

Matter is a source of energy

(Subtitle: The Essence of a Black Hole)

In this article we will rely on the properties of particles of matter that were presented in article "The constructive field theory - briefly and step by step" on http://pinopa.narod.ru/KTP_uk.pdf. There, the essence of a single particle of matter was presented in the form of a centrally symmetrical field. This distribution of the field (particle) of matter results from the ability of the particle (field) to accelerate other similar particles (fields) depending on the distance between them. The acceleration process itself is equivalent to the interaction. If the concept of force is needed here, it will be a secondary concept derived from the existing acceleration.

Let's first consider an unusual situation. Namely, we will consider a situation in which matter is not a source of energy. This situation occurs when the acceleration that all particles impart to other particles varies equally with distance. These accelerations consist of two components: gravitational and structural. The gravitational component of acceleration always acts in such a way that particles of matter accelerate other particles "toward themselves." However, the structural component of a particle of matter consists of many centrally symmetric potential shells. In the region of a spherical potential shell, one can distinguish the place where there is zero acceleration and the slopes of the shell: internal and external slopes. In the area of such a shell, another particle oscillates between the slopes. And when, as a result of external influence, these oscillations stop, the particle stops at a place where the acceleration is zero. Under appropriate conditions, these shells create durable structures of matter.*1)

It can be assumed that in some place in space there exist particles with the same gravitational acceleration capabilities. This can happen when there are only protons or only neutrons at that location. It may happen that in a certain place there will be a concentration of such particles of matter.

Here we need to remember that everywhere in space there is a protoelectron medium. Previously, this medium was called ether, and in recent decades it has been called dark matter.*2) Near the central points (i.e. in the central areas) of protons and neutrons, the protoelectron medium is highly concentrated. The gravitational influence of these nucleons contributes to this. But based on the behavior of the particles, which have been called protoelectrons, it can be assumed that their gravitational influence is very small. The most important role in them is played by centrally symmetric potential shells. Thanks to these shells, the particles bind together and create a more or less dense medium. This protoelectronic medium manifests its mass indirectly and collectively. Because being in a dense state in the central region of the nucleon, it contributes to the increase in the gravitational acceleration given by this nucleon to other nucleons.

Let us now return to the region in space with identical particles, where a density of these particles has arisen. We will still call these particles nucleons here, remembering, however, that these are only one type of nucleons, they are either protons or neutrons. This dense area can be called the beginning of a black hole. This area in the near and far distance is surrounded by identical nucleons. This huge number of nucleons in density exist by accelerating each other and, as a result, they move relative to each other in a very complex way. They all accelerate their neighbors in the same way, i.e. these accelerations vary with distance according to the same mathematical function. For this reason, the position of their common center of mass in space does not change. This is because nucleons interact according to Newton's third law of dynamics. If there are changes in the position of this center of mass, it is as a result of external gravitational influence that comes from celestial bodies located somewhere far away. And only in such a situation does the density of nucleons move in space as one whole.

The nucleons vibrate towards each other, and along with them vibrates the medium, consisting of protoelectrons locked in their central regions. When a black hole is formed, nucleon density oscillations dampen and the amplitude of their oscillations decreases. Because they transfer energy to other protoelectrons and this energy is radiated in the form of waves beyond this density.

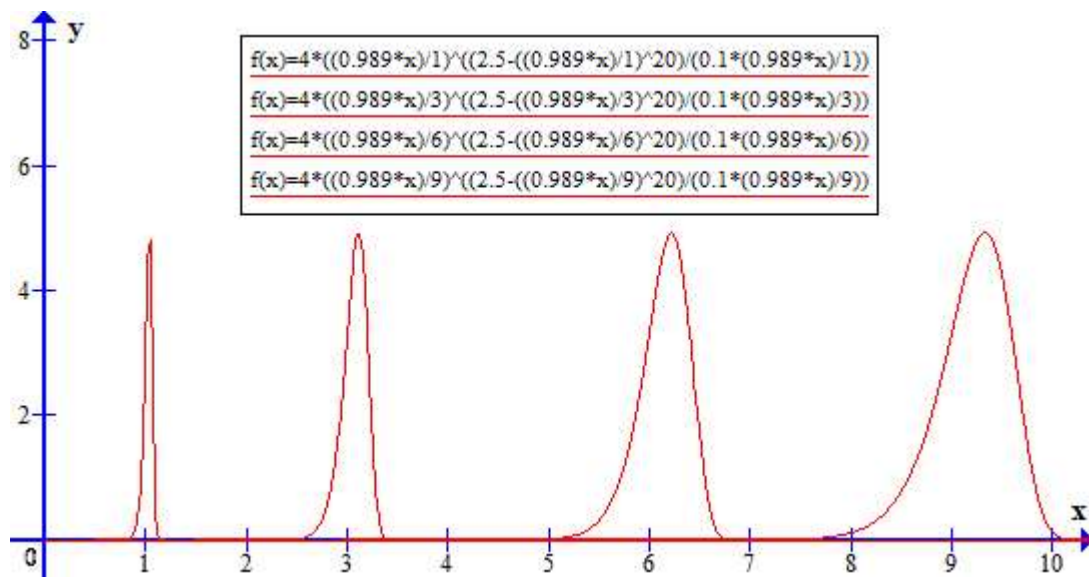
The gravitational interaction of nucleons holds the density together and attracts similar nucleons from further afield to the density. In this way, the number of nucleons in the density increases and the amount of energy increases. But the gravitational interaction attracts the nucleons in the cluster increasingly closer to itself, while the vibrations of the protoelectronic medium transfer energy outside the nucleon cluster. As a result of this emission of energy outside the cluster, nucleons become more and more often permanently bound together using nuclear potential shells. The emission of energy outside causes the nucleons in the center of density to stop vibrating towards each other. This means that they die, as it were, in the form of a permanent structure that no longer emits any energy. This is how a black hole is created. As time passes, due to the emission of energy outside, an increasing number of nucleons become motionless - thus the volume of the black hole and its enormous mass increases.

The density of matter in a black hole is greater than the density of matter that exists in the nuclei of atoms. The stopping of the motion of nucleons relative to each other in the black hole means that the temperature of absolute zero, i.e. 0 K (i.e. $-273.15\text{ }^{\circ}\text{C}$), has been reached there. This state of aggregation of matter was caused, on the one hand, by the gravitational interaction that constantly concentrated the matter, and on the other hand, by the homogeneity of nucleons in the aggregation. Because the identical way of mutual acceleration of homogeneous nucleons results in the fact that they are unable to generate energy on their own. We can add a third reason here: the existence of a protoelectron medium. Because with its participation, energy is emitted in the form of waves outside, and thus the black hole is cooled. All this together means that matter is much more concentrated in the center of the black hole than in the nucleus of the atom of the heaviest chemical element - oganesson.

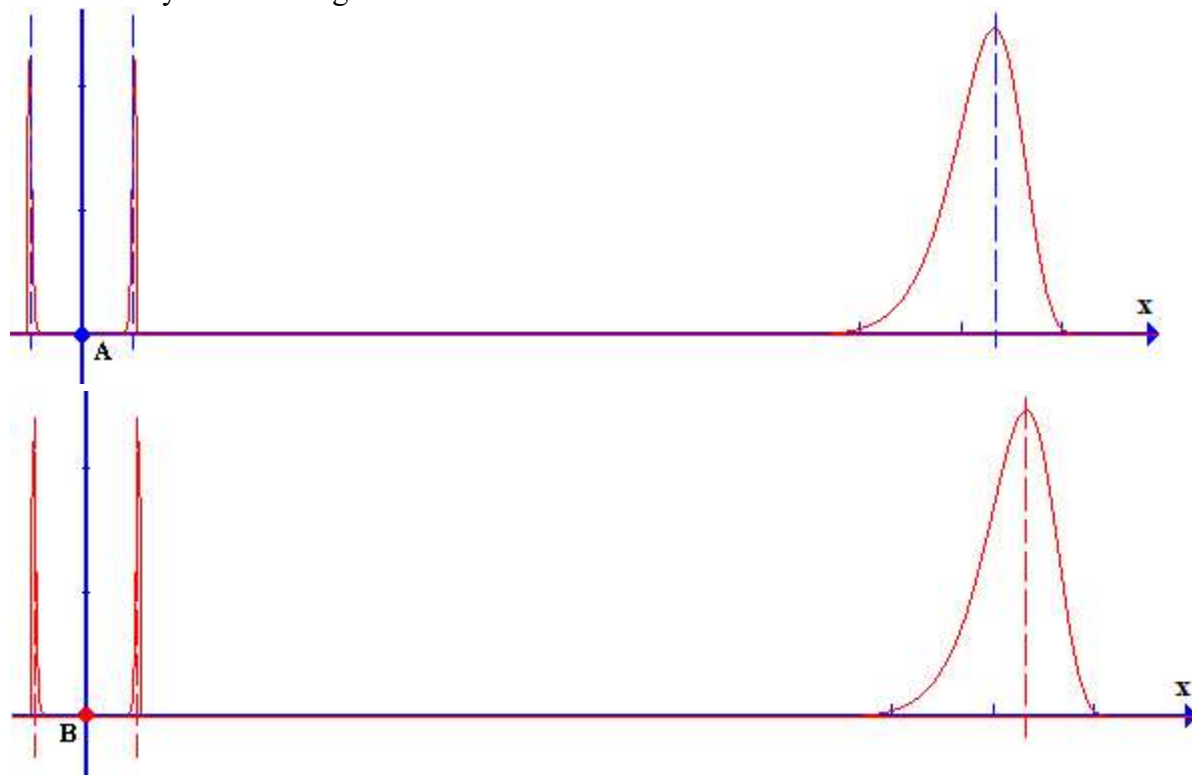
The gravitational influence during the formation of a black hole contributes to the density of matter. However, the protoelectron medium is used to radiate (expel) the accumulated energy outside this structure. The further development of the black hole will eventually lead to the fact that the speed of acceleration of matter towards its center, especially the speed of concentrating protoelectrons from the protoelectron medium, will be so great that the emission of any waves outside will also be inhibited. Then the existence of a black hole in space can only be confirmed indirectly. For example, you can observe large amounts of material surrounding a black hole in the form of an accretion disk. This disk, spinning around the black hole, radiates enormous amounts of energy.

A black hole develops because it contains one type of nucleons. In a cluster of two types of nucleons, i.e. in a cluster of protons and neutrons, a black hole cannot be formed. Because protons and neutrons accelerate each other differently. In other words, the acceleration they impart to other particles varies with distance according to different mathematical functions. And due to this difference in acceleration, protons and neutrons connected together, e.g. in the form of a deuterium (^2H) or helium (^4He) nucleus, do not behave in accordance with Newton's third law of dynamics. That is, protons and neutrons together form a stable structure and vibrate against each other. But the system of these two different nucleons automatically moves in an accelerated motion. In this way, their behavior contradicts the principle of conservation of energy. Below are the details of the spontaneous acceleration of the components of matter.

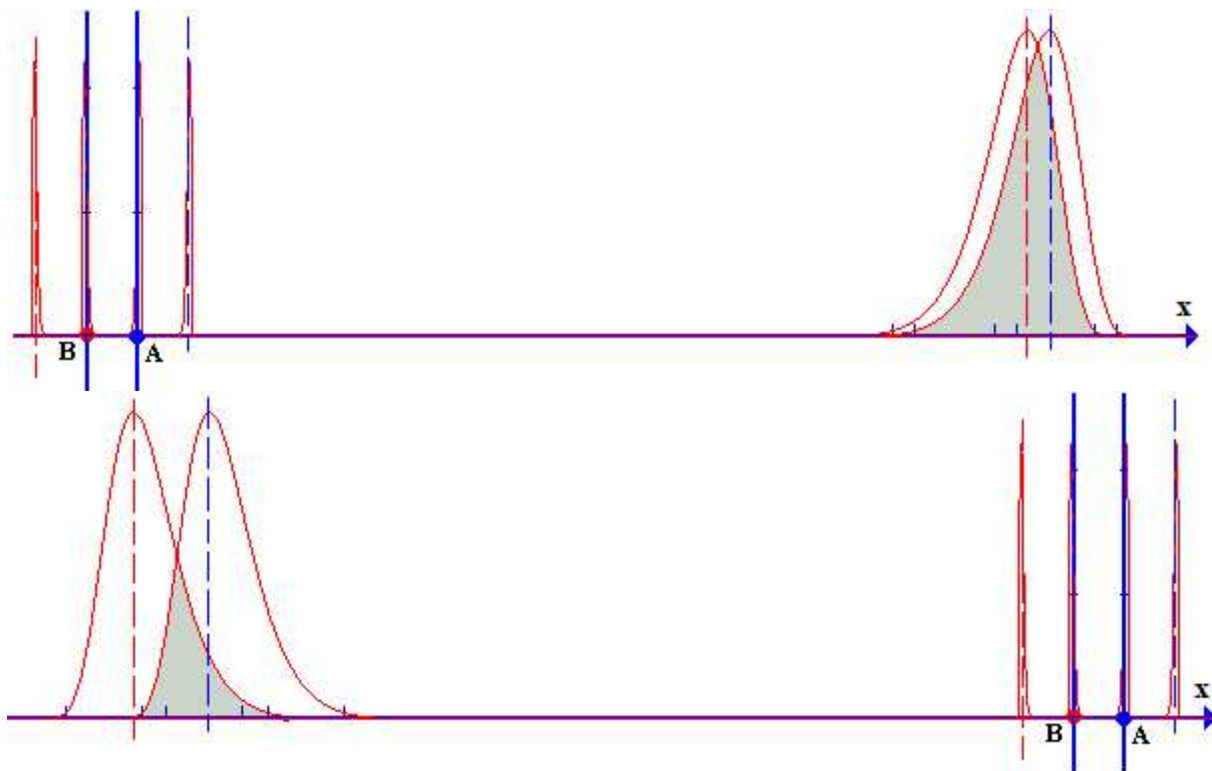
The structure of a particle (neutron, proton) contains many potential shells. All shells have a spherical shape and concentrically surround the central point of the particle. The nuclear potential shells are closest to the center of the particle. Through these shells, protons and neutrons bind together and atoms of various elements are created. Molecular potential shells are located much, much further from the center of the particle. The diagram below shows the increase in the thickness of potential the shell as the shell radius increases.



For this reason, molecular shells differ from nuclear shells in that they are much, much thicker. During the formation of an atom, the molecular shells of different nucleons partially overlap and thus a strengthened molecular shell is created. Through these shells, atoms bond with each other and form molecules. This is illustrated by the four diagrams below.

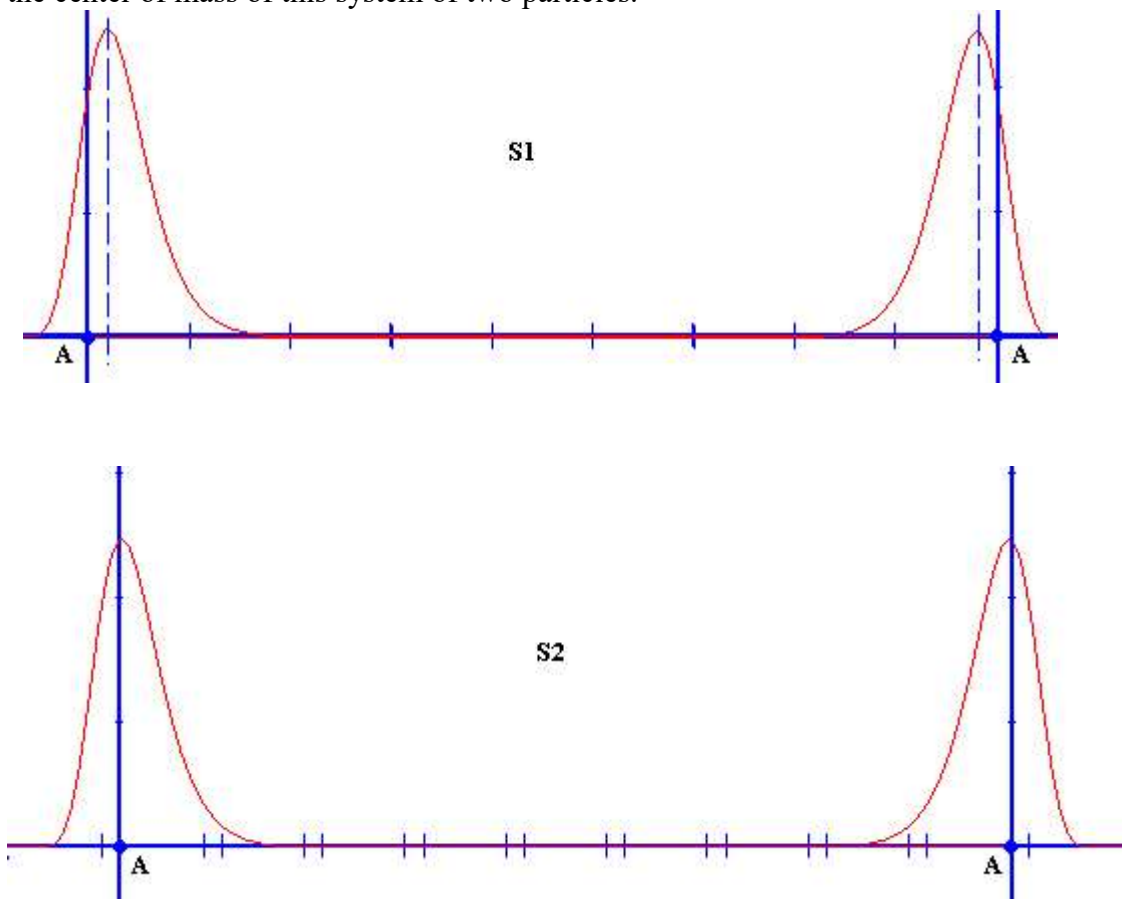


The first two schemes show graphs of the potential functions of two particles: particle A and particle B. Graphs of one nuclear the potential shell and one molecular the potential shell are presented. The differences in the radii of the nuclear shells of two particles A and B are negligible, and the differences in the radii of their molecular shells are much greater. (As a reminder: the shell radius is the distance from the center of the particle to the point on the shell with the extreme potential.)



When particles are bonded together by nuclear potential shells, their molecular shells partially overlap. In the two schemes above, common areas of the molecular shells have been "darkened". The central points of particles A and B are located on the X axis. For this reason, the common areas of both molecular shells shown in the schemes, through which the X axis passes, are among those with the lowest potentials. The areas with highest resultant potentials are located on a plane perpendicular to the x-axis, which intersects the x-axis at a location between particles A and B.

The two figures below present two situations that illustrate and explain the reason for the lack of automatic accelerated motion of two identical particles, and specifically the lack of accelerated motion of the center of mass of this system of two particles.

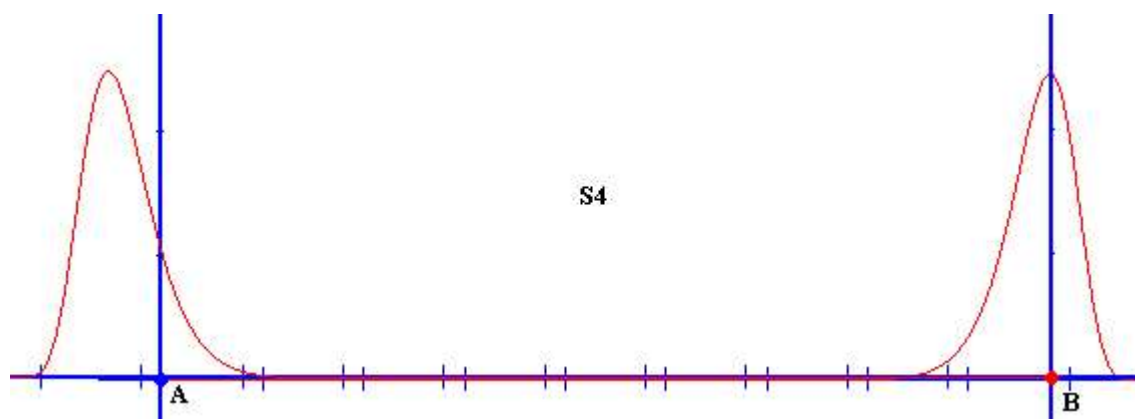
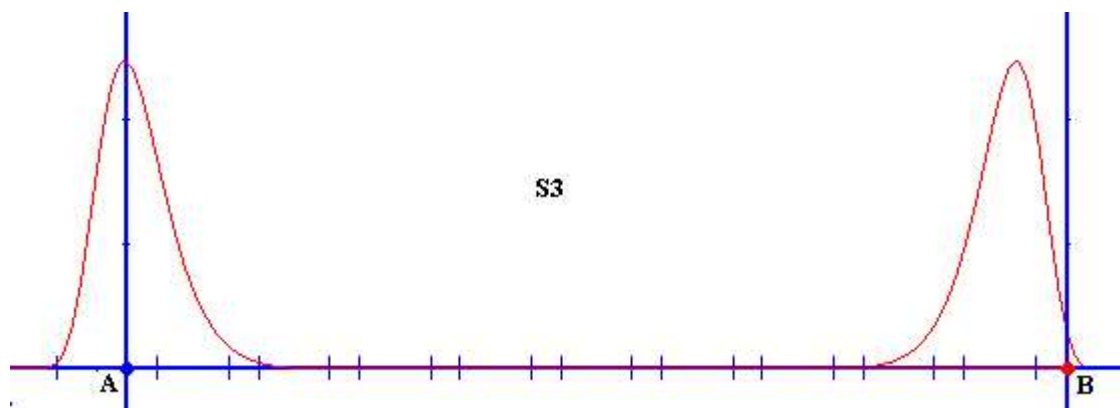


The schemes (S1 and S2) of two identical particles are presented here in the form of their central (blue) points against the background of the field potential diagram of their neighbor. You can see that they accelerate each other in the same way "towards each other" and "away from each other." If their oscillating motion is stopped, they will stop relative to each other. And they will then be located on potential shells in places with the highest field potential. There, the derivative of the field potential function is zero and the acceleration of motion is zero.

This applies to identical particles having the same structure of potential shells, i.e. described by the same field potential function. But in the case of nucleons, there is also an additional load in the form of protoelectrons from the surrounding protoelectron medium, which are accumulated and most concentrated in their central area. This additional load may be different for two particles of the same type. But this additional load does not change the nature of the field potential function, but only changes the function's proportionality coefficient, also known as the mass. In this case, the resultant center of mass of the particles also remains stationary, and the particles, when vibrating relative to each other, move with an acceleration inversely proportional to their mass. For example, a particle with n times greater mass moves with n times less acceleration and covers n times less distance than a lighter particle.

The two schemes below show two different particles against the background of the potential field diagram of their neighbor. In scheme S3, particle A is located in a place in the potential shell of particle B where the acceleration imparted to it is zero. Then, particle B, being in the area of the potential shell of particle A, is accelerated towards it. If in this situation the particles had their velocities set to zero and were just starting to move, then particle B would start to accelerate "to the left". There would be a slight approach between the particles. This means that particle A would be in the area of its neighbor's shell, where it would be accelerated "to the left". The particles would get closer to each other and at some point the situation presented in scheme S4 would occur.

Such situations are constantly repeated when particles vibrate against each other.



But if at the moment shown in scheme S4, the particles had their velocities set to zero and were just starting to move, particle A would start moving faster and it would be a "to the left" movement. Particle A would move away from particle B, so particle B would be in the shell area of its neighbor, where it would also accelerate "to the left".

Particles A and B vibrate towards each other and move "to the left" in jumps, but with an accelerated motion. If their oscillating motion were stopped, they would stop on the neighbor's shell in the positions shown in scheme S5.



In this position, particles A and B are located on the shells in places where they have the same acceleration "to the left". Their vibrations stopped and only a uniform accelerated movement "to the left" remained. Therefore, the speed of such movement is constantly increasing. But it grows until it is stopped as a result of the influence of external matter. Then the system of particles moves at a constant speed.

At a fundamental level of structure, matter is a source of energy. This fact has been presented as Law of dynamics of self-acting motion.*3) This principle describes how matter becomes a source of energy. It also describes the inseparable bond that connects energy with matter. In a limited region of space, matter can exist at a temperature of absolute zero (i.e. at 0 K). In this state, matter exists inside a black hole and exists there without energy. But energy without matter cannot exist. Currently, natural science holds the view that energy is another form of matter and that matter and energy are equivalent - this is a false view. When disseminating it, the operation of phenomena described by three physical laws is omitted.*4)

When nucleons of two types exist in a certain region of space, they may also form a small concentration there at first. The gravitational interaction of nucleons holds the density together and attracts nucleons from further areas into the density. In this way, the number of nucleons increases and the density grows. Similarly to the formation of a black hole inside a cluster of nucleons, nucleons become permanently bound together using nuclear potential shells. But in this case, their movement in the emerging structure is not stopped. Quite the opposite happens: nanostructures are created in the form of nuclei of various atoms, which have the ability to accelerate themselves. Thanks to their mobility, atomic nuclei contribute to the increase in the amount of energy in the cluster. This is how the objects we know as stars are formed.

The phenomenon of decay of atoms of radioactive isotopes is known. It is said that the energy in the structure of atoms is stored and bound in them during their formation. And indeed, this is happening. Nuclei of more complex atoms, containing large numbers of nucleons, are formed from nuclei with fewer nucleons. The nuclei of such atoms are formed deep inside the star, where high pressure overcomes the mobility of self-accelerating nuclei with small numbers of nucleons and brings them closer together. Thanks to this, nuclear bonds are formed between these mobile nuclei with the participation of nuclear potential shells. In a sense, there is a trapping of energy in this new structure - it is a trapping of the energy that contributed to the creation of this structure.

Nuclear bonds between nucleons may be more or less permanent. In radioisotopes, some nuclear bonds break relatively easily. Such breaking of the bond is equivalent to the decay of the radioactive isotope atom. This process is associated with the rapid separation of previously connected components. The process of separation itself proves that the components of atomic nuclei do not obey the principle of conservation of energy. Because before the decay of the atomic nucleus, these components were bound together. In the structure of the atom, they vibrated relative to each other and their state was stable. When the bond is broken and the atom disintegrates, they break free from their bonds and their independent movement and acceleration begin.

The spontaneous acceleration that occurs when atoms of different chemical elements interact with each other manifests itself in many phenomena. There are often situations in which systems of atoms are trapped in the structure of matter and would move at an accelerated rate if they were free. But other particles of matter in the surroundings prevent them from accelerating themselves. In this situation, this arrangement of atoms becomes a kind of micropump. This micropump forces the surrounding protoelectrons to move in a specific direction. This process affects the properties of, for example, metals in a specific way. Thanks to the phenomenon of protoelectron pumping, permanent magnets are created. The phenomenon of protoelectron pumping also manifests itself in an electrical form, and more specifically, it manifests itself in the form of a contact voltage at the interface of two different metals. Electric batteries and accumulators operate thanks to the phenomenon of protoelectron pumping.

The ability of matter to become a source of energy in certain circumstances, presented here, can be used for social good. But when will this happen? It depends on when the so-called official science will accept and begin to spread Constructive Field Theory. You can learn whether Constructive Field Theory is suitable for logically describing all natural phenomena from many articles included in the list "Trzy Kolekcje Три коллекции Three collections".*5)

*1) The article "Evidence of potential shells" can be found at

http://pinopa.narod.ru/Dowody_potenc_powllok.pdf (in Polish);

http://pinopa.narod.ru/Dokaz_potent_obolochek.pdf (in Russian).

*2) You can read more about dark matter in the article "Dark matter in phenomena"

on http://pinopa.narod.ru/Ciemna_materia_w_zjawiskach_uk.pdf.

*3) The article "The principle of dynamics of self-acting motion" can be found at

http://pinopa.narod.ru/04_ZakonDSD_pl.pdf (in Polish); http://pinopa.narod.ru/04_ZakonDSD.pdf (in Russian).

*4) The content of the article "Stupid formula $E=m*c^2$ " can be read at

http://pinopa.narod.ru/Glupia_formula_uk.pdf.

*5) The list "Trzy Kolekcje Три коллекции Three collections" on <http://pinopa.narod.ru/3Kolekcje.html>.

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