

Byuons, Quantum Information Channel, Consciousness and Universe

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Abstract

The physics of consciousness and universal mind is shown on the base of theory of *byuons*, the theory of “life” of special unobservable discrete objects—*byuons* from which the surrounding space and the world of elementary particles are formed. An essential distinction of that theory from the modern models in the classical and quantum field theories is that the potentials of physical fields (gravitational, electromagnetic, asf.) gain exactly fixable, measurable values. Basic axioms and some conclusions of this theory are discussed. The *theory of byuons* predicts the existence of a new force and a new quantum information channel in nature. All objects of the Universe are shown to be united into the unique information field due to the huge interval of uncertainty in the coordinate ($\Delta x = L = 10^{28}$ cm) of objects 4b (object formed during four-contact *byuon-byuon* interaction ($mc_{4b}^2 = 33$ eV)) forming the surrounding physical space. It is a new quantum information channel.

Keywords: Byuon, New Force, Quantum Information Channel, Mind, Consciousness, Universe

1. Introduction

Today many authors discuss the following questions:

Why should there be a universe? Why Does Life Start? What Does It Do? Where Will It Be? What is Consciousness? [1-3].

Yes, these problems are very interesting for our mind but I think they are very old and have no solution in the framework of standard cosmological theories [4-6].

Therefore, I would like to consider some problems from the viewpoint of byuon theory [7,8]. That is a theory of “life” of special discrete objects from which the surrounding space and the world of elementary particles are formed. The intrinsic dynamics of byuons determines such fundamental phenomena as the course of time, physics of space, masses of elementary particles, rotation of planets and stars, spins of elementary particles, asf.

2. Basic Foundations of Byuon Theory

Any theory begins with axioms, that is, with basic postulates accepted without proof.

Thus, let us assume that there are no space, no time,

no world of elementary particles from which all surrounding us physical bodies (and living object too) consist, but there is an object, the byuon $\Phi(i)$, being unobservable in itself and characterized by discrete states (*i.e.* numbered by the series of natural numbers) having inherent “vectorial” property. The expression for $\Phi(i)$ is

$$\Phi(i) = \begin{cases} [A_g x(i)], \\ -\sqrt{-1} [A_g x(i)] \end{cases} \quad (1),$$

where A_g is an inner potential equal, by magnitude, to the cosmological vector-potential A_g , a novel fundamental vectorial constant introduced by the author [7,8]; it is not an ordinary potential of any field theory since we have yet no notions of its field and potential; $x(i)$ is “length” of the byuon, a real (positive or negative) value depending on the index $i = 0, 1, 2, \dots$. The index i is a quantum number for $\Phi(i)$. It should be noted that the vector $\Phi(i)$ is not an ordinary vector in some space but an object with “inner” vectorial properties that are manifesting themselves when the value $x(i)$ changes in the process of physical space formation. The quantum number is a “face” of an object, that is, the value that characterizes

just that same its state in question but not another (for example, “smiling” or “frowning”). We have to do with a special property of the byuon that we call therefore the inner byuon potential. The dimensionality of $x(i)$ is that of distance, so we will measure $x(i)$ in centimeters (cm), and A_g in Gauss centimeter ($A_g \approx 1.95 \cdot 10^{11}$ Gs-cm). That is, our fundamental object is dimensional. That was presumed by many authors which searched for so called “universum” (the thing from which all the other things are built up), since the real world cannot be constructed from the dimensionless 0 and 1. But the question of dimensionality of that object remained an enigma. Our object, the byuon, has dimensionality of Gs \times cm², as also have (in CGSE-system) such physical objects as electric charge, magnetic flux, and Dirak’s monopole, a hypothetic object not yet detected in experiments.

Further, the notion of time is introduced. In accordance with our conception, by the discrete time of byuon is meant a sequence of events corresponding to discrete changes in index i from 1 up or down, which means a transition from one state to another. In connection with the discrete time, a time quantum τ_0 and space quantum \tilde{x}_0 are introduced in the one-dimensional discrete space R_1 formed by states of byuon ($\tau_0 \approx 0.9 \cdot 10^{-43}$ s, $\tilde{x}_0 \approx 2.8 \cdot 10^{-33}$ cm).

Statics. In the set $\{\Phi(i)\}$, no static states with time $t > \tau_0$ are meant. That is, the byuon is always in the state of continuous changing.

Kinematics. A free byuon state (that is, not interacting with another state) can correspond only to one of four so called vacuum states II^+ , I^+ , I^- , II^- (VS) depending on whether the vector $\Phi(i)$ is real or imaginary, its length $x(i)$ positive or negative, decreases or increases in modulus.

Introduce the following definitions:

1) The free byuon is in vacuum state II^+ if its positive length discretely increases of a quantum of distance \tilde{x}_0 in a quantum of time τ_0 . At that the speed of byuon propagation (increasing in length) $c = \frac{\tilde{x}_0 - 0}{\tau_0} = c_0$ (c_0 is speed of light).

2) The free byuon is in VS I^+ if its length discretely decreases of a quantum of distance \tilde{x}_0 in a quantum of time τ_0 . In this case $c = \frac{\tilde{x}_0 - 0}{\tau_0} = -c_0$.

3) The free byuon is in VS II^- if the modulus of its negative length discretely increases of \tilde{x}_0 in a time τ_0 . Therewith $c = \frac{-\tilde{x}_0 - 0}{\tau_0} = -c_0$.

4) The free byuon is in VS I^- if the modulus of its negative length discretely decreases of \tilde{x}_0 in a time τ_0 . In this case $c = \frac{0 - (-\tilde{x}_0)}{\tau_0} = c_0$.

Location of byuon in one or another VS is of probabilistic character and described by four ψ -functions with indexes corresponding both to VSs and magnitudes of quantum number i : $\Psi_{II^+}^{i+2}$, $\Psi_{II^-}^{k-i}$, determining the processes of byuon length magnitude origin and increase at positive and negative $X(i)$, respectively; $\Psi_{I^+}^i$, $\Psi_{I^-}^{k-i-2}$, determining the processes of byuon length magnitude cancellation and decrease at positive and negative $X(i)$, respectively.

Assume that for the byuons with the length greater than \tilde{x}_0 , only contact interactions are realized, by which we will mean existence of at least two byuons at a quantum of space R_1 (one-dimensional space).

Hypothesis 1. Assume the observable three-dimensional space R_3 to appear as a result of minimization of the potential energy ($E(i)$) of byuon interaction in the one-dimensional space R_1 formed by them. More precisely, the space R_3 is fixed by us as the result of this byuon dynamics. In the space R_3 therewith the dynamic processes for objects with the residual positive potential energy of byuon interactions originate, and in consequence, the wave properties of elementary particles arise.

For obtaining a basic results (the fundamental scales of physical space; the fundamental constants; mass spectra and so on (see Appendix)) the theoretical model doesn’t require of a new mathematics creation.

The minimization of $\Delta E(i)$ is achieved in the functional space of the following variables:

$$\Psi_{I^+}^0, \Psi_{II^+}^2, \Psi_{II^-}^{NkP}, \Psi_{I^-}^{NkP-2}, \cos_{I^+II^+}^{i,i+2}, \cos_{II^-II^-}^{NkP-k-i, NkP-i}, k, NP$$

where k, N, P are the assumed periods in i ; $\cos_{I^+II^+}$ etc. are functions minimizing the potential energy of interaction of byuons entering into the expressions for potential energies $E_{I^+II^+}^{i,i+2}, \dots, E_{II^-II^-}^{NkP-k-i, NkP-i}$, etc.; these functions are “responsible” for the appearance of a minimum plane object and introduction of the concept of spin.

Only some part of theory requires to develop a mathematical model basing on a new algebra of probabilistic events since the elementary events (a discrete decrease (\bar{A}) or increase (D) in the length of byuon) are assumed to be probabilistic in character. For example, for the deterministic approach the event $\bar{A} \cdot D \neq 0$ is illogical by Von Neumann, but in the probabilistic space of events the existence of $\bar{A} \cdot D \neq 0$ is possible.

Note that the known fundamental constant, light speed appears in the byuon theory as a result of byuon changes. The reader will know from [7,8] that, when having specified only three constants: modulus of A_g , τ_0 , and \tilde{x}_0 , we obtain values of all other fundamental constants and basic properties of the entire world as well and the life, too (see Appendix).

The interpretation of the nature of quantum mechanics

on the basis of byuon theory was given in [7-9].

In this references we have shown that all objects of the Universe are bound into unique information field due to the huge interval of uncertainty in coordinate ($\Delta x = L = 10^{28}$ cm) of objects 4b (object formed during four-contact byuon-byuon interaction in VSs $II^+ I^+ I^- II^-$ (to read as “4b-object”, $mc_{4b}^2 = 33$ eV.)), forming the surrounding space (see Appendix). The author has named this information field the new quantum information channel (QIC). In [7-10] we have considered experiments carried out with the aid of various measuring devices being capable to sense signals passing through QIC. As a rule, all information on Earth is transmitted with the aid of electromagnetic field in the form of radiowaves, TV-waves, photons of various frequency. Here we will be dealt with information which cannot be transmitted in the ordinary way by the electromagnetic field but can be transmitted by means of changes in the structure of the physical space formed by the objects 4b.

The byuon theory predicts the existence of a new force in nature [7-12].

An analysis of great run of experiments with strong magnets and torsion or piezoresonance balances carried out throughout many years, has shown that the new force is of a nonlinear and nonlocal character as to variation of some summary potential $A_{\Sigma}(|A_{\Sigma}| \leq |A_g|)$. The summary potential A_{Σ} contains potentials of all existent fields of all possible sources (Earth, Sun, Galaxy, etc.), and the new force can be represented as a complex series (sum) in terms of changes in this summary potential A_{Σ} . The first term of the series is

$$F \sim N \cdot \Delta A_{\Sigma} \frac{\partial \Delta A_{\Sigma}}{\partial x} \lambda_1 \quad (2)$$

where N is the number of stable particles (electrons, protons, and neutrons) in the test body.

The value of the new force (coefficients of this complex series ($\lambda_1, \lambda_2, \lambda_3 \dots$) and ΔA_{Σ}) will be an indicator of this new information.

As an example of QIC we can consider a nervous pulse.

3. QIC and Consciousness

The nature of the nervous pulse lies in diffusion of Na ions through the membrane inward the fiber, and of K ions—out of it [13]. Thus some circular currents arise in the section planes of the cylinder perpendicular to its axis. Let’s imagine that we have a stick in a hand (as if a nervous fiber). [Insert Figure1 Here] A torus-type rubber ring is put on the stick, and some currents are passing over the surface of this torus. Then we start to move the ring over the cylinder in such a manner that it rolls and at

the same time turns inside out. That is just a model of nervous pulse passage through the nervous fiber (**Figure 1**). On the basis of that model we may explain the metedeopendence of some people and a role of byuons in this dependence. Hence annular currents arise in the section planes through the axis of the cylinder. These currents on the whole form a torus, in which there always exists a magnetic field on the order of 30Gs in magnitude (see (2), new force). The field of the vector-potential associated with the magnetic field and currents, can form nearly 30Gs gradients of change in modulus of the summary potential A_{Σ} .

Now we have a situation similar to that observed in the experiments on QIC investigation with the aid of the β -decay [7-9,14], gravimeters with magnets [7,8], and, to some extent, with a system of two quartzes [8,10], one of which being inside the magnet system generating the field of vectorial potential. When a nervous pulse passes, there arises a mechanism of amplification of all signals coming from the Universe and associated with changes in A_{Σ} or with a solar flare and magnetic storm on Earth due to the existence of a substantial value of $\frac{\partial \Delta A_{\Sigma}}{\partial x}$

(approximately equal to 30 Gs). Note further that there is no necessity for any special orientation of the nervous fiber to amplify the signal passing through the structure of physical space, since a torus has always six current rings, the planes of which contain the effective directions of action of the new force. This force will act on the nervous fiber, causing a corresponding pain reactions by some people which may be named “metedeopendent”.

From all theoretical results recently obtained by the author, one has mostly agitated him: that the spread in a coordinate of R_3 -space is of the order of 10 cm for the objects 4b forming an electron. This value actually coincides with the characteristic size of human brain (volume

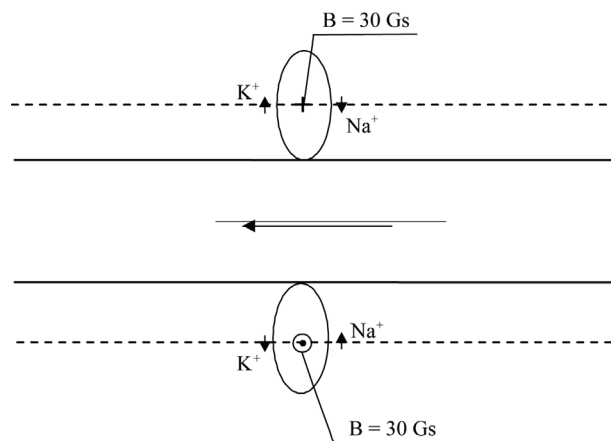


Figure 1. Model of nervous pulse passage through the nervous fiber.

$\approx 10^3 \text{ cm}^3$), and hence DNA, albumens, and other the most complex biophysical objects of our brain can exchange by information, due to the objects 4b, at distances of $\sim 10 \text{ cm}$ without dissipative losses and without any current systems only owing to quantum effects (that is, owing to the Heisenberg's interval of uncertainty). It is the physics of consciousness.

Therewith the amount of information units, bits, in the spatial structure of DNA, is very great (no less than 10^{15} bits of information carried by objects 4b). So, one double spiral of DNA carries in itself no less than 10^{15} bits of information carried by objects 4b. This estimate is obtained from the fact that an electron contains $1.5 \cdot 10^4$ objects 4b, and the characteristics of DNA are the following: length of $\sim 10^{-4} \text{ cm}$, "width" of $\sim 10^{-8} \text{ cm}$, mass of $\sim 10^{-12} \text{ g}$.

Does the Universal mind exist? Why is this question put at all in the theory of byuon? Let's attempt to reply to these questions [10].

We have just now considered why the information channel is built which has given the human brain and consciousness the chance to appear in nature and occupy in physical space the volume of characteristic size of 10 cm . But the theory of byuon says that the free objects 4b forming the entire physical space, integrate all objects of this space into one common information field. The Universe arisen has precisely the same communication channel as the human brain. Therefore, blasphemous though it may seem, it turns out that we live within an object that is constantly reading information on all that happens with us and any other things in this Universe. For example, whether you are going along the street, speaking at a seminar or making some other things. But at this time microcurrents flowing in your body change the summary potential A_Σ , and the objects 4b forming the free physical space in which the currents are flowing, distribute information on all the changes instantly over all the Universe because these objects are at the same time inside your electrons and at another end of the Universe that corresponds, in an information sense, to an enormous brain. Note that the byuon theory hasn't the speeds more c_0 for objects, and the STR postulate about constancy of c_0 is the consequence of byuon theory.

Thus the theory of byuon predicts the existence of the Universal mind with which together we will live practically for ever.

Therefore the answers on the raised questions (origin of life on Earth, etc.) are not panspermia, microbes or

viral visitors but it is QIC plus Universal mind. From this viewpoint we see the evolution in nature: QIC crushes entropy.

4. References

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Appendix

Table 1. Basic results of byuon theory.

| Given | Obtained |
|---|---|
| | a) The fundamental scales: $x_0 = k \tilde{x}_0 \approx 10^{-17}$ cm; $ct^* = kN \tilde{x}_0 \approx 10^{-13}$ cm; $L = kNP \tilde{x}_0 \approx 10^{28}$ cm; k, N, P - calculated periods of interaction of byuons. |
| 1) The quantum of space $\tilde{x}_0 \approx 2.8 \cdot 10^{-33}$ cm. | b) The fundamental constants: speed of light $c_0 = \tilde{x}_0/\tau$, the elementary electric charge $e_o^2 = \left(1/(4\sqrt{3})\right) A_g^2 x_o^2 (x_o/ct^*)^{3/2}$ |
| 2) The quantum of time $\tau \approx 0.9 \cdot 10^{-43}$ s. | Planck's constant $h = \left(\left([A_g x_o]_H^+ [A_g x_o]_I^-\right)/c_o\right) x_o/ct^* .$ |
| 3) The module of cosmological vector-potential A_g , $A_g \approx 1.95 \cdot 10^{11}$ Gs·cm | c) The constants of all interactions, for example, vector constant of weak interaction $C_v = e_o A_g 2 x_o^3$. d) Mass spectra of leptons (electron, muon, tau-lepton asf.), main barions, and mesons, for example, the mass of electron: $m_e c^2 = m_{46} c^2 (ct^*/x_o)$; the minimum value of that residual potential energy: $E_{k_{min}}^0 = (A_g^2 \tilde{x}_0^2)/(2\tilde{x}_0) = m_{46} c^2 = 33 \text{ eV}.$ |
| | e) The density of matter in the Universe $\sim 10^{-29}$ g/cm ³ (physics of dark matter (Baurov & Malov, 2010)); dark energy: physics on the base of new force (Baurov & Malov, 2010) and asf. |