{(X +)(X +)}{(Y -)}, \text{ or:}$$

$$\frac{(X + = \nu_e^-/2)(\sqrt{2} * G)(X + = \nu_e^-/2)}{(Y - = \gamma^+)} = q_e(Y +)$$

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{2} * G)(m(\nu_e)/2)}{m(\gamma)} = \frac{(1,36 * 10^{-5})^2 * \sqrt{2} * 6,67 * 10^{-8}}{4 * 9,07 * 10^{-9}} = 4,8 * 10^{-10} \text{ CGCE}$$

$$(Y +)(Y +) = (X -) \text{ and } \frac{(Y +)(Y +)}{(X -)} = 1 = (X +)(X -); (Y + = X -) = \frac{(Y -)(Y -)}{(X +)}, \text{ or:}$$

$$\frac{(Y - = \gamma_0^+)(\alpha^2)(Y - = \gamma_0^+)}{(X + = \nu_e^-)} = q_p(Y + = X -),$$

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3,13 * 10^{-5}/2)^2}{2 * 137,036^2 * 1,36 * 10^{-5}} = 4,8 * 10^{-10} \text{ CGCE}$$

Such coincidences cannot be random. For a proton's wavelength $\lambda_p = 2,1 * 10^{-14} \text{ cm}$, its frequency

$$(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1,4286 * 10^{24} \text{ Hz}$$

$$2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+}). \quad 1\text{r} = 5,62 * 10^{26} \text{ MeV}, \text{ or}$$

$$(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+})}{2c^2} = \frac{6,67 * 10^{-8} * 1,0545 * 10^{-27} * 1,4286 * 10^{24}}{2 * 9 * 10^{20}} = 5,58 * 10^{-32} \text{ r} = 3,13 * 10^{-5} \text{ MeV}$$

Similarly, for an electron $\lambda_e = 3,86 * 10^{-11} \text{ cm}$, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7,77 * 10^{20} \text{ Hz}$ is determined by

the frequency (ν_e^-) of quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2 \hbar(\nu_{\nu_e^-})$, where $\alpha(Y -) = \frac{1}{137,036}$ is a constant, we

$$\text{obtain: } (m_{\nu_e^-}) = \frac{\alpha^2 \hbar(\nu_{\nu_e^-})}{2c^2} = \frac{1 * 1,0545 * 10^{-27} * 7,77 * 10^{20}}{(137,036^2) * 2 * 9 * 10^{20}} = 2,424 * 10^{-32} \text{ r} = 1,36 * 10^{-5} \text{ MeV}, \text{ for the neutrino}$$

mass. Such coincidences also cannot be random. Such calculations correspond to the model of the products of proton-electron annihilation. The mass fields $(Y - = e) = (X + = p)$ of an atom.

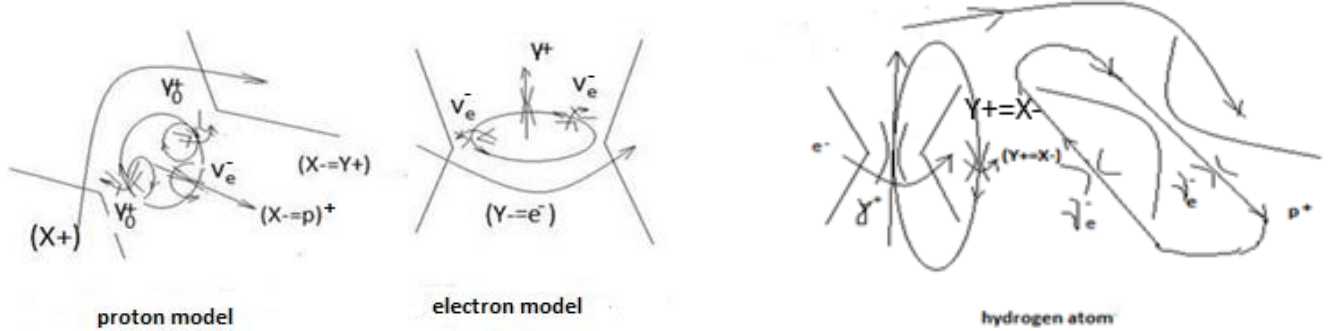


Figure 5.2. Models of the annihilation products of a proton and electron, a hydrogen atom

Now we can say that the charge of the proton: $q_p(Y + = X -) = \frac{(Y - = \gamma_0^+)(\alpha^2)(Y - = \gamma_0^+)}{(X + = \nu_e^-)}$, is formed in the space-matter of quantum fields $(Y + = \gamma_0^+)$, with a constant $\cos \varphi_Y = \alpha$, and the charge of the electron:

$$q_e(Y + = X -) = \frac{(X + = \nu_e^-/2)(\sqrt{2} * G)(X + = \nu_e^-/2)}{(Y - = \gamma^+)}, \text{ is formed in the space-matter of quantum fields } (X + = \nu_e^-), \text{ with}$$

a constant $\cos^2 \varphi_X = (\sqrt{G})^2 = G$, in the model of the hydrogen atom. In a unified space-matter, the mathematical truths of space are equal to the physical properties of matter. As in Einstein's General Theory of Relativity. The geometric **fact** of such a space-matter here is the presence of antimatter in the matter of the proton and electron. Moreover, the products of proton annihilation are

$$(X \pm = p^+) = (Y - = \gamma_0^+)(X + = \nu_e^-)(Y - = \gamma_0^+), \text{ and the products of electron annihilation are}$$

$$(Y \pm = e^-) = (X + = \nu_e^-)(Y - = \gamma^+)(X + = \nu_e^-). \quad \text{For } G = 6,67 * 10^{-8}, \alpha = \frac{1}{137,036}, \nu_\mu = 0,27 \text{ MeV},$$

$$\gamma_0 = 3,13 * 10^{-5} \text{ MeV}, \nu_e = 1,36 * 10^{-5} \text{ MeV}, \text{ and } \gamma = 9,1 * 10^{-9} \text{ MeV}, \text{ we have:}$$

$$(X\pm=p) = (Y-=\gamma_o)(X+=v_e)(Y-=\gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{v_e}{\alpha^2}\right) = 938,275 \text{ MeV};$$

$$(Y\pm=e) = (X-=v_e)(Y+=\gamma)(X-=v_e) = \left(\frac{2v_e}{\alpha^2} + \frac{\gamma}{2G}\right) = 0,511 \text{ MeV}; G\alpha = 4.8673 * 10^{-10}$$

Similarly, the mass spectrum of **unstable particles** is already in accordance with the products and decay time.

$$(Y\pm=\mu) = (X-=v_\mu)(Y+=e)(X-=v_e) = \frac{(T=2.176*10^{-6})}{G\alpha} \exp\left(v_\mu + e + \frac{v_e ch1}{\alpha^2} = 1,1751\right) = 105,66 \text{ MeV},$$

Here and throughout the calculations, we will use underlined font to ($\underline{\mu} = 1,1751$) denote the exponent $\exp()$. It demonstrates the fragmentation features of the dynamic field $\exp(a(X))$ in the Dirac equation.

$$(Y\pm=\pi^\pm) = (Y+=\mu)(X-=v_\mu) = \frac{(T=2.76586*10^{-8})}{2G\alpha} \exp\left(\underline{\mu} + v_\mu ch1\right) = 139,57 \text{ MeV}, (\underline{\pi}^\pm = 1,59173)$$

$$(X-=\pi^0) = (Y+=\gamma_o)(Y+=\gamma_o) = \frac{(T=7.8233*10^{-17})}{G^2\alpha} \exp\left(\frac{2v_o^2}{G\alpha}\right) = 134,98 \text{ MeV}, (\underline{\pi}^0 = 4,025599)$$

$$(X-=\eta^0) = (X+=\pi^0)(Y-)(X+=\pi^0)(Y-)(X+=\pi^0) = \frac{(T=5.172*10^{-19})}{(G\alpha)^2} \exp\left(\frac{3\pi^0}{2} - \frac{\gamma ch2}{G}\right) = 547,853 \text{ MeV},$$

$$(X-=\eta^0) = (Y-=\pi^+)(X+=\pi^0)(Y-=\pi^+) = \frac{(T=5.1*10^{-19})}{\sqrt{2}(G\alpha)^2} \exp\left(2\underline{\pi}^\pm + \frac{\pi^0}{2}\right) = 547,853 \text{ MeV},$$

$$(Y\pm=K^+) = (Y+=\mu)(X-=v_\mu) = \frac{(T=1.335*10^{-8})}{G\alpha} \exp 2\left(\underline{\mu} + v_\mu\right) = 493,67 \text{ MeV},$$

$$(Y\pm=K^+) = (Y+=\pi^+)(X-=\pi^0) = \frac{(T=1.01398*10^{-8})}{G\alpha} \exp\left(\underline{\pi}^+ + \underline{\pi}^0/2\right) = 493,67 \text{ MeV}. \underline{K}^- = 3,16535$$

$$(Y-=K_S^0) = (X+=\pi^0)(X+=\pi^0) = \frac{(T=0,885*10^{-10})}{G\alpha} \exp\left(2\underline{\pi}^0 - \frac{\gamma}{G}\right) = 497,67 \text{ MeV},$$

$$(X-=K_L^0) = (Y-=\pi^\pm)(X+=v_e)(Y-=e^\mp) = \frac{(T=4,9296*10^{-8})}{G\alpha} \exp\left(\underline{\pi}^\pm + e^\mp + \frac{2v_e}{\alpha^2}\right) = 497,67 \text{ MeV},$$

$$(X-=K_L^0) = (Y-=\pi^\pm)(X+=v_\mu)(Y-=\mu^\mp) = \frac{(T=5,1713*10^{-8})}{G\alpha} \exp\left(\underline{\pi}^\pm - \frac{\underline{\mu}^\mp}{2} + 2v_\mu\right) = 497,67 \text{ MeV},$$

$$(X-=\rho^0) = (Y+=\pi^+)(Y+=\pi^+) = \frac{(T=5,02*10^{-24})}{G\alpha} \exp\left(\frac{2\underline{\pi}^\pm}{\sqrt{\alpha}}\left(1 + \frac{1}{2\sqrt{\alpha}}\right)\right) = 775,49 \text{ MeV};$$

$$(X\pm=\rho^+) = (X+=\pi^0)(Y-=\pi^+) = \frac{(T=6,47566*10^{-24})}{G\alpha} \exp\left(\frac{\underline{\pi}^0}{\sqrt{\alpha}} - \frac{\pi^+(\sqrt{\alpha}-1)}{2}\right) = 775,4 \text{ MeV};$$

Similarly, hadrons

$$(Y\pm=n^0) = (X-=v_e^-)(Y+=e^-)(X-=p^+) = (X-=v_e^+)(Y+=e^+)(X-=p^-) = ("Majorano particle") =$$

$$= ((T = 878,77) \exp\left(\frac{v_e}{\sqrt{G}} + \frac{e}{2} - p\sqrt{G}\right) = 938,57 \text{ MeV},$$

$$(X\pm=\Lambda^0) = (X+=p^+)(Y-=\pi^-) = \frac{(T=2.604*10^{-10})}{G\alpha} \exp(\alpha p^+ + \underline{\pi}^-/2) = 1115,68 \text{ MeV}, \underline{\Lambda}^0 = 7,642837$$

$$(Y\pm=\Lambda^0) = (Y+=n)(X-=\pi^0) = \frac{(T=1.5625*10^{-10})}{G\alpha} \exp\left(\alpha n + \frac{\underline{\pi}^0}{2ch1}\right) = 1115,68 \text{ MeV}, \underline{\Lambda}^0 = 8,153$$

$$(Y-=\Sigma^+) = (X+=p^+)(X+=\pi^0) = \frac{(T=8.22*10^{-11})}{G\alpha} \exp\left(\alpha p^+ + \frac{\underline{\pi}^0}{2}\right) = 1189,37 \text{ MeV},$$

$$(X-=\Sigma^+) = (Y+=n)(Y+=\pi^+) = \frac{(T=8.1*10^{-11})}{G\alpha ch1} \exp(\alpha n + \pi^+) = 1189,37 \text{ MeV},$$

$$(X-=\Sigma^-) = (Y+=n)(Y+=\pi^-) = \frac{(T=1.25*10^{-10})}{G\alpha} \exp(\alpha n + \pi^-) = 1189,37 \text{ MeV},$$

$$(X-=\Sigma^0) = (Y+=\Lambda^0)(Y+=\gamma) = \frac{(T=7.4*10^{-20})}{G^2\alpha*ch1} \exp\left(\frac{\underline{\Lambda}^0 + \gamma/G}{2}\right) = 1192,64 \text{ MeV}, \quad \underline{\Lambda}^0 = 7,642837,$$

$$(Y\pm=\Xi^0) = (Y+=\Lambda^0)(X-=\pi^0) = \frac{(T=2.5984*10^{-10})}{G\alpha} \exp(\underline{\Lambda}^0 - \underline{\pi}^0\sqrt{\alpha}) = 1314,86 \text{ MeV},$$

$$\underline{\Lambda}^0 = 8,153, \quad \underline{\Xi}^0 = 7,809,$$

$$(X\pm=\Xi^-) = (X+=\Lambda^0)(Y-=\pi^-) = \frac{(T=1.3917*10^{-10})}{G\alpha} \exp(\underline{\Lambda}^0 + \underline{\pi}^-/2) = 1321,71 \text{ MeV},$$

$$\underline{\Lambda}^0 = 7,642837, \underline{\Xi}^- = 8,43869,$$

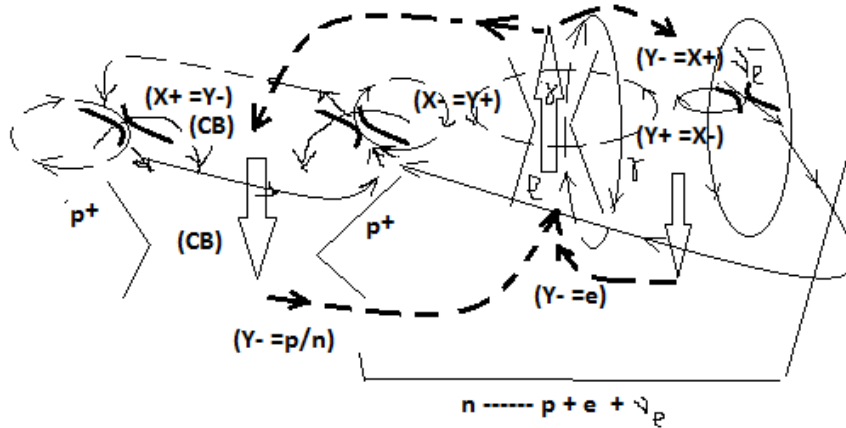
$$(X-=\Omega^-) = (Y+=\Lambda^0)(Y+=K^-) = \frac{(T=8.018*10^{-11})}{G\alpha} \exp(\underline{\Lambda}^0 - \underline{K}^-/2) = 1672,45 \text{ MeV},$$

$$\underline{\Lambda}^0 = 7,642837, \underline{K}^- = 3,16535$$

$$(X-=\Omega^-) = (Y+=\Xi^0)(Y+=\pi^-) = \frac{(T=6.734*10^{-11})}{G\alpha} \exp(\underline{\Xi}^0 + \underline{\pi}^-) = 1672,45 \text{ MeV}, \underline{\Xi}^0 = 7,809,$$

$$(Y-=\Omega^-) = (X+=\Xi^-)(X+=\pi^0) = \frac{(T=7.1147*10^{-11})}{G\alpha} \exp(\underline{\Xi}^- + \underline{\pi}^0/ch2) = 1672,45 \text{ MeV}, \underline{\Xi}^- = 8,275,$$

Remarkably, there are no Standard Model quarks here. They are unnecessary. And such calculations are impossible in principle in Euclidean axiomatics. Based on these calculations, we can talk about models of protons and neutrons as nucleons in atomic nuclei.



Model of a proton and a neutron in a quantum ($Y- = p/n$) Strong Interaction

We have a quantum ($Y- = p/n$) or ($Y- = 2n$) Strong Interaction in the nuclei of atoms, with a minimum $\Delta E_N = \alpha p^+ = 938,28 : 137 = 6,85 \text{ MeV}$ and maximum $\Delta E_N \approx 8,5 \text{ MeV}$ specific binding energy, or $\Delta m(Y-) = 2\alpha p = 17 \text{ MeV}$, of two nucleons of the nucleus. By analogy with the bremsstrahlung of an electron ($Y- = e^- \rightarrow (Y- = \gamma^+)$ X-rays, the emission

$(Y- = \alpha \left[\left(\frac{p^+}{n} \right) \text{ или } (2n) \right] = e_+^*) \rightarrow (Y- = (14 - 17) \text{ MeV} = \gamma_-^*)$ of quanta of inductive masses with mass ($Y-$) trajectories is physically permissible. They have ($Y+$) charge field and can react to a magnetic field. We are talking about bremsstrahlung of the ${}^2_1\text{H}$ deuterium nucleus. These quanta are absorbed or emitted by quanta ($Y- = p/n$) or ($Y- = 2n$) in the shells of the atomic nuclei. Such quanta ($Y- = p/n$) and ($Y- = 2n$) the Strong Interaction of nuclei form structures $X_{\pm}$ and ($Y_{\pm}$) quanta of the nucleus.

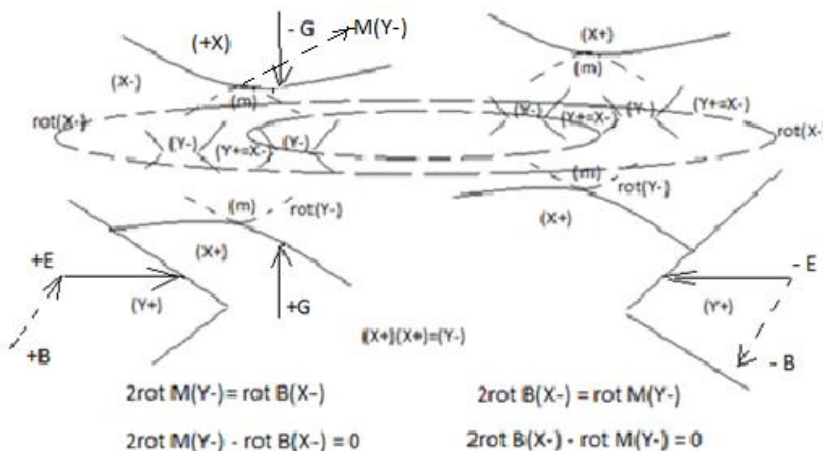


Figure . levels and shells of the atomic nucleus:

In this case, in the core there is indeed a general state of the equations of the dynamics of a single ($X_{\pm} = Y_{\mp}$) space-matter. Let us sum up these equations for closed vortex $rot(Y-)$ and $rot(X-)$ fields in the "standing waves" of the core, without their densities $\lambda_1 E(Y+)$ and $\lambda_2 G(X+)$ in the form:

$c * rot_Y B(X-) + c * rot_X M(Y-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \varepsilon_2 * \frac{\partial G(X+)}{\partial T}$, and we will reduce these fields to ($X_{\pm}$) the ($Y_{\pm}$) quanta of the nucleus of one frequency $\frac{\partial}{\partial T} = \omega$, oscillations of all quanta to the structure of the

nucleus, as one quantum. $c * rot_X M(Y-) - \varepsilon_1 \omega E(Y+) = \varepsilon_2 \omega G(X+) - c * rot_Y B(X-) = 0$, with zero densities outside the vortices. The fact is that the "+" matter of mass ($Y- = X+$) fields corresponds to the "-" charge of the electric quantum ($Y+$) fields ($Y_{\pm}$), and vice versa for antimatter. A single frequency of oscillations of all quanta in the structure of the nucleus in a single ($X_{\pm} = Y_{\mp}$) space-matter has the form:

$$\omega = \frac{c * rot_X M(Y-)}{\varepsilon_1 E(Y+)} = \frac{c * rot_Y B(X-)}{\varepsilon_2 G(X+)} \text{ or } \varepsilon_2 G(X+) * c * rot_X M(Y-) = \varepsilon_1 E(Y+) * c * rot_Y B(X-),$$

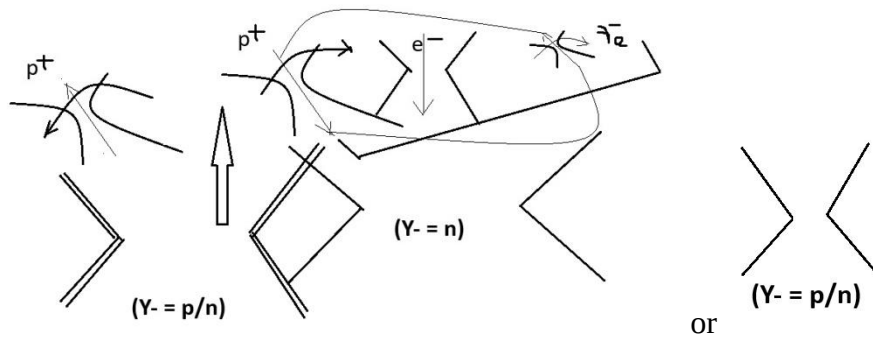
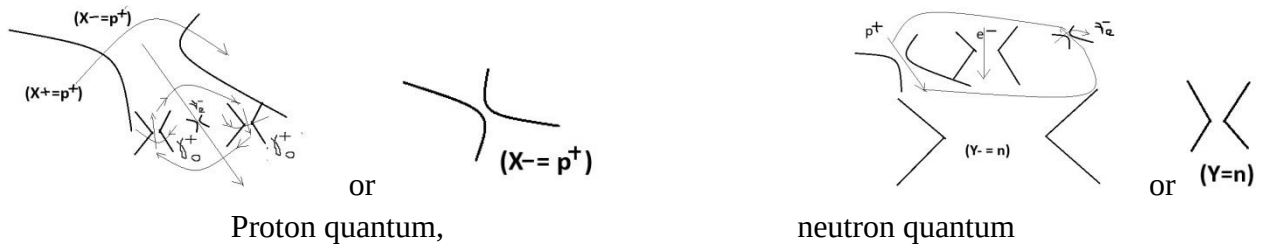
for gravity ($X+ = Y-$) mass and electromagnetic ($Y+ = X-$) fields of the quanta of the nucleus, already as one quantum, with the wave function of the quantum field.

In general, quanta ($Y \pm = \frac{p}{n} = \frac{2}{1}H$) and ($X \pm = 2 \frac{p}{n} = \frac{4}{2}\alpha$) shells of nuclei form the levels and shells of electrons in the atomic spectrum. In unified models of the decay products of the elementary particle mass spectrum, in unified fields ($Y - = X +$) of ($Y + = X -$) space-matter, one can also represent the nuclei of the atomic spectrum. Based on calculations of the proton and neutron masses:

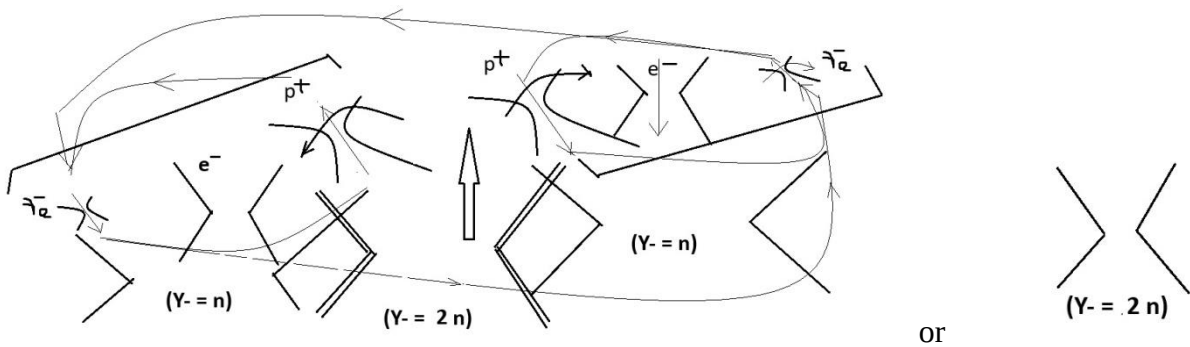
$$(X \pm = p) = (Y - = \gamma_o)(X + = v_e)(Y - = \gamma_o) = \left(\frac{2\gamma_o}{G} - \frac{v_e}{\alpha^2}\right) = 938,275 \text{ MeV},$$

$$(Y \pm = n) = (X - = v_e)(Y + = e)(X - = p) = (T = 878,77) \exp\left(\frac{v_e}{\sqrt{G}} + \frac{e}{2} - p\sqrt{G}\right) = 938,57 \text{ MeV},$$

we talk about the quanta of the Strong Interaction in the structures of the nucleus in the form of models of charged ($Y \pm = \frac{p}{n}$) = ($X + = p$) + [$(X + = p)(e)(v_e) = n$] and neutral quanta of the Strong Interaction ($Y \pm = 2n$) = [$n = (v_e)(e)(X + = p)$] + [$n = (X + = p)(e)(v_e)$], when fields ($X +$)($X +$) = ($Y -$) form mass ($Y -$) trajectories. Such ($Y \pm = \frac{p}{n}$) quanta ($Y \pm = 2n$) also form the structures of the nucleus within ($X \pm = Y \mp$) its unified space-matter, with closed vortex ($X -$) magnetic fields and ($Y -$) mass fields. Let's imagine the structures of the nucleus as such models of charged ($Y \pm = \frac{p}{n}$) quanta of the Strong Interaction. For example:



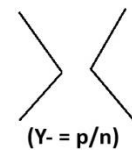
Charge quanta ($Y \pm = p/n$) of the Strong Interaction are ($Y \pm = \frac{2}{1}H$) the deuterium nucleus



Neutral quantum ($Y \pm = 2n$) of the Strong Interaction,

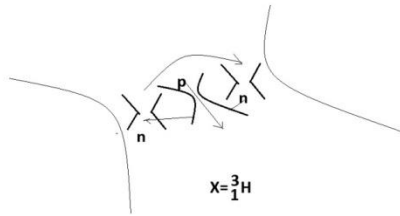
These quanta ($Y \pm = p/n$) or ($Y \pm = 2n$) the Strong Interaction, form the structures of the nuclei of a spectrum

of atoms. Let's consider the models of the nuclei of the simplest hydrogen -

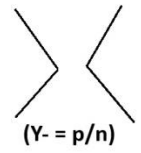


like atoms

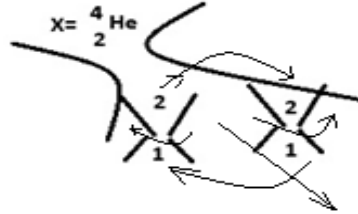
$$(X+=\frac{1}{1}H)(Y-=\frac{1}{0}n) = (X\pm=\frac{3}{1}H),$$



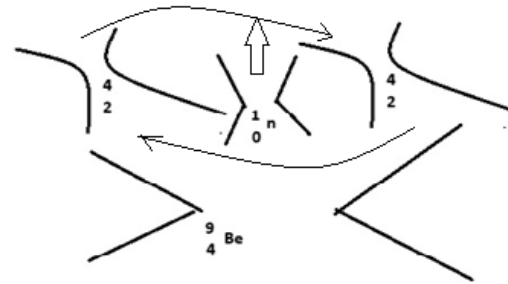
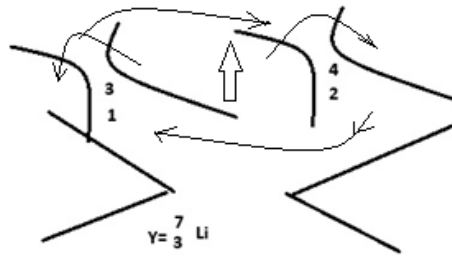
$$(Y\pm=\frac{p}{n}=\frac{2}{1}H),$$



$$(X\pm) = (Y+=\frac{p}{n})(Y+=\frac{p}{n}) = (X-=\frac{4}{2}\alpha),$$

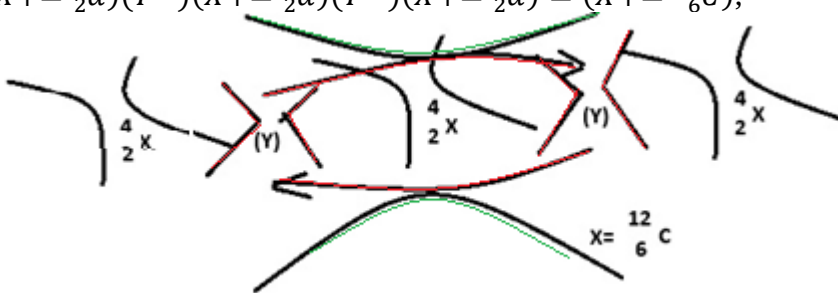


$$(X+=\frac{3}{1}H)(X+=\frac{4}{2}H) = (Y-=\frac{7}{3}Li),$$

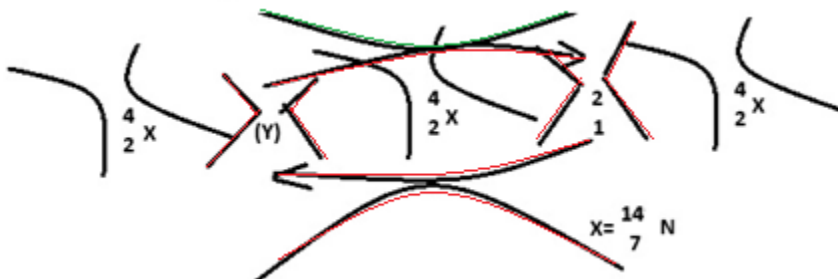


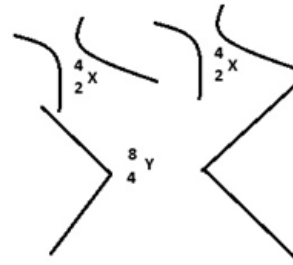
$$\text{and so on } (X-=\frac{4}{2}\alpha)(Y+=\frac{1}{0}n)(X-=\frac{4}{2}\alpha) = (Y-=\frac{9}{4}Be).$$

$$(X+=\frac{4}{2}\alpha)(Y-)(X+=\frac{4}{2}\alpha)(Y-)(X+=\frac{4}{2}\alpha) = (X+=\frac{12}{6}C),$$

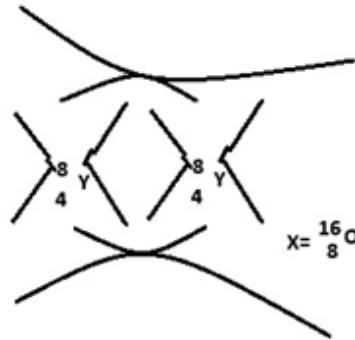


$$(X+=\frac{4}{2}\alpha)(Y-)(X+=\frac{4}{2}\alpha)(Y-=\frac{2}{1}H)(X+=\frac{4}{2}\alpha) = (X+=\frac{14}{7}N).$$

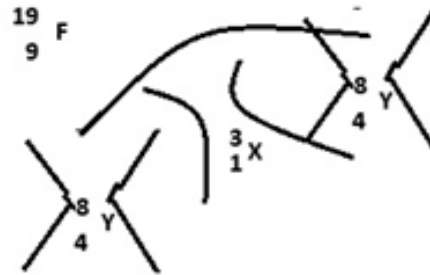




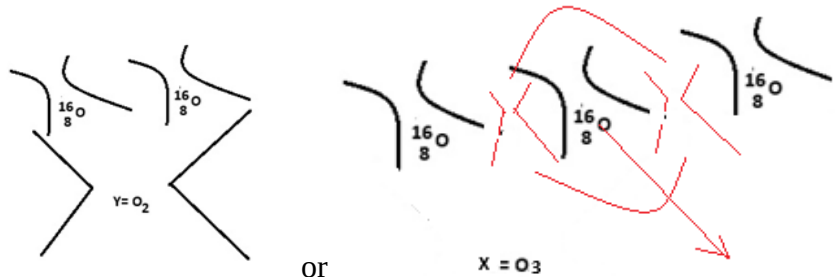
New structure inside the kernel $(X+ = \frac{4}{2}\alpha)(X+ = \frac{4}{2}\alpha) = ({}^8_4Y -)$



gives nuclei: $({}^8_4Y +)({}^8_4Y +) = (X- = {}^{16}_8O)$,



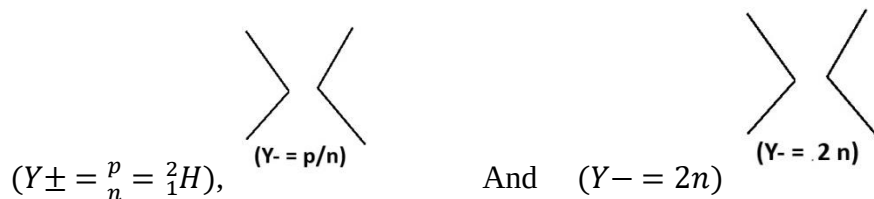
$(Y- = {}^8_4Y +)(X+ = {}^3_1H)(Y- = {}^8_4Y +) = (X\pm = {}^{19}_9F)$,

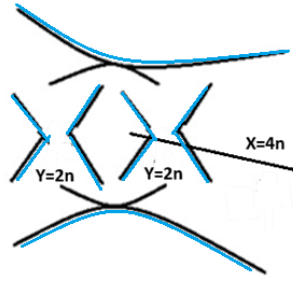


and oxygen molecules, for example:

and so on.

We can say that for the nucleus ${}^A_ZX(N)$, "free" $(A - 2Z = N)$ neutrons in the form of neutral $(Y\pm = 2n)$ quanta of the Strong Interaction also form their structures within the structures of charged $(Y\pm = p/n)$ quanta of the Strong Interaction. Structures of charged quanta $(Y\pm = p/n)$ The strong interaction forms the structures of the electron shells of atoms, as a reason. For example: the neutral structure





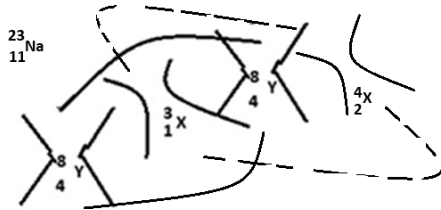
$$(Y \pm = 2n)(Y \pm = 2n) = (X \mp = 4n),$$

is located inside the kernel $(X \pm = {}^{40}_{18}\text{Ar}(4n))$ in the form:

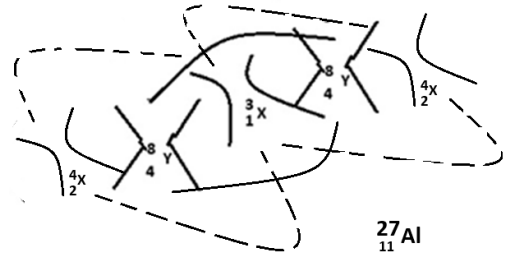
$$(X \mp = {}^{12}_6\text{X})(Y \pm = 2n)(X \mp = {}^{12}_6\text{X})(Y \pm = 2n)(X \mp = {}^{12}_6\text{X}) = (X \pm = {}^{40}_{18}\text{Ar}(4n)).$$

In such structures, the equations of both electromagnetic fields $(Y + = X -)$ and gravitational equations operate. $(X + = Y -)$ mass fields simultaneously, in the form of fields $(Y +)(Y +) = (X -)$ And $(X +)(X +) = (Y -)$. Similarly further: ${}^{75}_{33}\text{As}(9n) = (X - = 4n)(Y + = 1n)(X - = 4n) = (Y \pm = 9n)$.

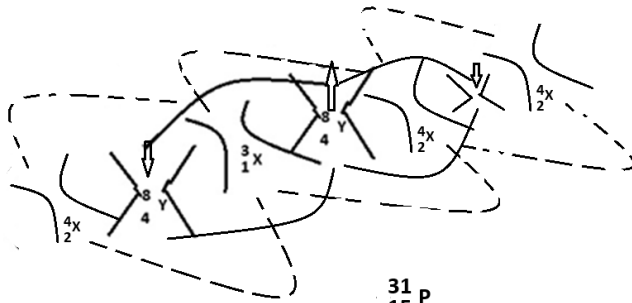
Let us note that in 100% states of the nucleus, ${}^9_4\text{Be}(1n)$ we ${}^{19}_9\text{F}(1n)$ will continue with neutrons:



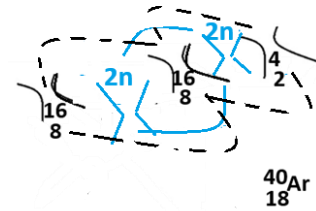
${}^{23}_{11}\text{Na}(1n),$



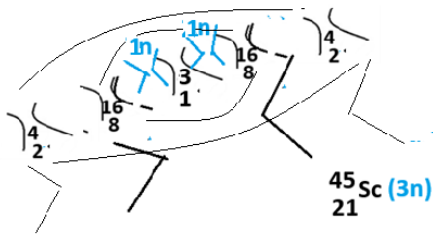
, ${}^{27}_{13}\text{Al}(1n),$



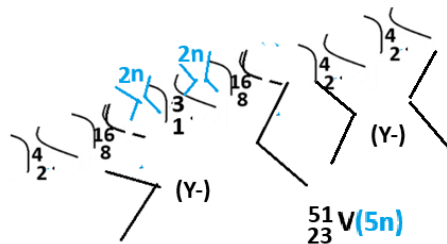
${}^{31}_{15}\text{P}(1n),$



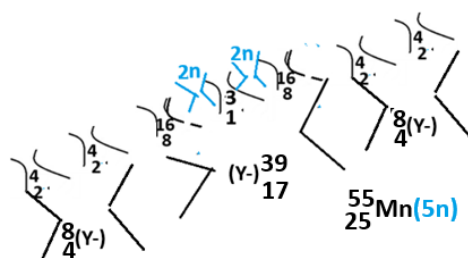
${}^{40}_{18}\text{Ar}(4n),$



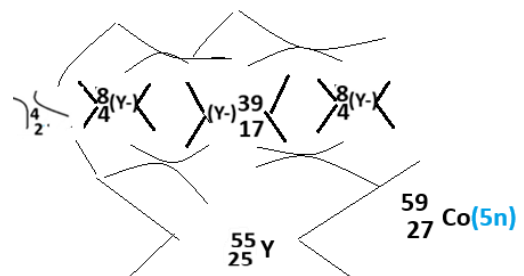
${}^{45}_{21}\text{Sc}(3n)$



${}^{51}_{23}\text{V}(5n)$

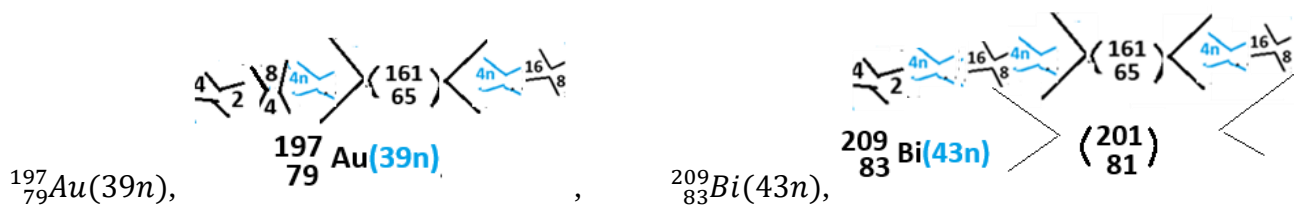
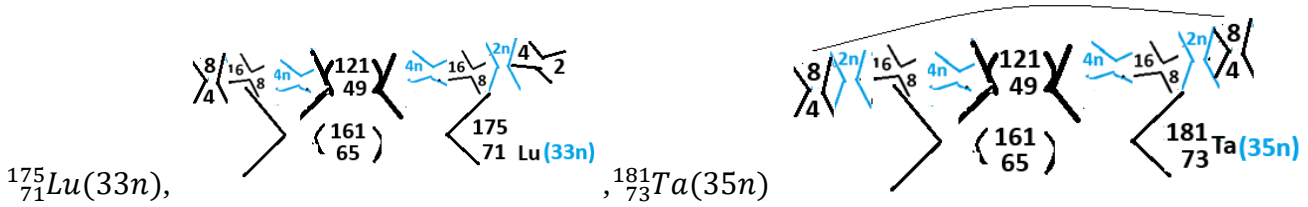
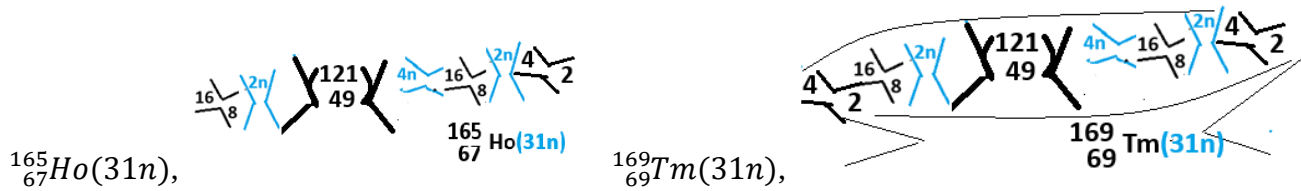
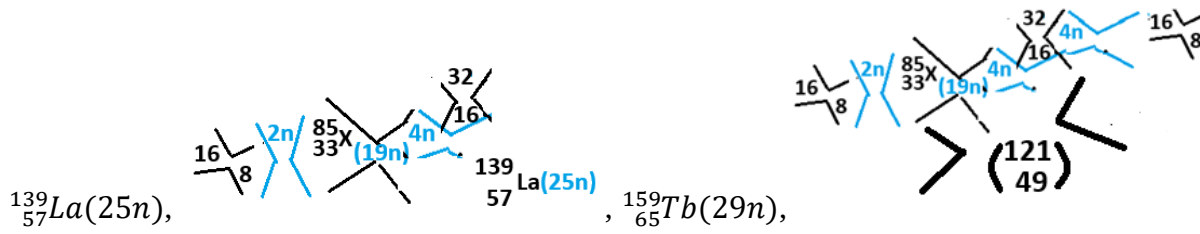
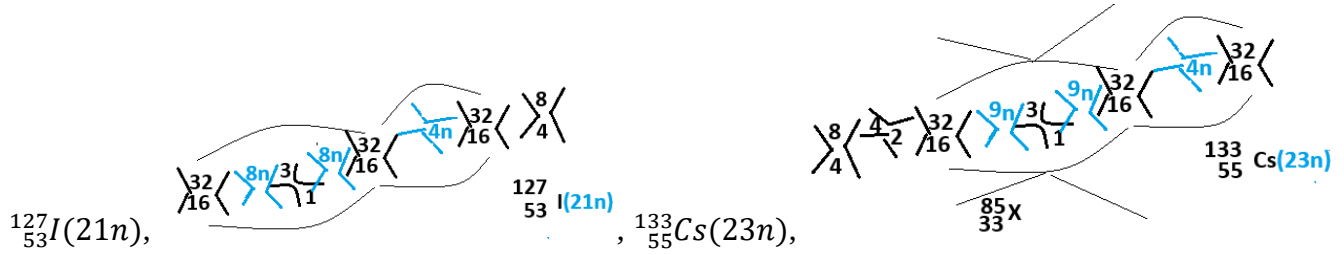
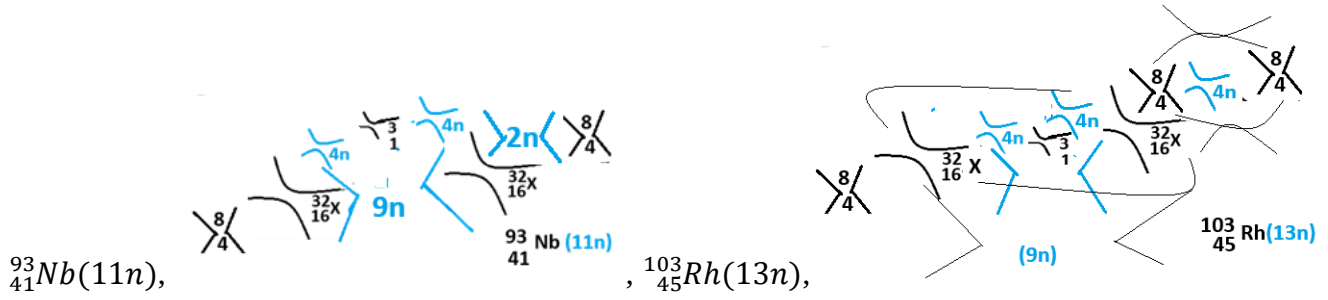
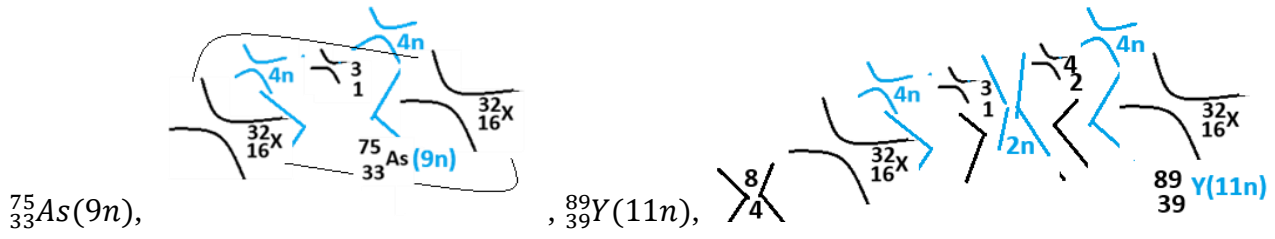


${}^{55}_{25}\text{Mn}(5n),$



, ${}^{59}_{27}\text{Co}(5n),$

As we can see, $(X \pm = Y -)$ The nuclear field is the mass field of the nucleus. The same goes for the rest.



we obtain the final stable structure of “standing waves” of neutral ($Y \pm = 2n$) quanta of the Strong Interaction in the nucleus of the atom $^{209}_{83}\text{Bi}(43n)$.

$$(X \mp = 4n)(Y \pm = 9n)(X \mp = 4n)(Y \pm = 9n)(X \mp = 4n)(Y \pm = 9n)(X \mp = 4n) = (43n) = ^{209}_{83}\text{Bi}(43n),$$

inside the structure of charged ($Y \pm = p/n$) quanta of the Strong Interaction of the nucleus, which form the structures of the electron shells of atoms, as the cause.

Such neutral ($Y \pm = 2n$) quantum structures are found in corresponding shells of charged ($Y \pm = p/n$) quanta of the Strong Interaction in self-consistent fields closed in a figure-eight chain of vortex fields. All this corresponds to the equations of dynamics and can be modeled, calculated, and predicted. Moreover, neutral quanta ($Y \pm = 2n$) of the Strong Interaction can form a nucleus without charged ($Y \pm = p/n$) quanta of the Strong Interaction, without orbital electrons, that is, without atoms, all the way to the core of neutron stars. Their maximum mass is determined by the binding energy ($Y = 14 - 17$) MeV in the fields of the Strong Interaction. For example, For ($G = 6,67 \times 10^{-8}$), we have:
 $(Gm = (14 - 17 \text{ MeV}) \times 1,78 \times 10^{-27} \times 6,67 \times 10^{-8} = (1,66 - 2) \times 10^{-33}, m \times M = 1, \text{ or } M = 1/m = (3,3 - 4)M_s$, the limiting mass of a neutron star. Saturating these ($Y \pm$) quanta ($X \pm$) of the core shells with the energy of the inductive mass quanta ($Y = 14 - 17$) MeV that the deuterium nucleus can emit ($Y = p/n$) in bremsstrahlung. These are ($Y = 14 - 17$) MeV the quanta of inductive mass. These are exactly the same quanta ($X =$) inductive magnetic field, the helium nucleus can emit ($X = \frac{4}{2}H = \frac{4}{2}\alpha$, already as $\frac{4}{2}\alpha$ -particle. Such ($Y =$) or ($X =$) quanta, it is possible to saturate or "ionize" the levels and shells of the atomic nucleus, and control the properties of the atomic nucleus.

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