

# Soliton perception in the human biological system

## Abstract

A soliton is understood as a lone moving wave that propagates with small energy loss of unchanged form. Solitons are located in a physical environment and require its presence as an information medium and therefore cannot propagate in vacuum, which other elementary particles do not require. During transmission solitons do not carry elementary particles, but information itself contained in conformation change, in other words, a change in the aquatic plasma, gas, light environment etc. The human biological system has the ability to induce an electromagnetic field, either through solitons, or during melanin synthesis, which is able to convert a photon into a phonon and vice versa. Induced electromagnetic field causes the emergent of the coherent structures and form a chain of hierarchical levels. So this electromagnetic resource provides the mechanism for the non-locality, complexity, and self-consistency (self-maintaining) of biological organisms and ecosystems.

**Keywords:** soliton, spin wave coherent light, bio plasma

Volume 6 Issue 1 - 2020

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**Received:** December 20, 2019 | **Published:** February 27, 2020

## The role of solitons and coherent light in creating mental structures human

The works Pougeta i Maugina contributed significantly to the development of the field of solitons.<sup>1,2</sup> In a transparent manner from the mathematical and physical side, the soliton is discussed. It is understood as a single moving wave that propagates with a small loss of energy unchanged, they are localized and require the presence of a physical environment as a carrier of information, therefore they can not propagate in a vacuum, which is not required by other elementary particles. During the transmission, solitons transfer not elementary particles, but the information itself contained in the change of conformation, i.e. in the self-formation of the water, plasma, gas, light, etc. In infinity they seek to zero, or to a certain constant. They can strongly interact with other solitons, but after the collision they return to their original shape, that is they retain their shape and speed. Pouget and Maugina showed the effect of solitons in ferroelectrics, along with electroacoustic interaction, which is conditioned by piezoelectric and electro-curricion. They point to the domain structure of the medium, which determines the size and intensity of the soliton wave. The movement of solitons is affected by the density and thickness of the biological membrane in the cell, because it determines the size of the piezoelectric effect from which the electric field flows, interacting with the solitons. Using the Lax-Wendroff mathematical equations, they illustrate analytical considerations and collision models soliton-antisoliton, collision soliton-soliton, the action of a single solitona in various media.<sup>3</sup> Solitons have their own speed, which depends on their energy and are clearly located in time and space. Optical solitons are localized non-linear excitations that exist due to the mutual balance of diffraction and non-linearity (in the case of spatial solitons) or dispersion and non-linearity (in the case of time solitons). Solitons can spread without distortion over very large distances. There are light, water and sound solitons that can interact strongly with other solitons, but after this interaction the form and structure remain unchanged. This means that they penetrate each other without losing their identity.<sup>4,5</sup> Soliton signals are transmitted to the mental and spiritual sphere - these are mental, emotional and conscious states. Solitons can spread throughout the universe and do not disappear. They exist from the beginning of life to the present. The cosmos is

densely filled with a soliton network, carrying content and meaning. The brain has the ability to generate and receive soliton fields that take an active part in human life processes and decide about his personality development.<sup>6,7</sup> Light, water and sound solitons retain space-time features, i.e. geometric and dynamic, fall within the scope of local processes, again spin solitons fall into the scope of quantum nonlinear processes and are carriers of information fields that affect human mental states. Human psychological life depends on coherence and decoherence, between solitons and laser light produced by the human biological system. In order to be constantly and mutually consistent, the human psyche must take care of coherence, because after the breakup of this relationship, the structure of identity and personality disappears, which is a symptom of schizophrenia.<sup>8</sup> Solitons densely fill the space of the Universe and bring signals, meanings, conceptual content to the human psychosphere from space. This happens in the DNA of biological cells that generates laser light. Laser radiation activates helical bioplasmic antennas that draw solitons from space into the cell, at the same time into the bioplasma of the biological system. Solitons are a hypothetical aspect of the function of the wave bioplasma, globally dispersed in space, and locally focused on Earth.<sup>9</sup> According to Jibu and Yasue, condensates inside and outside the neuronal membrane may weakly combine with each other to form the so-called Josephson anastomosis. The bias potentials of the cell membrane induce self-excited oscillations stimulate the Josephson junction to produce solitons along the biological membrane. Soliton waves retain their form over long distances and may propagate to macroscopic dimensions, which may turn out that cell conductivity transmits information by ion and soliton.<sup>10</sup> Shrivastava & Schneider<sup>11</sup> presented evidence for the existence of two-dimensional lone sound waves in lipids and their implications for biological signaling. Pouget and Maugina showed the operation of solitons in ferroelectrics, together with electroacoustic interaction, which is conditioned by piezoelectric phenomena and electrostriction. They point to the domain structure of the medium, which determines the size and intensity of the soliton wave. The movement of solitons is influenced by the density and thickness of the biological membrane in the cell, because it determines the magnitude of the piezoelectric effect, from which the electric field that interacts with solitons flows.<sup>1,2</sup> Using Lax-Wendroff mathematical equations, they illustrate analytical

considerations and soliton-antisoliton collision models, soliton-soliton collision, operation of a single soliton in different centers.<sup>12</sup> Solitons are created in non-linear optical centers and in Bose-Einstein condensates. Strong laser waves, a degree of non-linearity and a high concentration of atoms in the Bose-Einstein condensate affect the formation of multidimensional solitons. Currently, the highest degree of non-linearity is achieved by organic substances in which electrons have the ability to travel long distances.<sup>13</sup> The author presents a similar position in his work.<sup>14</sup> Spin and soliton waves create a different image than electromagnetic waves received by the eyesight receptor. Science to date only recognizes the effects of an electromagnetic wave on the sense of sight. It can be concluded that we are dealing with a second center that creates the structure of the world image and is responsible for the development of human personality. A similar thing occurs with an acoustic wave, during sleep or hallucinations. Solitons build the structure of emotional unity between mother and child up to 3 years old. During this period, the child and mother are one, the child says 'I' to himself and mother, after the third year, the child separates the mother as you and yourself as me. Breaking this unity makes a child an orphan disease. To date, learning this phenomenon has not solved why this is happening and what mechanism it drives. Solitons are responsible for the whole emotional sphere of a child and his personality development.

### Modification of phase structures by solitons in biological systems

From the biological point of view, man is an open system and can not be considered in isolation from his surroundings, because together with his surroundings it constitutes a whole. A constant exchange of information, energy and matter exists between man and his environment. Man can be treated not only as a single system, but also as a system composed of a whole range of subsystems, between which there are many feedbacks. The whole world is one, all processes occurring in it are connected and interact with each other, focusing in itself all the forces and influences coming from the cosmos, which are so strong that they can not be omitted. Currently, it is assumed that the basic parameter of nature are phase changes. The phase change is the transition of one phase of the system in the thermo-dynamic equilibrium to another phase. During the phase transition, the substance adopts a new type of structure or acquires new features specific to the new phase that did not occur. The phase change is combined with a step change in one or several physical quantities, and often even with a significant change in the physical properties of the system, such as change of state, loss of electrical resistance, the appearance of spontaneous magnetization and many other phenomena. Such significant changes in the macroscopic properties of the system are possible due to the fact that the phase transition is determined by complex phenomena in which all components of the system participate, that is atoms, ions, elementary particles, particles, fields, etc. For this reason, in theoretical considerations referring to phase transitions should take into account the interactions between all components of the system, which leads to fundamental complications, but this opens up new horizons of research. Adam Adamski's<sup>15,16</sup> show that Bose-Einstein bioplasma and condensate has a significant effect on phase transitions. In the Bose-Einstein condensate, quantum processes have a large order and a high degree of unity. The key feature of the Bose-Einstein condensate is that the particles that make up the ordered system not only behave as a whole, but they care about this order and there is no interference between individual particles.

The particles do not lose their individuality in their entirety. The condensate is described by a single wave function. This means that the entire object has one solid phase. The disappearance of the condensate makes the dissociation of a specific structure that changes its properties and is determined to change the phase state. The Bose-Einstein condensate (BE) also decides about the time-space change between the micro and macro elements of the cosmos. The product of BE condensation is solitons and exons.<sup>7,14</sup> From a physical point of view, solitons are impulsive non-linear fields and have properties of both wave and particles.<sup>17</sup> Their behavior during the collision depends on the phase difference between them. When they have the same phase, the impulses penetrate and then return to their initial propagation velocities. The collision causes a phase shift and displacement increasing the initial distance between the solitons. When the soliton's phases are shifted in relation to each other, the solitons are repelled. If there is no phase difference between them, these solitons are attracted, but when they are in opposite phases, they repel each other. It was noted that the soliton could generate an electromagnetic wave, or absorb it, resulting in the formation of a continuous conduction medium and information transfer at a distance.<sup>18,19</sup> Loss of the functionality of bioplasma and condensate, is associated with the loss of continuity of self-awareness, and the result is the death of the body. Along with the death of the organism there is a necrotic emission of light to the Galactic Quantum Memory located in the Kosmos, as<sup>20</sup> says in his publications. The main feature of melanin and neuromelanin is that it can act as a photon converter in phonons and the reverse process, i.e. light in sound and vice versa,<sup>21,22</sup> and also photon in soliton.<sup>23</sup> This means that these substances affect the phase changes that determine the physical properties of the system. They also demonstrate the ability to accelerate and delay the movement of photons, phonons, solitons and their spins, which is used in creating an information language, information processing, creating a conscious, subconscious and unconscious process.<sup>24</sup> Brizik<sup>25</sup> claims that not only the external electromagnetic field affects the dynamics of the soliton, but solitons have the ability to emit an electromagnetic field of a specific frequency that leads to the consistency of solitons. The total intensity of such coherence of the field is proportional to the square of the number of solitons. This field can be enough strong and can be one of the tools for information exchange and self-regulation in the field of system biology. The total field created by all solitons, i.e. it is a collective property, can affect the local dynamics of some solitons, which are beyond general coherence, and thus can regulate some local disorders. Fields, electromagnetic can be a communicator that governs the dynamics of not only individuals, but also the entire ecosystem to which individuals belong.<sup>25</sup> This generalization is based on the calculation of the fact that the electromagnetic field itself causes the appearance of coherent structures that, due to their coherence, openness and non-linearity, are able to create a specific phase.<sup>25</sup> The maintenance of specific phase states in the human biological system has an influence on the time evaluation, which determines the survival in the present, past and future tenses, and on the integrity of the psyche. Generally, a person is so accustomed to his specific order in which events are arranged according to time-space coordinates and according to a given hierarchy of values and he is unaware of it. There is no doubt in him that yesterday is the past and tomorrow is the future, that heaven is above his head, and under the feet of the earth, there are four basic directions in which he can move. In schizophrenia, all this complicated spatio-temporal network and hierarchy of validity breaks down. Patients sometimes have the impression that time has stopped and there is no future or past for them, time has changed into

standing water. They do not feel the flow of time, they are neither bored nor in a hurry, they can not determine whether time is running fast or if it is long. Sometimes, especially in the acute phases of the disease, there is a temporary “storm”, the past is mixed with the future and the present. The patient is experiencing what has happened years ago, as if he was going on, his dreams of the future become a present reality, his entire past, present and future life is focused as if at one point. The differences in the coordinates of time in the patient’s life are mixed together and occur together in one time point. An analogous phenomenon is observed in a dream, in which sometimes distant fragments of the past mix with loved ones and dreams of the future, and everything is lived as a present. The withdrawal from social contacts and lack of activity influence to a large extent the creation of this structure. Activity is, in fact, the main factor that gives time to time.<sup>26</sup> An important factor for maintaining your own identity is the sense of time continuity. In schizophrenia, it is often disrupted. Various fragments from his past, sometimes distant (eg from early childhood) emerge in the consciousness of the patient, they mix with the fragments of the most recent date, as well as fragments relating to the near or distant future. It is difficult for the observer to assess the validity of these mental and imaginary images, sometimes they appear trivial and insignificant to him. Sometimes their plasticity hits them; they are lived “live” as if they were happening now, not in the distant past or future. The patient also does not know how to connect them together. When asked about their importance or for further developments, they usually can not give an answer. His past, present and future life becomes like a mosaic of small, sometimes very vividly lived events that do not merge into one composition. It is like a distraction of memory and imagination. In a normal man in the creation of mental and imaginary records (when it comes to the future), the law of selection applies. These records are sorted according to the hierarchy of importance. What is not important is rejected from consciousness and lies deep in oblivion. It can sometimes appear in the content of dreams. However, it does not fit into the overall composition of life history and project into the future, it is removed from consciousness. Thanks to this, the unit’s continuity is preserved, its life is not broken into loose, unrelated fragments.<sup>27</sup>

### Soliton communication and organization of the biological system

The soliton model of charge and energy transport in biological macromolecules is used to suggest one of the possible mechanisms for electromagnetic radiation influence on biological systems. The influence of the electromagnetic field (EMF) on molecular solitons is studied both analytically and numerically. Numerical simulations prove the stability of solitons for fields of large amplitude, and allow the study of emission of phonons. It is shown that in the spectra of biological effects of radiation there are two characteristic frequencies of EMFs, one of which is connected with the most intensive energy absorption and emission of sound waves by the soliton, and the other of which is connected with the soliton photodissociation into a delocalized state.<sup>4</sup> Solitons, as self-reinforcing solitary waves, interact with complex biological phenomena such as cellular self-organization. A soliton model is able to describe a spectrum of electromagnetism modalities that can be applied to understand the physical principles of biological effects in living cells, as caused by endogenous and exogenous electromagnetic fields and is compatible with quantum coherence. A bio-soliton model is proposed, that enables to predict which Eigen-frequencies of non-thermal electromagnetic waves are life-sustaining and which are, in contrast, detrimental for living cells.

The particular effects are exerted by a range of electromagnetic wave Eigen-frequencies of one-tenth of a Hertz till Peta Hertz.<sup>28</sup> Brizik<sup>29</sup> is of the opinion that, not only external electromagnetic field affects soliton dynamics, solitons themselves radiate electromagnetic field of characteristic frequency, which is determined by the average per period of oscillations velocity of solitons, i.e., by the intensity of metabolism of the system. This self-radiated field leads to synchronization of soliton dynamics and charge transport processes. It is the source of the coherence in the system. Moreover, the dependence of the intensity of the endogenous electromagnetic field on the metabolic state of the system becomes evident in frame of the soliton mechanism of charge transport. The synchronization of electrosoliton dynamics results in the adjustment or, in other words, in the tuning of their radiation frequencies, which are determined by the relations. Therefore, radiation fields of solitons become coherent, and as a result, the total intensity of such coherent field is proportional to the square of the number of solitons. Such a field can be strong enough and can be one of the tools of the information exchange and self-regulation in biological systems. While the total field is created by all solitons, it is a collective property, it can affect locally dynamics of some solitons which are out of the general coherence, and thus it can regulate some local disorders. According to quantum field theory, the electromagnetic field can be the messenger which via its electromagnetic potential governs the dynamics of not only individuals, but of the whole ecosystem the individuals belong to.<sup>25</sup> This generalization is based on the account of the fact that the self-induced electromagnetic field causes the emergence of the coherent structures and form a chain of hierarchical levels. So this electromagnetic potential provides the mechanism for the non-locality, complexity, and self-consistency (self-maintaining) of biological organisms and ecosystems.<sup>29</sup>

### Perception of sounds from tibetan bowls and their impact on mental health

Anthropologists and ethnologists have stated, among others that the sounds made by old bowls, 100, even 200 years old, produce the entire register of alpha, beta, delta and theta waves. In the bowl sound massage, our structure is harmonized. Each cell is massaged by this beneficial sound, and all processes in our body seek harmony. The goal of this therapy is to achieve perfect physical, mental and spiritual condition and balance between these levels. Sound massage affects the quantum level. It relaxes and relaxes muscles, unblocks nerve connections ... The body and mind are put into a deep state of relaxation - the alpha state, in which there is full harmonization - it begins to feel lightness, relieving tension. With appropriate sounds, you can treat ailments in the spine, arms, heart, larynx. It manages to remove headaches, bothersome migraines, and problems with knee joints. Sounds also have a beneficial effect on digestive processes, the functioning of the intestines and other internal organs. Sound massage of Tibetan bowls is a very effective method of stress relief. During the massage all tensions and blockages accumulated in the physical body are released. The massage person tunes the patient to the frequencies responsible for his health and the harmony of his body. Every man in his individual structure is shaped by his unique sound code. If he can live in harmony with himself and his surroundings - he feels happy, healthy and is able to shape his life independently and creatively. This harmony is threatened by everyday stress creating chaos in us leading to diseases. Sounds from Tibetan bowls penetrate the body carrying health information. It reaches every single cell, stimulating it to vibrate properly.<sup>30</sup>

Both illness and health are conditions that do not only result from physical but mainly mental reasons. All illnesses, illnesses they begin mainly in the mental sphere (of our mind), and only later they cover the physical sphere of our body. Music, singing, appropriate sounds that are spoken of at work have a positive effect on overall health, causing self-regulation, keeping the body and mind in balance. Facilitates and accelerates the recovery process. It brings joy and allows you to develop positive relationships with yourself and the environment. Sound, music as a carrier of an acoustic wave also has its face in quantum processes that affect the generation of solitons and are responsible for our emotional states and mental well-being. The action of solitons in the human biological system provides the basis for seeing the human psyche in a different light than current psychology does. In the field of bioelectronics and quantum psychology, it is recognized that the human biological system develops under the influence of energy and information factors of the environment in which he lives. The biological system plays the role of an electronic device and functions on biological electronic material, thanks to which it can transfer information inside and outside the system electronically, similarly to what happens in television or radio broadcast. Consciousness works with the cosmos and is guided by the laws of quantum mechanics. According to her law, consciousness may be in a certain area of space, or may not be there, or its location is unmarked. This uncertainty is significantly different from existence and non-existence, it is self-organizing, without time and without a spatial dimension.<sup>31</sup> In the classic approach, perception is based on biochemical processes. In the bioelectronic model of life, the perceptual process is more complex. The brain does not show us the length of the electromagnetic wave, but gives the impression of a specific color tone, a similar situation is in the sense of hearing that a certain intensity of an acoustic wave is converted into an impression of sound. This is due to the bioplasma found in melanin of the iris and neuromelanin, which performs all processing of perceptual impressions.<sup>32</sup> During photoreception, the light falls on the iris of the eye, which is filled with melanin. Free radicals are activated in melanin, which have the effect of changing the setting of yard spins. Changing the spin makes recording information in the nucleus, at the same time entangled quantum states driven by bioplasma in the brain. Information received by neuromelanin is a conscious act for the brain that allows a person to function.<sup>32</sup> Free radicals are responsible for the formation of quantum states of braided particles, atoms, or entire information structures and images created in the bioplasma of melanin and neuromelanin. What can such tangled atomic clouds be useful for in the human biological system? First of all, to create an act of awareness, save, process data in a biological computer, and send them Galactic Internet.<sup>33</sup>

Solitons can spread throughout the Universe, without fading, they are from the beginning of the appearance of life to the present moment. The space has been densely filled with a soliton network, carrying content and meaning. Information (soliton) fields can affect energy systems with almost no loss of energy, cause major changes in the biological system. These fields and thoughts can interact with each other and are associated not only with the biosphere, but also with the noosphere. Their variety of densities is endless. The brain has the ability to generate and receive soliton waves.<sup>34</sup> The brain and any genetic code replication system has transmitting and receiving antennas that transmit space "directives".<sup>35</sup> The solitonic image of the cosmos has a great impact on the development of human mental processes and his social life. Solitons create the structure of the subconscious mind, in which there are: patterns of action of each

person, life programs, is the center of our emotional life. Soliton images can carry our emotional states, thoughts, or behavioral patterns in the form of archetypes. Human psychological life depends on the coherence and decoherence of solitons, magnons, photons. In order to be constantly and mutually consistent, the human psyche needs to take care of coherence, because after the dissolution of this relationship the identity and personality structure disappears, which is a symptom of schizophrenia.<sup>36</sup> This paper may be useful for psychology students, psychologists interested in quantum psychology, bioelectronics interested in artificial consciousness and intelligence, because it shows knowledge that can be used in integrated circuits, in robot production, for the army. For scientists in the field of cognitive science, for which a new light is shed on the psychological states of man, but also for quantum physicists, to conduct further experimental research on light bioplasma, solitons, spin wave and artificial consciousness that are associated with synchronous phenomena.

## Conflicts of interest

Authors declare that there are no conflicts of interest.

## Acknowledgments

None.

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