Arguments Supporting Model of Three-Positron Structure of the Proton

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Abstract

In this paper arguments supporting model of three-positron structure of the proton are discussed. They are divided into four groups. The first group of arguments is based on external effects which positron and proton generate, interpreted in the context of multicomponent vacuum medium mechanics. Within the second group mechanisms of annihilation of proton and antiproton are analysed. Third group is related to cosmological processes especially related to processes on the inside of black holes. Finally we discuss how three-positron structure of proton supports concepts of selforganization processes in molecular systems on the most fundamental level of description. In this case the three-positron structure of proton is interpreted as a chain state of three positrons. This in turn is interpreted as an asymptotic state of three positrons induced by an attractor. Such an interpretation indicates that strength of this attractor is considerable since it is able to overcome even electrostatic repulsion at very small distances. Existence of such an attractor in electronic structure in molecular systems can be interpreted as responsible for long lasting evolution.

1 Introduction

Internal structure of proton is investigated for many years. As a result of these investigations three-parton structure is well established. However, what kind of particles are partons is an open question since disintegration of proton is not observed yet. Decay modes predicted by the Standard Model undergo the charge conservation law [1]. Partons are usually identified with quarks having fractional charge. However, free quarks are not observed yet.

Fractional charge of quarks suggests more deep discussion on status of the charge conservation law. This fractional charge happens just by assumption
that charge conservation law has the highest status. In order to satisfy this law fractional charges have to be assigned to quarks placed on the inside of proton. However an open question is whether charge should be considered as a fundamental notion of particle theories. Let us note that charge is a constant which characterizes Coulomb electric field of separate particles and as such is chosen rather accidentally and is not related directly to more elementary level than the elementary particle.

More elementary level of theoretical description than that one represented by elementary particles is suggested in the paper [2] and developed in papers [3], [4], [5], [8] and is called the vacuum medium mechanics. The vacuum medium has multicomponent structure and particles appear in this medium as vortexes of various components separated from the remaining part of the vacuum medium by a discontinuity surface. As a result of this a fundamental notion corresponding to charge is now strength of the medium against separation of components and only a critical maximal value of electric field can be attained on the surface of particle.

Consequences are serious since breaking of charge conservation law can be described. Furthermore, three-positron structure of proton appears in a natural way. However, since disintegration of proton is not observed yet we discuss in this paper arguments supporting the concept of three-positron structure of proton. Within this discussion we interpret observed properties of proton as well as other physical processes related to this particle within context of the vacuum medium mechanics.

2 Arguments based on multicomponent structure of the vacuum medium

In order to discuss premises for three-positron proton structure admitting breaking of charge conservation law we should discuss first concisely assumptions of the vacuum medium model.

We assume that the medium is composed of fourth components with densities denoted by $\varrho_v$, $\varrho_\bar{v}$, $\varrho_w$, $\varrho_\bar{w}$ [2]. All these densities together create density

$$\varrho = \varrho_v + \varrho_\bar{v} + \varrho_w + \varrho_\bar{w} \quad (1)$$

of the medium with stable structure. The equilibrium state of the $\varrho$-medium is characterized by an assumed value $\varrho = \varrho_0$.

Each component which is placed within $\varrho$ can be deformed separately. This is expressed, for each component correspondingly, with the help of deformation functions $p = \chi_p(X)$, $\bar{p} = \chi_\bar{p}(X)$, $s = \chi_s(X)$, $\bar{s} = \chi_\bar{s}(X)$. As a result we can introduce the following displacements within an elementary unit of the vacuum medium:
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\[ \mathbf{v} = \mathbf{p} - \mathbf{X}, \quad \bar{\mathbf{v}} = \mathbf{p} - \mathbf{X}, \quad \mathbf{w} = \mathbf{s} - \mathbf{X}, \quad \bar{\mathbf{w}} = \mathbf{s} - \mathbf{X} \quad \text{(2)} \]

which are considered as small. Owing to above introduced displacements we are able to apply methods of continuum mechanics to description of the vacuum medium.

We assume furthermore that two pairs of the components are discriminated by special interactions. Components within each pair are able to move with respect to each other. Accordingly, we can reduce the number of variables by introducing the new ones: \( u = \bar{\mathbf{v}} - \mathbf{v} \) and \( q = \bar{\mathbf{w}} - \mathbf{w} \). At this moment it is also assumed that \( \bar{\mathbf{v}} = -\mathbf{v}, \quad \bar{\mathbf{w}} = -\mathbf{w} \). Vectors \( u \) and \( q \) distributed in space correspond to electric intensity field and magnetic induction field respectively.

For sufficiently high energy the component \( \varrho \) can be decomposed into the sum

\[ \varrho = a + b, \quad a = \varrho_v + \frac{1}{2} (\varrho_w + \varrho_{\bar{w}}), \quad b = \varrho_{\bar{v}} + \frac{1}{2} (\varrho_w + \varrho_{\bar{w}}). \quad \text{(3)} \]

We do not interpret this decomposition in details yet. This is done in order to fix a position for further considerations.

After the separation components \( a \) and \( b \) rotate creating electron and positron respectively. Mechanism of this rotation has been discussed in [9].

The component \( a \) is separated from \( \varrho \) by a discontinuity surface \( S_a \) in case of electron. Motion of this surface is identified with motion of electron. Thereby, the electron is an extended particle with its own internal dynamics related to motion of components. Similarly, the positron is composed of the rotating component \( b \) also separated from \( \varrho \) by a discontinuity surface denoted here by \( S_b \).

Neutrino is interpreted as a rotating state of \( \varrho \) separated by a discontinuity surface \( S_\varrho \) from stable \( \varrho \) medium [2], [3].

Coexistence of \( a, b \) and \( \varrho \) in a point of space can be considered as a disturbed state of the vacuum medium without any particle. Taking into account possible polarization of \( \varrho \) manifested by \( u \) and \( q \), the state associated with nonequilibrium distribution of components without any particle is expressed generally as \( \{a, b, \varrho, u, q\}(\mathbf{X}) \) for sufficiently low energy.

Position of the surface of particle is precisely determined within the continuum model with a discontinuity surface. Thus, position of electron is also entirely determined. This does not mean that we are able to measure the position precisely.

Motion of the electron is associated with separation of the component \( a \) and \( b \) from \( \varrho \) in front of the particle. The component \( a \) goes into the particle and the component \( b \) is in an excessive amount present in front of the particle. On the other hand behind of electron an amount of \( a \) is stopped due to internal and surface forces which act on the particle. Consequently, motion of the electron
is associated with a nonequilibrium distribution of components represented by the field \( \{a, b, g\}(X) \) and interpreted as a wave function. This nonequilibrium distribution has to relax in order to recover stable vacuum medium structure. Laws of this relaxation determine evolution of the wave function. Let us note that neutrino has no wave function since its motion is not associated with separation of any components.

We have assumed that the same components attract themselves. By this mechanism electric field represented by \( u \) appears in space when a source of this field represented by electron is present. Let us note that the discontinuity surface is characterized by the condition

\[
\mathbf{u} = \mathbf{u}^*.
\]  

(4)

In other words attraction within component \( a \) induces considerable shrinking of the medium \( a \) of electron with respect to the remaining part \( g \) of the vacuum medium. Then, a critical value of \( \mathbf{u} \) appears on surface of the electron since the separated component \( a \) attracts similar component placed within \( g \) inducing its polarization. This critical value expresses maximal strength in multicomponent system necessary for separation of corresponding components. This is also considered as a fundamental notion instead of charge within the vacuum medium mechanics discussed here. Thereby, the charge appears as a consequence of appearing of the separation surface with the condition (4).

This general discussion allows us to formulate first reason why the proton could be composed of three positrons. The same external effect generated by positron and proton represented by the same charge of both particles and their resulting external electric field suggests directly that the same component is present on the inside of both positron and proton. Three-parton structure suggests just that three positrons are present on the inside of proton.

However, the question is why we have to do with the same external electric field for three positrons in comparison with electric field of one positron. Justification follows just from (4). In other words, we assume that positrons in proton are sufficiently close in order to see external surface of proton approximately by one discontinuity surface \( S_b \) with the condition (4).

The next question appears when we consider diameter of proton which can be viewed as about thousand time larger than the positron. Then, the question is why external field of proton is so similar to external field of positron if the critical condition occurs on surfaces with considerably various diameter. This question has been discussed in [10]. Concisely, the electric field is flat in near-to-surface region of the particle which follows directly from multicomponent mechanism of generation of electric filed. The field is Coulombic on larger distances only. This follows the same electric field of both particles just at larger distances.

Another question appears when we discuss the problem why three positrons
are together against electrostatic repulsion. Discussion of waving in the vacuum medium leads directly to concept of the chain state of particles with the same charge [4]. Just this state is responsible for overcoming electrostatic repulsion. Concept of the chain state will also be discussed in what follows.

The second argument for three-positron composition of proton follows from existence of neutrino. In case when we approach an electron to proton, which can happen under pressure generated by large gravitation of stars for instance, we can expect interactions of a part of the medium of proton with a part of the medium of electron. In case when proton is composed of the same component as positron then joining of both components can generate vortex of $\rho$ medium which is interpreted just as the neutrino. It is admissible creation of pair of neutrinos and one of them can leave the neutron. Stability of electron and stability of three-positrons joined in a dynamical state prevent possibility of direct full annihilation of these components before destroying of the whole proton. Generation of neutrino on described above way can be considered as a partial annihilation. Thereby, we obtain in natural way an answer to the question why neutrino appears in stars [8].

It is evident that the neutron within such a description is composed of proton, electron and antineutrino in a bounded unstable state, in accordance with its decay. Thereby, both proton and neutron are not composed of quarks.

This point of view on structure of neutron can also be justified on another way. Let us notice that disintegration of proton needs large energy. The energy 3.5 TeV in LHC still remains proton not destructed. This fact suggests that proton is very stable and as such remains as an individual particle within the neutron. Therefore we come to the conclusion that structure of neutron is determined by unstable bounded state of proton, electron and antineutrino.

Summarizing, arguments supporting three-positron structure of proton follows from the same external electric field of both particles interpreted as induced by the same particle components. Appearing of neutrino in neutron structure also supports discussed here structure of proton.

3 Arguments based on proton-antiproton annihilation

Three-positron structure of proton should be in accordance with proton-antiproton annihilation. Let us note that dominant paths of low energy annihilation produces three positrons and three electrons. It means that the three-positron structure is not at variance with discussed annihilation processes. Larger number of positrons and electrons can happen due to high energy of this process by production of additional electron-positron pairs. It is also possible immediate annihilation of electrons on positrons which lead to smaller number of these
Another serious argument follows from fact that proton and antiproton cannot annihilate directly to electromagnetic waves. Let us note that scenario of production of electron and positron from electromagnetic wave happens by attaining sufficiently high \( u \) within electromagnetic wave which leads to separation of components into electron and positron. Consequently, electron and positron annihilates through electromagnetic waves similar to that ones which would be able to create them.

Conditions for annihilation of proton and antiproton are not similar to the previous case. Now we have to do with three positrons and three electrons which annihilates almost simultaneously. Thereby, there does not exist so strong electromagnetic wave in order to exceed so considerably the condition (4) for production directly close three electron-positron pairs. In other words energy of this annihilation is too large in order to create only electromagnetic wave. Therefore, within so unstable \( \varrho \)-medium simpler antiparticle pairs should appear first. This is the case just when proton and antiproton annihilates. Therefore, annihilation process of proton and antiproton supports concept of three-positron proton structure.

4 Arguments based on processes on the inside of black holes

In the paper [5] we define the black hole state of particles within the context of vacuum medium as a set of particles closed by a surface where sufficiently strong gravitation makes impossible propagation of electromagnetic waves. However, this criterion related to softening of interactions responsible for propagation of electromagnetic waves, does not follow that no particles can leave the black hole. This in turn follows from fact that mechanisms responsible for propagation of electromagnetic waves and motion of particle are different. Thereby, very strong gravitational field is an obstacle for propagation of electromagnetic waves but particles can move and leave the black hole when they have sufficiently large energy.

Energy can be provided into particles of the black hole by means of accretion disk of matter. The black hole is considered as a dense hard fluid or even superfluid composed of protons and electrons predominantly. Then, energy provided into region of equator of the black hole by hitting matter of accretion disc, can be transferred into its center. Next it can be directed towards axis perpendicular to the plane of the accretion disc. Within this model relativistic jets are generated on the inside of black holes.

Let us admit the situation when the black hole is big sufficiently and gravitational compression is so strong that annihilations of electrons on protons
are close to initiation. Then, the elastic wave induced by hitting matter of accretion disc could initiate them. We can discuss also the situation when gravitational compression is so big that initiation of annihilations of electrons on protons can happen without energy provided by accretion disc.

Consequently we consider three kinds of processes on the inside of black holes. In the first case they induce relativistic jets without cooperation with annihilation of electrons on protons. In the second case jets are supported by energy of annihilation processes but annihilation is stopped when accretion disc stops providing matter and energy. In the third case we have to do with massive annihilation on the inside of black hole induced by gravitational compression only.

We can expect that the first kind of processes could happen in micro-quasars. On the other hand very large number of positrons in the central region of our galaxy [6] where supermassive black hole is placed, suggests that the second kind of processes could happen there. Positrons are in fact not produced in the Universe due to low densities of energies corresponding to cosmological processes. This suggests directly that positrons are produced on the inside of black hole. Then annihilation of electrons on protons on the inside of black hole could be viewed as a reaction providing an excessive number of positrons which could be next emitted by relativistic jets. Above discussion suggests that presence of positron clouds in the central region of our galaxy supports the three-positron structure of proton.

Another example is related to still larger supermassive black hole of quasars. In their powerful jets presence of positrons is discovered [7]. This fact could also be interpreted as supporting three-positron structure of protons.

The third case related to processes on the inside of black hole leads to massive explosion of space on the inside of this black hole. Let us note that annihilation of electron on one positron from proton leads to joining of two components \( a \) and \( b \) into \( \varrho \) what means just generation of our space. We assume that volume of corresponding \( \varrho \) element is considerably larger than volume of \( a \) and \( b \). This leads to a Big Bang theory based on annihilation processes [5] and explosion of space instead of the most widespread Big Bang theory related to creation of pairs.

The question is where confirmation of three-positron structure of proton takes place in case of this Bing Bang theory. The answer rests on consistency of the Bing Bang based on annihilation with astrophysical observations. Explosion of space is rather unstable. It means that not whole matter of central region of the Black hole is annihilated. This explains existence of galaxies and also massive black holes at the beginning of our universe. This explains also asymmetry of matter and antimatter which follows directly from initial conditions of this explosion.

The further from center of explosion the larger objects could remain in
form of massive matter. This suggests existence of large number of black holes far from center of explosion. This in turn could explain why the cosmic sky is black. We see very dense matter which is interpreted as an internal wall of the black hole which surrounds the space after explosion. Expanding universe accelerates. It can be explained by gravitational attraction of galaxies by the external shell of matter of the black hole.

Very large number of black holes at larger distances from center of space explosion suggests existence of large number of collisions of black holes which are present there. Such collisions could be associated with gamma ray bursts. Let us note that two approaching black holes weaken gravitational field in region between them. Thus propagation of light could be possible there. When collision occurs, then massive annihilation of electrons on protons produces intense gamma ray burst which is suppressed soon, owing to merging of the two black holes. Such a scenario is in accordance with three-positron proton structure as well as with astrophysical observations of gamma ray bursts and their relative short duration.

Above interpretation of gamma ray bursts as associated with internal wall black hole objects leads to the conclusion that GRB should appear on the whole sphere stochastically. This is just in accordance with astrophysical observations.

5 Areas of biological evolution in relation to three-positron structure of proton

We have discussed previously the chain state of particles with the same charge as responsible for positrons confinement within proton. Such a concept has been introduced in [4] by considering processes of the vacuum medium responsible for generation of the wave function.

In order to discuss consequences of the vacuum medium mechanics on the molecular level we are forced to introduce considerable simplifications. This is done in the paper [8]. It is accentuated within this approach that electronic structure and conjugations of electronic and nuclei motion are responsible for selforganisation of molecular processes, in particular that ones related to molecular biology. Since the vacuum medium mechanics is rather complicated and not entirely finished we can introduce a phenomenological theory of electronic structure of atoms, having motivations from multicomponent vacuum medium.

We assume in [8] that electron is a classical point-like particle described by equations

$$\frac{d\mathbf{R}}{dt} = \mathbf{v},$$

(5)
\[
m \frac{d\mathbf{v}}{dt} = \mathbf{f},
\]

where \( \mathbf{R} \), \( \mathbf{v} \) and \( m \) are position, velocity and mass of electron correspondingly.

Within this approach more complex form has force \( \mathbf{f} \) acting on the electron. We assume that this force has two main components

\[
\mathbf{f} = \mathbf{f}_a + \mathbf{f}_{ab}.
\]

The component \( \mathbf{f}_a \) represents force induced by electrostatic field only. The component \( \mathbf{f}_{ab} \) represents influence of nonequilibrium distribution of components of the vacuum medium induced by motion of particle expressed as force acting on the classical point-like particle. Thereby, role of the wave function will be represented just by the force \( \mathbf{f}_{ab} \). We do not discuss here any other possible sources of force such as magnetic or gravitational field for instance.

Consequently, the force \( \mathbf{f}_a \) is defined on a classical way. The force \( \mathbf{f}_{ab} \) needs a kind of constitutive equations in order to reflect possibility of modelling of a discrete set of electronic orbits of an atom or various interparticle interactions.

Motion of the electron is associated with an excess of the component \( b \) in front of the particle in a region denoted by \( B_F \), and a deficiency of this component and also excess of \( a \) within zone denoted here by \( A_B \) at the back of the electron. Way of relaxation of this nonequilibrium distribution of components is associated with a system of forces acting on the electron. We assume that

\[
\mathbf{f}_{ab} = \mathbf{f}_{DS} + \mathbf{f}_b + \mathbf{f}_a.
\]

The force \( \mathbf{f}_b \) represents a barrier against motion of the electron due to an excess of the component \( b \) in front of the particle and has direction opposite to the motion approximately. The force \( \mathbf{f}_a \) also acts against motion and has direction tangent to the path of the particle. The force \( \mathbf{f}_{DS} \) is parallel by assumption to the force \( \mathbf{f}_b \) but has the sense the same as velocity and represents dynamics of separation of components in front of the particle and processes associated with transfer of \( b \) into back of the particle.

An excess of the component \( b \) in front of the particle is described by the field \( b(\mathbf{X}) \) in full description. We assume that an amount of this component is placed within a region \( B_F \) in front of the particle. The whole amount of \( b \) in this region is represented by a scalar \( b \) in our approximation. Similarly, an amount of component \( a \) represented by scalar variable, is contained in a region \( A_B \) behind of the particle.

An uniform motion of particle is associated with a stationary profile of the wave function. We admit here also accelerated motion. Then, the wave function can have a nonstationary profile. Within our approximation we assume that
\[ b = \bar{b}(v) + \delta b, \quad a = \bar{a}(v) + \delta a, \quad (9) \]

where \( \bar{b}(v) \) and \( \bar{a}(v) \) represents amount of \( b \) and \( a \) corresponding to a stationary motion with velocity \( v \).

We assume that the force \( f_{ab} \) can be expressed in the form

\[ f_{ab} = f_{DS}(v) t - f_b(b) t - f_a(a) t_{pth}, \quad (10) \]

where \( t \) is a unit vector which should be determined, \( t_{pth} = v / |v| \) is unit vector tangent to the path of the electron. Functions \( f_b \) and \( f_a \) are monotone with respect to \( b \) and \( a \) by assumption.

The relation (10) indicates that we have to do with variables \( a \) and \( b \) which are not present in (5) and (6) and should be determined by additional equations. We postulate them in the following forms

\[ \frac{da}{dt} = \bar{c}_a(v) + c_{Ja} \quad (11) \]

and

\[ \frac{db}{dt} = \bar{c}_b(v) + c_{Jb}, \quad (12) \]

where \( \bar{c}_a(v) \) and \( \bar{c}_b(v) \) are production of \( a \) and \( b \) correspondingly owing to velocity of motion \( v \). \( c_{Ja} \) and \( c_{Jb} \) stand for production of components due to other mechanisms including divergence of efflux from regions \( A_B, B_F \) interpreted here as a kind of production.

Uniform motion of the electron takes place when \( f_a = 0 \) and also \( f_{ab} = 0 \). Then, all components of the force \( f_{ab} \) are related to a stationary evolution of components where the component \( \bar{b} \) is transferred into back region of particle in order to recover the equilibrium vacuum medium with \( \rho = \rho_o \). Then, we have the relation for uniform motion with velocity \( v \)

\[ f_{DS}(v)t_{pth} - f_b(\bar{b}(v))t_{pth} - f_a(\bar{a}(v))t_{pth} = 0, \quad (13) \]

where \( t = t_{pth} \).

Let us discuss the situation when another electron denoted by 2 moves in similar direction before the first one denoted by 1. Then, in front of the first electron a region \( A_{B2} \) associated with the second electron appears. It induces transfer of the component \( \bar{b} \) from the region \( B_{F1} \) of the first electron directly to the region \( A_{B2} \). Then, for convenient positions of \( B_{F1} \) and \( A_{B2} \), this transfer is more easy than direct transfer of \( b \) into \( A_{B1} \). Neglecting at this moment electrostatic repulsion we see that the two electron interact by forces in the vacuum medium. We say that the two particles are in an open chain state.
We can have also to do with \( n \)-particle chain when the set of particles, one behind another, has property that the \( k \)-th particle is behind the \( k + 1 \)-th one and all particles transfer the component \( b \) from the region \( \mathcal{B}_k \) to the region \( \mathcal{A}_{B(k+1)} \).

The situation qualitatively changes when the last particle of the \( n \)-particle chain state can go directly behind of the first one. Then transfer of the component \( b \) is more easy and particles create a ring interpreted as a closed chain state. We postulate the following hypothesis for closed chain of particles:

\[
[f_{DS} - f_b - f_a]_k t_{p\theta(k)} > 0 \tag{14}
\]

for each \( k \)-th particle of the chain state in an idealized moment where particles are distributed uniformly on a circle and there is a possibility for decreasing of \( D_{ab} \), where \( D_{ab} \) is a parameter similar to length of the component wave. This assumption means that the closed chain of particles with the same charge accelerates when we neglect other forces acting on particles and furthermore the circle undergoes a shrinking in order to maintain properties of the relation \( D_{ab} = D_{ab}(v) \) considered as positive and decreasing function.

In reality such a chain is disturbed by some forces and is not uniform in discussed above sense. However, by this assumption we indicate a general property related to dynamics.

Stationary orbit of electron can also be interpreted as closed one-particle chain state. This is so since the way of transferring of the component \( b \) is not interpreted as transfer into back of the particle but into front of the particle.

Above discussed pnenomenological model based on four-component vacuum medium allows us to discuss qualitatively concept of the chain state in relation to larger molecular systems at this stage of development of description. Properties of the model responsible for generation of chain states define an attractor in mathematical sense considered in electronic structure of molecular systems. One discusses a hypothesis which rests on flowing of the chain state into molecular structure as a mechanism responsible for evolution of molecular structure towards a protocell [8].

The condition (14) characterizes a tendency of the chain state for acceleration to a critical velocity. It means that a resulting force accelerates the chain state when no obstacles appear. However, obstacles are present in molecular systems and are associated with not optimal molecular structure for realization of this acceleration. Thus slow evolution rests on gradual improving the nuclei structure and dynamics in order to protect the chain state. This slow evolution is forced just by attractor defined among others by the relation (14).

The three-positron structure of proton can be considered as an asymptotic stage of increasing of velocity of three-positron chain state towards a critical velocity. Importance of the three-positron structure rests on confirmation of existence of this asymptotic state and by this on existence of the attractor.
in electronic structure of molecular systems. Dynamics of the three-positron structure provides confirmation of possible strength of evolutionary pressure basing on mechanism of creation of multiparticle chain states. This strength is confirmed among others by difficulty with disintegration of proton which shows also that the attraction within the chain state can overcome electrostatic repulsion when particles are close sufficiently.

Summarizing, the three-positron structure of proton could be in fact the only clear evidence for selforganization defined on the most elementary level of description. In mathematical biology selforganization processes are discussed usually for phenomenological theories defined on more averaged level of description than that one corresponding to fundamental theories.

6 Final remarks

We have discussed various arguments which support model of three-positron structure of proton. Summarizing we have considered the following arguments:
1. The same external effect for positron and for proton represented by their electrostatic field.
2. Generation of neutrino under high compression approaching electron and proton.
3. Annihilation of proton and antiproton predominantly to three electrons and three positrons.
4. Annihilation of proton and antiproton through intermediate particle-antiparticle pairs instead of direct annihilation into electromagnetic waves.
5. Presence of positrons near supermassive black hole in center of our galaxy.
7. Consistency of the Bing Bang theory based on annihilation processes with astrophysical observations.
8. Possible explanation of gamma ray bursts as collisional processes of black holes.
9. Interpretation of the three-positron structure of proton as three-particle chain state which can be considered as an asymptotic state for an attractor. It provides arguments for mechanisms of long lasting evolution and their strength in molecular systems.

Above arguments are based on experimental investigations which are interpreted in context provided by multicomponent vacuum medium mechanics.

References

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