Thermonuclear fusion

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Annotation

A new technology for space-matter theories is presented, the limiting case of which is the technology of Euclidean space-time axiomatics. Within the framework of this technology of theories, the difficulties of existing problems of thermonuclear fusion are presented and new principles of thermonuclear fusion are proposed.

Introduction.

Modern theories are based on Euclidean axiomatics. They describe physical properties in spacetime well, but there are problems . 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 axioms provide no answers to such questions. While these axioms were acceptable to everyone in BC, for measuring areas, volumes, and so on, they simply don't work in modern research . Euclid's " length without breadth" is today's principle of the uncertainty of a quantum's trajectory. Similarly, an electron is like a point "without parts." Where is Euclid and where are quantum theories today, but there is a direct connection here . We are talking about the technology of theories. Further. If the (+) charge of a proton (p^+), in quark ($p = uud$) models: $q_p = \left(u = +\frac{2}{3}\right) + \left(u = +\frac{2}{3}\right) + \left(d = -\frac{1}{3}\right) = (+1)$, is represented by the sum of fractional charges of quarks, but exactly the same (+1) charge (e^+) of a positron does not have quarks. Such a model and representation of the (+) charge does not correspond to reality . Electrons emit photons, but the proton itself does not emit a photon in the exchange charge interaction with the electron of an atom. Electrons with the same (-) charge themselves do not repel each other in the exchange interaction at close distances in the orbitals of an atom, but electrons are attracted to the (+) charge of more distant protons in the nucleus of the atom. Coulomb's law does not apply here. This, and many other fundamental contradictions, have no solutions in theories.

Initial provisions:

But there are facts that do not require proof, in which the Euclidean axiomatics is a limiting and special case of a more general axiomatics of dynamic space-matter.

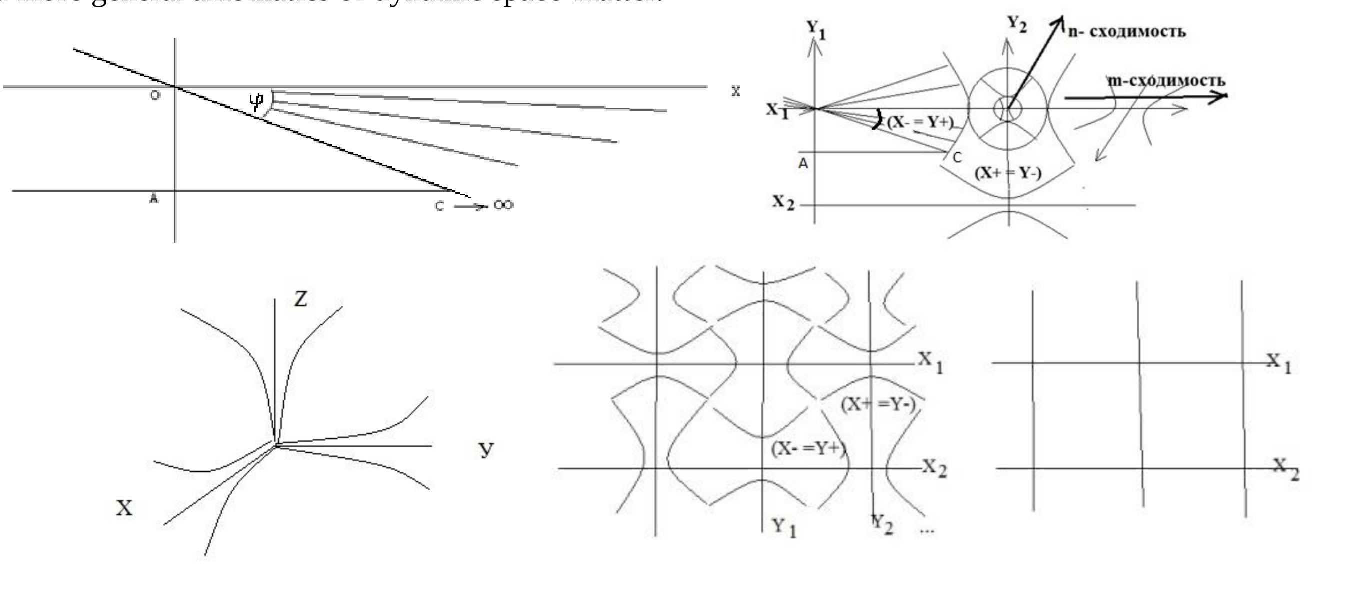


Figure 1. Dynamic *space* -matter.

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 turns into 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 have their own external $(X+)$ fields $(Y+)$. They form Indivisible Regions of Localization $(X\pm)$. $(Y\pm)$ In this case, Euclidean space with a non-zero and dynamic angle $(\varphi \neq const)$ parallelism in each of its (XYZ)axes loses its meaning. But this is the real (X-), along the (X-) axis, space of a dynamic bundle of straight lines, which we do not see in Euclidean space. In 2-dimensional space, a zero angle of parallelism (φ = 0) for (X-) and (Y-) lines yields Euclidean straight lines. In the limiting case of a zero angle of parallelism (φ = 0) in each axis, dynamic space-matter transforms into Euclidean space, as a special case of dynamic space-matter. 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. Gödel's incompleteness theorem states that any consistent formal axiomatic theory formalizing the arithmetic of natural numbers is not (absolutely) complete. This means that in any such theory there are true statements that cannot be proven within the framework of this theory. In this case, there are no arguments for truth itself, and it is questionable, and the result of the assertion in Gödel's theorem is confirmed as reality only by experiment or by a fact of reality. But even here, in both cases—Gödel's theorem and experiment—in dynamic space-matter there are (X-) or (Y-) regions that we cannot penetrate in principle and by definition, neither in the Euclidean axioms, the basis of all theories, nor in experiments. Moving, for example, along the ray (vector) AC, we can never enter the (X-) field. And this is a fact of reality, without any theorems.

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_o)- 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 НОЛ$(X \pm)$or НОЛ$(Y \pm)$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 ,

$$НОЛ = КЭ(X- = Y+)КЭ(Y- = X+) = 1, \quad НОЛ = КЭ(m)КЭ(n) = 1,$$

in a system of numbers equal by analogy to units.

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

Already within the framework of such axioms of a dynamic and unified space-matter, the physical properties of matter are considered . They are presented in the "Unified Theory 2" *http :// viXra . org / abs /2210.0051* .

Why is mathematics a tool for describing physics? Because mathematics describes space, and these are the physical properties of matter . Space-matter is a single whole,

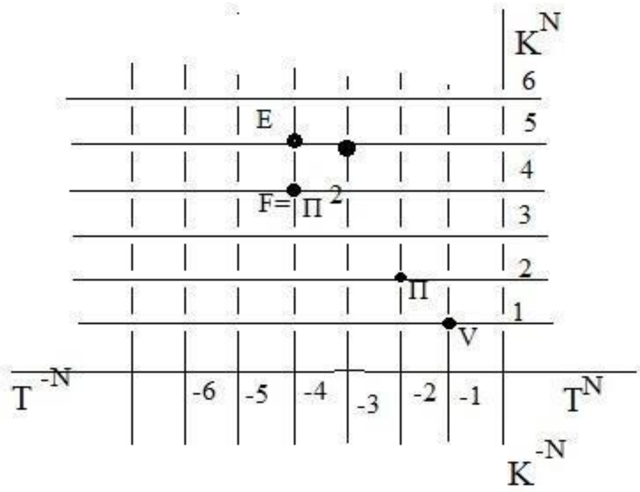


Figure 2.1. Criteria of Evolution in space-time.

in multidimensional on (mn) convergences, space-time, as in the multidimensional space of velocities: $W^N = K^{+N} T^{-N}$. 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 time (T) space-time gives: charge ПК=q (Y+ =X -) in electro (Y+ =X -) magnetic fields, or mass ПК=m (X+=Y-) in gravit (X+=Y-)

mass fields, then the density $\rho = \frac{m}{V} = \frac{\text{ПК}}{\text{К}^3} = \frac{1}{\text{T}^2} = \nu^2$ is the square of the frequency, the energy E = Π^2K, the momentum (ρ = Π^2T), the action (ħ = Π^2KT), etc., of a single NOL = (X+ = Y-) (Y+ = X -) = 1 space-matter. It is clear that the potential $W^2 = K^{+2} T^{-2} = \Pi$ is the acceleration a = $K^{+1} T^{-2}$, over the length K^{+1}, and so on.

In "Unified Theory 2" *(http://viXra.org/abs/2210.0051) , the structure and properties of indivisible protons, electrons , and the mass spectrum of elementary particles, without quarks ,* were presented. This represents a fundamentally different theoretical technology in both mathematics and physics.

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 $(ОЛ_1)$, they form the first (X + = Y-) region of localization of indivisible quanta at their $m - n$ convergences (Figure).

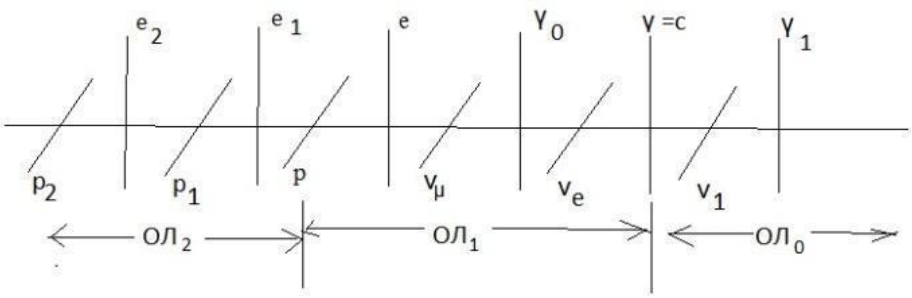


Figure 5.1 Indivisible quanta of space-matter.

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), ($\gamma_{2\ldots}$), 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.

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

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

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

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

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

$$\sqrt{G/2} * \Pi K * \sqrt{G/2} = G * m(p)/2 = m(\gamma_0) = 3.13 * 10^{-5}\ MeV,\ \text{or: } m_Y = Gm_X/2$$

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

In one $(Y\pm = X\mp)$ or $(Y+ = X-)$, $(Y- = X+)$space-matter of indivisible structural forms of indivisible quanta $(Y\pm)$and $(X\pm)$:

$(Y\pm = e^-) = (\boldsymbol{X}+= \nu_e^-)(Y-= \gamma^+)(\boldsymbol{X}+= \nu_e^-)$ electron, where NOL $(Y\pm)$= KE(Y +)KE(Y -), and

$(X\pm = p^+) = (\boldsymbol{Y}-= \gamma_0^+)(\boldsymbol{X}+= \nu_e^-)(\boldsymbol{Y}-= \gamma_0^+)$proton, where NOL $(X\pm)$=KE(X +)KE(X -),

We separate the electric and $(Y+ = X-)$magnetic fields from the mass fields $(Y- = X+)$in the form:

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

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

$$q_e = \frac{(m(\nu_e)/2)(\sqrt{\boldsymbol{2}}*\boldsymbol{G})(m(\nu_e)/2)}{m(\gamma)} = \frac{(1.36*10^{-5})^2*\sqrt{2}*6{,}67*10^{-8}}{4*9{,}07*10^{-9}} = 4{,}8 * 10^{-10}\text{СГСЕ}$$

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

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

$$q_p = \frac{(m(\gamma_0^+)/2)(\alpha^2/2)(m(\gamma_0^+)/2)}{m(\nu_e^-)} = \frac{(3{,}13*10^{-5}/2)^2}{2*137{,}036^2*1.36*10^{-5}} = 4{,}8 * 10^{-10}\text{СГСЕ}$$

Such coincidences cannot be random. For the proton wavelength $\lambda_p = 2{,}1 * 10^{-14}$см, its frequency $(\nu_{\gamma_0^+}) = \frac{c}{\lambda_p} = 1{,}4286 * 10^{24}$Гцis formed by the frequency $(\gamma_0^+)$of quanta, with mass

$2(m_{\gamma_0^+})c^2 = G\hbar(\nu_{\gamma_0^+})$. 1г $= 5{,}62 * 10^{26} MeV$, or$(m_{\gamma_0^+}) = \frac{G\hbar(\nu_{\gamma_0^+}).}{2c^2} = \frac{6{,}67*10^{-8}*1{,}0545*10^{-27}*1{,}4286*10^{24}}{2*9*10^{20}} = 5{,}58 * 10^{-32}$г $= 3{,}13 * 10^{-5} MeV$

Similarly, for an electron $\lambda_e = 3{,}86 * 10^{-11}$см, its frequency $(\nu_{\nu_e^-}) = \frac{c}{\lambda_e} = 7{,}77 * 10^{20}$Гцis formed by the frequency $(\nu_e^-)$of quanta, with mass $2(m_{\nu_e^-})c^2 = \alpha^2\hbar(\nu_{(\nu_e^-)})$, where is $\alpha(Y-) = \frac{1}{137{,}036}$a constant, we obtain:

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

Such coincidences also cannot be random. The proton's charge isopotential is a physical fact. $p(X-= Y+)e$ and an electron in a hydrogen atom. These calculations correspond to the model of the products of proton-electron annihilation. The mass fields (Y- = e) = (X+ = p) of the atom.

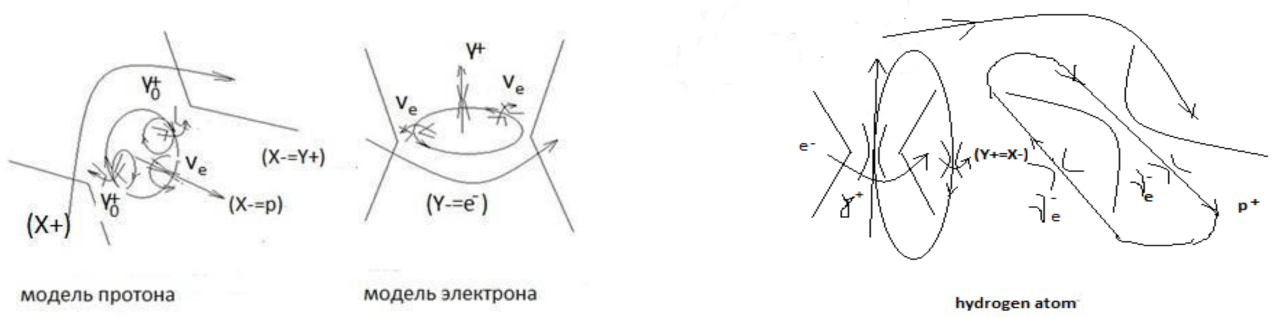


Figure 5.2. Models of proton-electron annihilation products

The properties of such models follow from the unified equations of dynamics,

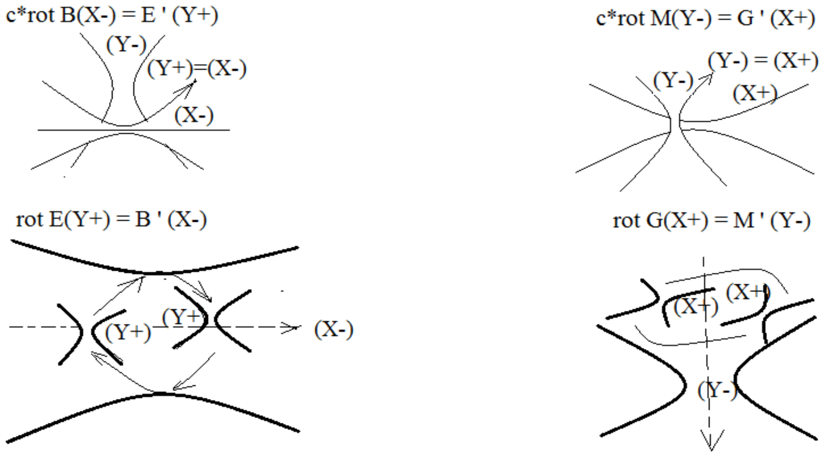


Figure 2.2. Unified fields of space-matter

Maxwell's equations for electromagnetic fields

$$c * rot_Y B(X-) = rot_Y H(X-) = \varepsilon_1 \frac{\partial E(Y+)}{\partial T} + \lambda E(Y+);$$

$$rot_X E(Y+) = -\mu_1 \frac{\partial H(X-)}{\partial T} = -\frac{\partial B(X-)}{\partial T};$$

and the equations of dynamics for gravity $(X+= Y-)$ mass fields,

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

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

For $G = 6,67 * 10^{-8}$, $\alpha = \frac{1}{137.036}$, $\nu_\mu = 0,27\ MeV$, $\gamma_o = 3,13 * 10^{-5} MeV$, $\nu_e = 1,36 * 10^{-5} MeV$, $\gamma = 9,1 * 10^{-9} MeV$, we get:

mass spectrum according to decay (annihilation) products

Stable particles with annihilation products in a single $(Y\mp= X\pm)$ space-matter:

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

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

unstable particles already in accordance with the products and decay time. $G\alpha = 4.8673 * 10^{-10}$

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

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.

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

$(X-= \pi^0) = (Y+= \gamma_o)(Y+= \gamma_o) = \frac{(T=7.8233*10^{-17})}{G^2\alpha} \exp\left(\frac{2\gamma_0^2}{G\alpha}\right) = 134{,}98\ MeV$, $\qquad (\underline{\pi^0} = 4{,}025599)$

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

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

$(Y\pm=K^+)=(Y+=\mu)(X-=\nu_\mu)=\frac{(T=1.335*10^{-8})}{G\alpha}\exp 2\left(\underline{\mu}+\nu_\mu\right)=493{,}67\ MeV,$
$(Y\pm=K^+)=(Y+=\pi^+)(X-=\pi^0)=\frac{(T=1.01398*10^{-8})}{G\alpha}\exp\left(\underline{\pi^+}+\underline{\pi^0/2}\right)=493{,}67\ MeV.\ \underline{K^-}=3{,}16535$
$\left(Y-=K_S^0\right)=(X+=\pi^0)(X+=\pi^0)=\frac{(T=0{,}885*10^{-10})}{G\alpha}\exp\left(2\underline{\pi^0}-\frac{\gamma}{G}\right)=497{,}67\ MeV,$
$(X-=K_L^0)=(Y-=\pi^\pm)(X+=\nu_e)\left(Y-=e^\mp\right)=\frac{(T=4{,}9296*10^{-8})}{G\alpha}\exp\left(\underline{\pi^\pm}+e^\mp+\frac{2\nu_e}{\alpha^2}\right)=497{,}67\ MeV,$
$(X-=K_L^0)=(Y-=\pi^\pm)\left(X+=\nu_\mu\right)\left(Y-=\mu^\mp\right)=\frac{(T=5{,}1713*10^{-8})}{G\alpha}\exp\left(\underline{\pi^\pm}-\frac{\mu^\mp}{2}+2\nu_\mu\right)=497{,}67\ MeV,$
$(X-=\rho^0)=(Y+=\pi^+)(Y+=\pi^+)=\frac{(T=5{,}02*10^{-24})}{G\alpha}\exp\left(\frac{2\underline{\pi^\pm}}{\sqrt{\alpha}}(1+\frac{1}{2\sqrt{\alpha}}\right)=775{,}49\ MeV;$
$(X\pm=\rho^+)=(\mathrm{X}+=\pi^0)(Y-=\pi^+)=\frac{(T=6{,}47566*10^{-24})}{G\alpha}\exp\left(\frac{\underline{\pi^0}}{\sqrt{\alpha}}-\frac{\underline{\pi^+(\sqrt{\alpha}-1)}}{2}\right)=775{,}4\ MeV;$

Similarly, hadrons

$(Y\pm=\mathrm{n}^0)=(X-=\nu_e^-)(Y+=e^-)(X-=p^+)=(X-=\nu_e^+)(Y+=e^+)(X-=p^-)=$ ("частица Майорано") $=$ $((T=878{,}77)\exp\left(\frac{\nu_e}{\sqrt{G}}+\frac{e}{2}-p\sqrt{G}\right)=938{,}57\ MeV,$
$(X\pm=\Lambda^0)=(X+=p^+)(Y-=\pi^-)=\frac{(T=2.604*10^{-10})}{G\alpha}\exp\left(\alpha p^++\underline{\pi^-}/2\right)=1115{,}68\ MeV,\qquad \underline{\Lambda^0}=7{,}642837$
$(Y\pm=\Lambda^0)=(Y+=n)(X-=\pi^0)=\frac{(T=1.5625*10^{-10})}{G\alpha}\exp\left(\alpha n+\frac{\pi^0}{2ch1}\right)=1115{,}68\ MeV,\qquad \underline{\Lambda^0}=8{,}153$
$(Y-=\Sigma^+)=(X+=p^+)(X+=\pi^0)=\frac{(T=8.22*10^{-11})}{G\alpha}\exp\left(\alpha p^++\frac{\underline{\pi^0}}{2}\right)=1189{,}37\ MeV,$
$(X-=\Sigma^+)=(Y+=n)(Y+=\pi^+)=\frac{(T=8.1*10^{-11})}{G\alpha ch1}\exp(\alpha n+\pi^+)=1189{,}37\ MeV,$
$(X-=\Sigma^-)=(Y+=n)(Y+=\pi^-)=\frac{(T=1.25*10^{-10})}{G\alpha}\exp(\alpha n+\pi^+)=1189{,}37\ MeV,$
$(X-=\Sigma^0)=(Y+=\Lambda^0)(Y+=\gamma)=\frac{(T=7.4*10^{-20})}{G^2\alpha*ch1}\exp\left(\frac{\underline{\Lambda^0}+\gamma/G}{2}\right)=1192{,}64\ MeV,\qquad \underline{\Lambda^0}=7{,}642837,$
$(Y\pm=\Xi^0)=(Y+=\Lambda^0)(X-=\pi^0)=\frac{(T=2.5984*10^{-10})}{G\alpha}\exp\left(\underline{\Lambda^0}-\underline{\pi^0}\sqrt{\alpha}\right)=1314{,}86\ MeV,$
$\underline{\Lambda^0}=8{,}153,\ \underline{\Xi^0}=7{,}809,$
$(X\pm=\Xi^-)=(X+=\Lambda^0)(Y-=\pi^-)=\frac{(T=1.3917*10^{-10})}{G\alpha}\exp\left(\underline{\Lambda^0}+\underline{\pi^-}/2\right)=1321{,}71\ MeV,$
$\underline{\Lambda^0}=7{,}642837,\ \underline{\Xi^-}=8{,}43869,$
$(X-=\Omega^-)=(Y+=\Lambda^0)(Y+=K^-)=\frac{(T=8.018*10^{-11})}{G\alpha}\exp\left(\underline{\Lambda^0}-\underline{K^-}/2\right)=1672{,}45\ MeV,$
$\underline{\Lambda^0}=7{,}642837,\underline{K^-}=3{,}16535$
$(X-=\Omega^-)=(Y+=\Xi^0)(Y+=\pi^-)=\frac{(T=6.734*10^{-11})}{G\alpha}\exp\left(\underline{\Xi^0}+\underline{\pi^-}\right)=1672{,}45\ MeV,\ \underline{\Xi^0}=7{,}809,$
$(Y-=\Omega^-)=(X+=\Xi^-)(X+=\pi^0)=\frac{(T=7.1147*10^{-11})}{G\alpha}\exp\left(\underline{\Xi^-}+\underline{\pi^0}/ch2\right)=1672{,}45\ MeV,\ \underline{\Xi^-}=8{,}275,$

What's remarkable is that there are no Standard Model quarks here. They're not needed.

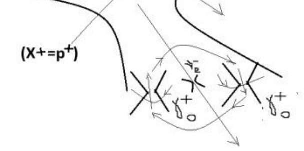
Models of the nucleus of the atomic spectrum

In unified models of the decay products of the mass spectrum of elementary particles, in unified fields $(Y-=\mathrm{X}+)$of $(Y+=\mathrm{X}-)$space-matter, it is possible to represent models of the nucleus of the spectrum of atoms.

Based on calculations of the masses of the proton and neutron:

$(\mathrm{X}\pm=p)=(Y-=\gamma_o)(X+=\nu_e)(Y-=\gamma_o)=\left(\frac{2\gamma_o}{G}-\frac{\nu_e}{\alpha^2}\right)=938{,}275\ MeV,$
$(Y\pm=n)=(X-=\nu_e)(Y+=e)(X-=p)=(T=878{,}77)\exp\left(\frac{\nu_e}{\sqrt{G}}+\frac{e}{2}-p\sqrt{G}\right)=938{,}57\ MeV,$

we can talk about models of the structure of the proton, neutron, charged $(Y\pm=p/n)$and neutral quanta $(Y\pm=2n)$of the Strong Interaction.



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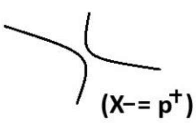
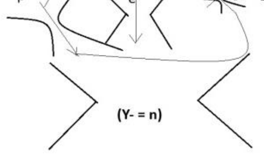
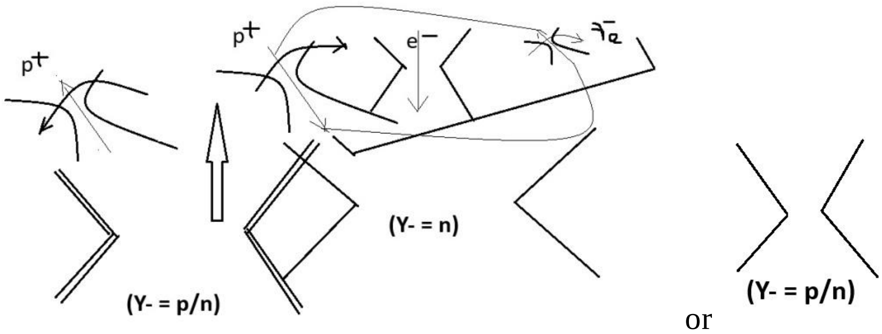


Proton quantum



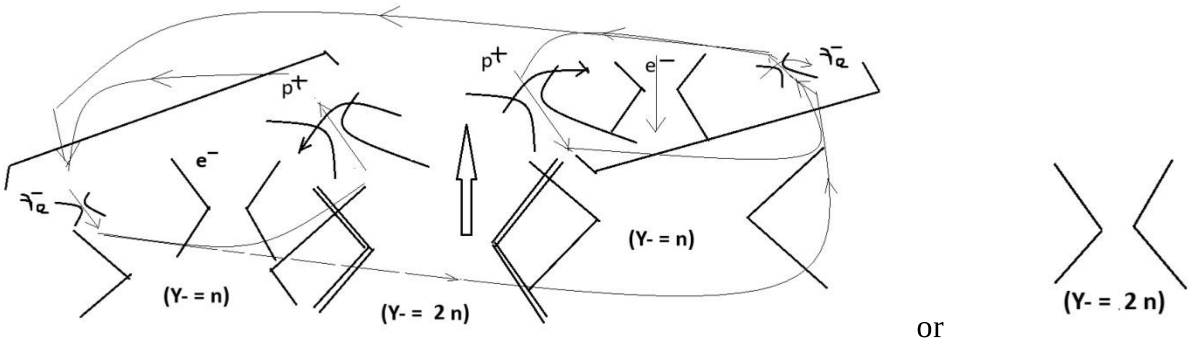
or


Neutron quantum



or

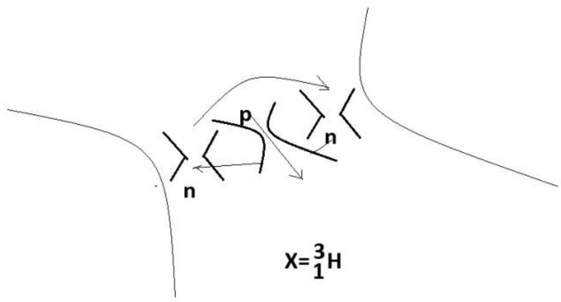
charged quantum $(Y\pm= p/n)$of the Strong Interaction, this is $(Y\pm= {}_{1}^{2}H)$the deuterium nucleus



or

neutral quantum $(Y\pm= 2n)$of the Strong Interaction.

And these quanta $(Y\pm= p/n)$of $(Y\pm= 2n)$the Strong Interaction form the structures of the nuclei of atomic spectra. Let's consider the models of the nuclei of the simplest hydrogen-like atoms:$(Y\pm= {}_{1}^{3}H)$



$(Y-) = 2(X+)\left(\alpha = {}^{1}/{}_{137}\right) \times 938{,}57 = 2 \times 6.85 = 13.7\ MeV$quanta of the Strong Interaction, or maximally saturated quanta $(Y-) = 2 \times 8.5 = 17MeV$, when fields $(X+)(X+) = (Y-)$form mass $(Y-)$trajectories. Such $\left(Y\pm= {}_{n}^{\mathrm{p}}\right)$quanta $(Y\pm= 2n)$of the Strong Interaction form the structures of the nucleus in $(X\pm= Y\mp)$ its unified space-matter, with closed vortex $(X-)$magnetic fields and $(Y-)$mass fields. Let us imagine the structures of the nucleus as such models of charged $\left(Y\pm= {}_{n}^{\mathrm{p}}\right)$quanta of the Strong Interaction in a unified $(Y\pm = X\mp)$or $(Y- = X+)$space $(Y+ = X-)$-matter. For example:

$(Y\pm = {}_{n}^{p} = {}_{1}^{2}H)$, $(X\pm) = \left(Y+= {}_{n}^{\mathrm{p}}\right)\left(Y+= {}_{n}^{\mathrm{p}}\right) = (X- = {}_{2}^{4}\alpha)$,

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

$(X+= {}_{1}^{3}H)(X+= {}_{2}^{4}H) = (Y-= {}_{3}^{7}Li)$, and so on $(X-= {}_{2}^{4}\alpha)(Y+= {}_{0}^{1}n)(X-= {}_{2}^{4}\alpha) = (Y-= {}_{4}^{9}Be)$.

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

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

The new structure inside the core $(X+= {}_{2}^{4}\alpha)(X+= {}_{2}^{4}\alpha) = ({}_{4}^{8}Y-)$gives the cores: $({}_{4}^{8}Y+)({}_{4}^{8}Y+) = (X-= {}_{8}^{16}O)$,

$(Y-= {}_{4}^{8}Y+)(X+= {}_{1}^{3}H)(Y-= {}_{4}^{8}Y+) = (X\pm= {}_{9}^{19}F)$, and similarly further.

neutral structure $(Y\pm = 2n)(Y\pm = 2n) = (X\mp = 4n)$, located inside the nucleus$(X\pm = {}_{18}^{40}Ar(4n))$

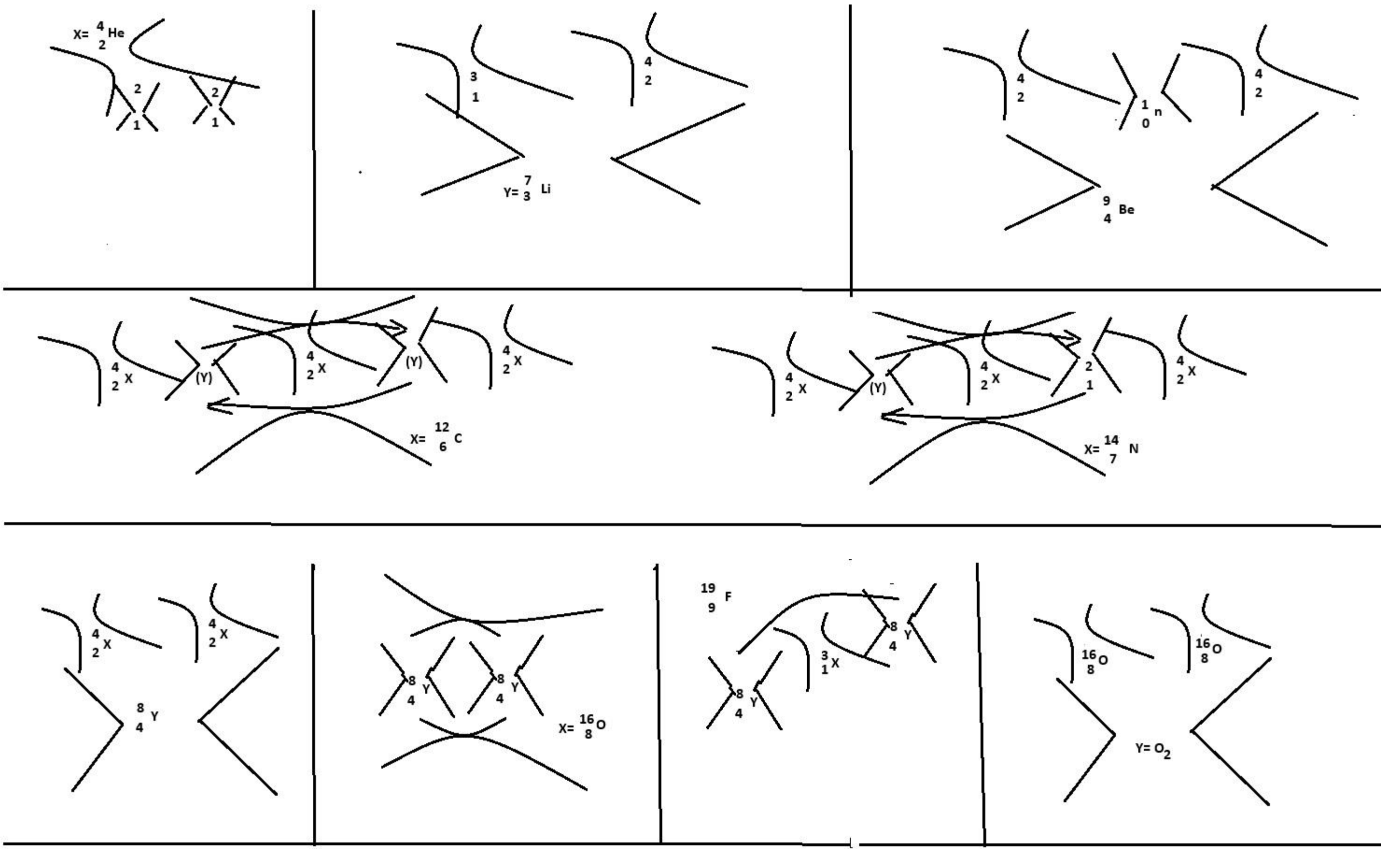
$$(X\mp= {}_{6}^{12}X)\ (Y\pm = 2n)(X\mp= {}_{6}^{12}X)(Y\pm = 2n)(X\mp= {}_{6}^{12}X) = (X\pm= {}_{18}^{40}Ar(4n))$$

Note that in 100% of the states of the core,

${}_{4}^{9}(1n)$, ${}_{9}^{19}(1n)$, ${}_{11}^{23}(1n)$, ${}_{13}^{27}(1n)$, ${}_{15}^{31}(1n)$, ${}_{18}^{40}(4n)$, ${}_{21}^{45}(3n)$, ${}_{23}^{51}(5n)$, ${}_{25}^{55}(5n)$, ${}_{27}^{59}(5n)$, ${}_{33}^{75}(9n)$, ${}_{39}^{89}(11n)$, ${}_{41}^{93}(11n)$, ${}_{45}^{103}(13n)$, ${}_{53}^{127}(21n)$, ${}_{55}^{133}(23n)$, ${}_{57}^{139}(25n)$, ${}_{59}^{141}(23n)$, ${}_{65}^{159}(29n)$, ${}_{67}^{165}(31n)$, ${}_{69}^{169}(31n)$, ${}_{71}^{175}(33n)$, ${}_{73}^{181}(35n)$, ${}_{79}^{197}(39n)$, ${}_{83}^{209}(43n)$, Thus, structures of neutral quanta of the Strong Interaction exist. In this case , we obtain a final stable structure of "standing waves" of neutral $(Y\pm=2n)$quanta of the Strong Interaction in the nucleus of an atom ${}^{209}_{83}Bi(43n)$.

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

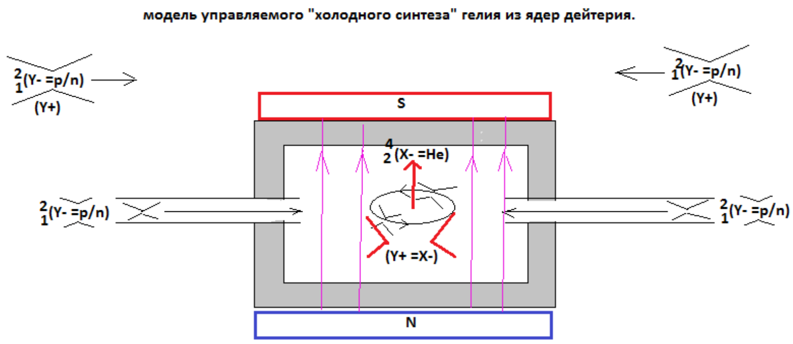
Let us consider the models of the nucleus spectrum of these atoms, in a 100% state, without isotopes, in a single state $(Y\pm=X\mp)$ or $(Y+=X-)$, $(Y-=X+)$space-matter.



Nuclei across the entire spectrum of atoms in the periodic table are modeled similarly . This is easier to do on a computer, including atomic isotopes and molecules. The orbitals of an atom's electrons correspond to the structure of the shells, the charged quanta of the Strong Interaction of the nucleons of the atom's nucleus.

Conditions for a cold fusion thermonuclear reaction

Based on the presented models of the atomic spectrum, we can discuss the optimal conditions for thermonuclear fusion of light nuclei. Today, controlled thermonuclear reactions $({}^{2}_{1}H+{}^{3}_{1}H\rightarrow{}^{4}_{2}He+{}^{1}_{0}n+17{,}6MeV)$are created in plasma. These are different nuclei. In space-matter, $(Y-=X+)$this is $({}^{2}_{1}H+{}^{3}_{1}H)$similar to the relationship between the mass trajectories of a "positron," $(Y-=p^{+}/n=e^{***+})$or $(Y-=e^{+})$, and a "proton," $(X+={}^{3}_{1}H=p^{***})$or $(X+=p^{+})$. A proton and a positron, with mutually perpendicular $(Y-)\perp(X-)$trajectories. , It's like "hydrogen," in which **<u>everything tends to rupture the structure</u>** , in plasma in this case. And only during impacts in high-temperature plasma, in $(X+=p^{+})$strong interaction fields , The trajectories of the vortex masses of the new nucleus are formed $(Y-=p^{+}/n)(Y-=p^{+}/n)=(X\pm={}^{4}_{2}He)$as a stable structure, with the release of neutrons. Inelastic collisions of low-energy deuterium nucleus beams in a chamber with perpendicular magnetic field lines, without the primordial plasma, appear more optimal .



Cold fusion nuclear reactor

This would be controlled "cold fusion" of helium. The energy yield of such fusion can be calculated using the standard method.

$$\Delta m(2[{}_1^2H]) = 2[(1{,}00866 + 1{,}00728) - (m_{core} = 2{,}01355)] = 0{,}00478\text{aem}$$

$$\Delta m([{}_2^4He]) = [(2 * 1{,}00866 + 2 * 1{,}00728) - (m_{core} = 4{,}0026)] = 0{,}02928\text{aem.}$$

$$\Delta E = \Delta m([{}_2^4He]) - \Delta m(2[{}_1^2H]) = (0{,}02928 - 0{,}00478) = (0{,}0245) * 931{,}5MeV = 22{,}82MeV$$

Two grams (one mole) of such deuterium plasma are equivalent to 25 tons of gasoline. Not bad. Helium nuclei, like alpha particles, heat the water jacket of an already controlled thermonuclear reactor.

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