The Constructive Field Theory
- briefly and step by step

(Translated from Polish into English by Andrzej Lechowski)

Abstract

Fundamentals of constructive field theory (CFT) are the result of synthetic developent of many physical phenomena. In these phenomena the author of CFT saw simplest physical properties of matter, thanks to which there are so very different characteristics of different physical phenomena. Based on the results of many experiments that were previously carried out by many researchers, the author came to the conclusion that the world of nature and the phenomena occurring in it can logically be described using the properties of the three types of fundamental particles. CFT changes the action of atoms. But these changes are occurring in the minds of people who know and understand what CFT represents. There follows an understanding that all physical phenomena have their origin from parameters of the fundamental constituents of matter - centrally symmetric fields - called briefly particles. These centrally symmetric fields is a distribution of potentials in space - they are just constituents of matter. In the distribution of fields potentials - particles, can be distinguished gravitational component and structural component. This second component occurs in the form of a plurality of spherical formations that have different radii and concentrically surround the central point of the fundamental particle. These spherical formations have been named the potential shells and with their participation there are created stable structures of matter, and with their participation occur any changes in matter.

Contents

1. Galileo - gravity law of free fall

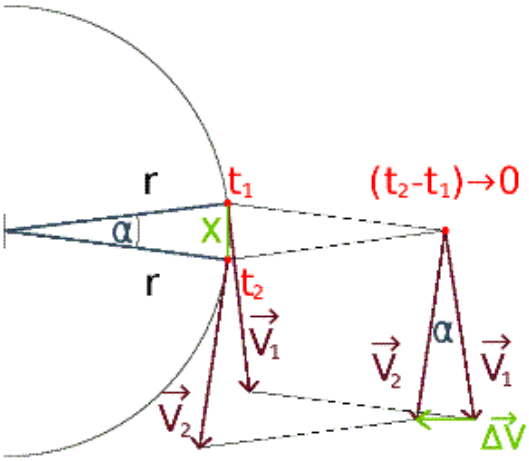
Galileo (Galileo Galilei, 1564 - 1642) experiments with gravity. He drops objects from a high altitude and measures their time of fall. Based on the results draws a conclusion that we now know as the law of free fall of objects in a gravitational field. This Galileo's law of gravity says that the objects regardless of their weight in a gravitational field fall with equal accelerations. In other words, the gravitational field treats these objects in the same way and equally accelerates them.

2. Johannes Kepler – third law of planetary motion

Johannes Kepler (1571 - 1630) analyses the results of astronomical observations of his teacher, Tycho Brahe and formulates three laws of planetary motion in orbit. Some analytical arguments are now known as Kepler's third law. This law states that the ratio of the square of the orbital period of a planet around the Sun to the cube of semi-major axis of its elliptical orbit (or the average distance from the Sun) is constant for all planets in the Solar System. Or rather, the second powers of the orbital periods of planets around the Sun are directly proportional to the third powers of the semi-major axes. This can be written by means of the formula: $\frac{(T_1)^2}{(a_1)^3} = \frac{(T_2)^2}{(a_2)^3} = \text{const}$, where T with the index of 1 or 2 are the orbital periods of two planets, but a with the index of 1 or 2 are semi-major

axes of orbits of these planets. This formula can be changed slightly and for the two planets can be described it in the form: $\frac{(T_1)^2}{(T_2)^2}=\frac{(a_1)^3}{(a_2)^3}$. We can also go to a more idealized form of the planetary system in which the planets move in circular orbits. Then in the formula instead of ratio of cubes of semi-major axes of elliptical orbits appears ratio of cubes of radii of circular orbits and the formula has the form $\frac{(T_1)^2}{(T_2)^2}=\frac{(R_1)^3}{(R_2)^3}$.

The nature of the form of the formula, and thus the nature of Kepler's third law, is kinematic. That means that Kepler's law and the formula describe motion in an elliptical or circular orbit using parameters of orbit and time of motion, and there are not taken into account the reasons for such a motion. In this respect, the situation is similar to the description of the acceleration of the body on a circular orbit. In this case, the centripetal acceleration is described by the velocity of the body in the orbit and the orbit radius. The formula for centripetal acceleration (normal) has the form $a_n=\frac{v^2}{R}$, and its justification is shown in the following example.



On http://forum.szkola.net/viewtopic.php?t=3548&sid=5757292cf0adb6118990050fe98cb5fa there is the following explanation:
You are performing vector analysis of circular motion, reaching the following conclusions:
1) Triangle with sides [r, r, x] is similar to triangle [v, v, Δv]. For very small times (t⟶0) we approximate x as segment, and not arc.
2) From Thales' theorem we receive: x/r = Δv/v, which shows, that Δv=xv/r.
3) We know, that acceleration is given by formula a= Δv/t=(xv/r)t=(xv)/(rt), because x/t is nothing else but velocity v, thus we receive a=vv/r=v2/r, bearing in mind, that sense of such acceleration is towards the centre of the circle in which body orbits.

What are relations between shown both dependences regarding third Kepler's law and centripetal acceleration, will be explained further.

3. Isaac Newton - laws of motion and law of universal gravitation
Isaac Newton (1643 - 1727) is engaged with mathematical analysis – elaborates calculus - and at the same time analyses behaviour of objects in a gravitational field and during orbital motion.
Now, when we know results of Newton's analytic work in the form of three laws of motion and law of universal gravitation, we can also see that (and how) he used the scientific achievements of Galileo and Kepler. Galileo's law of gravity, which is related to the free fall of objects in a gravitational field, though not visible at first glance, is contained in the law of universal gravitation and the third law of

motion. Galileo's law, assuming the same acceleration of bodies in a gravity field, in the implied meaning says that the value of the acceleration depends only on body mass, in which gravitational field the acceleration occurs. And this, you can already clearly see by analysing relationships between parameters of motion of two bodies in an exemplary planetary system. Here's how this situation looks like.

Basing on the law of universal gravitation, we consider the situation of two bodies, a heavy body of mass M and light body of mass m, which move in circular orbits around their common centre of gravity. These bodies form a stable planetary system through the mutual acceleration. Bodies in this system interact with each other forces that are equal in magnitude and have opposite directions. Taking into consideration that each of the forces is the product of the body mass, onto which acts acceleration coming from the neighbour, and just this acceleration, the equality of these forces is precisely for this reason, that acceleration is dependent (directly proportional) only on that neighbour. If the dependence (mathematical formula) that describes the acceleration had another character, then there would be no equality of forces and Newton's third law of motion didn't work in such case.

Knowing the results of Galileo's gravity, Newton pondered over this, how with increasing distance varies gravity of heavenly bodies, in particular, how changes the Earth's gravity. Undoubtedly, he knew the dependences associated with the motion of bodies in a circle, of which high school students learn today. So, he knew of the existence of dependence describing centripetal acceleration (normal) and the transformation of this dependence, which now is written by means of formulas as $a_n = \omega^2 \cdot R$ and $T^2 = (2\cdot\pi)^2 \cdot \frac{R}{a_n}$. The dependence of the latter shows that if the gravitational acceleration would not alter with increasing distance, or the centripetal acceleration would be independent of the radius of the orbit, then the speed of a body in orbit would have to be such, that the square of the period of circulation of the body in orbit would be proportional to the radius of the orbit. In other words, it would be that $(T_1)^2 = (2\cdot\pi)^2 \cdot \frac{R_1}{a_n}$, $(T_2)^2 = (2\cdot\pi)^2 \cdot \frac{R_2}{a_n}$, and therefore there would have to be a real dependence $\frac{(T_1)^2}{(T_2)^2} = \frac{R_1}{R_2}$.
It should be emphasized that this would exactly happen if the gravitational acceleration coming from a given heavenly body, while changing a distance from it remained constant. But Newton also knew of Kepler's research and knew that Kepler's third law has form $\frac{(T_1)^2}{(T_2)^2} = \frac{(R_1)^3}{(R_2)^3}$. On this basis, Newton concluded that centripetal acceleration, which acts on the body in the orbit, which contributes to the curving trajectory of motion and makes that it is a circle, must be inversely proportional to the square of the radius of the orbit (the distance). In other words, Newton came to the conclusion that the acceleration of gravity should change (according to nowadays' notation) according to the formula $a_n = \frac{G\cdot M}{R^2}$. Because only then will it be so that $(T_1)^2 = (2\cdot\pi)^2 \cdot \frac{(R_1)^3}{G\cdot M}$, $(T_2)^2 = (2\cdot\pi)^2 \cdot \frac{(R_2)^3}{G\cdot M}$, and $\frac{(T_1)^2}{(T_2)^2} = \frac{(R_1)^3}{(R_2)^3}$, that is, only then it will be in accordance with Kepler's third law.

Used today in physics the concept of gravitational field is sufficiently expressive. But not always been so and few people know how this concept arose and what it actually means. Today, you can guess that the development of the meaning of this concept was initiated as a result of analytical studies of

Newton. The first step, and groundwork for the emergence of the concept of a field that surrounds the body, were the results of analysis of the distribution of acceleration of outsider bodies that these outsider bodies received as a result of the impact of the given body. In connection with heavenly body there appeared spatial image of distribution of accelerations, which had a centrally symmetric character.
It is not known whether it was Newton, or perhaps someone else, but it certainly was a man who has mastered calculus. This expert in mathematical analysis found integral function, that was associated with the distribution function of accelerations around a heavenly body - it was created as a result of the integration of function describing distribution of accelerations. To use the words they could describe the whole of theoretical dependences, which came into being in this way, there were created concepts of field, field potential, field intensity. At the same time, in terms of numerical and in terms of a description by mathematical function, the field intensity was identical to the spatial distribution of accelerations. Such were the beginnings of a description of the gravitational interaction, but also the beginnings of a perfect description of the property and the structure of matter as a basis for constructive field theory.

4. Pinopa creates Constructive Field Theory. Pinopa discovers...
Pinopa (born in 1944) is dealing with analytic research of dependences between various physical phenomena. Pinopa's discoveries and interpretation of physical phenomena can be produced in the following way:

A) Instantaneous nature of the gravitational interaction
Process of gravitational interaction between objects occurs without participation of time. That's a process which happens immediately in the place of position of object, and acceleration of object proceeds according to law of universal gravitation and adequately to distribution of other objects in space. Because way of acceleration is just encoded in the whole space in a gravitational field, that surrounds every object and that is why every object being in this field (formed by all neighbouring objects) is immediately accelerated according to the resultant field intensity. This resultant field intensity is dependent on the position in space of other (remaining) objects and their physical parameters.
Other ways of explanation of gravitational interaction - namely that it takes place by means of waves or by exchange of intermediary particles between objects - are discordant with experimental facts. Because just facts prove immediate change of value of gravitational acceleration, namely that this change occurs immediately, as soon as the distance between objects is changing.
Such a confirming fact may be a motion of components of PSR B1913+16 binary star. The distances between the components of this binary star system and the trajectories of their motion are such, that in periaster, when the distance between them is minimal, light beat this distance during the 26 seconds, and in apoaster, when the distance between them is maximal light beat this distance during 105 seconds. Speed of the pulsar in this system in “almost” elliptical orbit varies from 450 km/s to 110 km/s (One complete revolution in the orbit takes about 7.752 hours). At such speeds, the binary components of the system during 26 seconds (or 105 seconds) beat vast distances, curving at the same time in an appropriate manner their trajectories. This behaviour of PSR B1913+16 binary star components is possible only in case when the gravitational interaction has instantaneous character.

B) The identity of fundamental and gravitational interactions
Gravitational interaction is the same as the fundamental interaction that occurs between the fundamental constituents of matter and gravitational field is identical with the fundamental field. The gravitational field of the body is the resultant field, which arises from the overlapping of the gravitational fields of all components of the body. The same fundamental effect, which at large distances is manifested in the form of a well-known resultant gravitational interaction, at small distances is the interaction that joins the components in complex structural systems and is the basis of all physical phenomena that occur at this scale in matter.
The fundamental interaction at small distances between the components, with which it comes to the formation of material structures, are the same interactions that are now known as strong and weak

nuclear interaction, interatomic interaction and other. While the interaction between the structures in more complex forms are known, for example, as the electrical interaction between the conductors of electric current, magnetic interaction and electrostatic interaction.

C) The fundamental particle of matter

Fundamental centrally symmetric field is the same as the fundamental particle of matter. Such fundamental particles, based on the same principle of the interaction, which operates the gravitational interactions, there are spontaneously formed stable structures of matter. Different behaviour of fundamental particles at large distances and at small distances is due to the nature of matter, which can be described by mathematical functions. And more specifically, using the function, we can describe nature of changes of the fundamental field intensity. This nature of changes in the intensity of the fundamental field enables that with mega-distances can form stable systems in the form of planetary systems, to which is needed an orbital motion, and at the nano-and micro-distances are forming stable structures in the form of atoms, small and large molecules, crystals, etc., for which the orbital motion is superfluous.

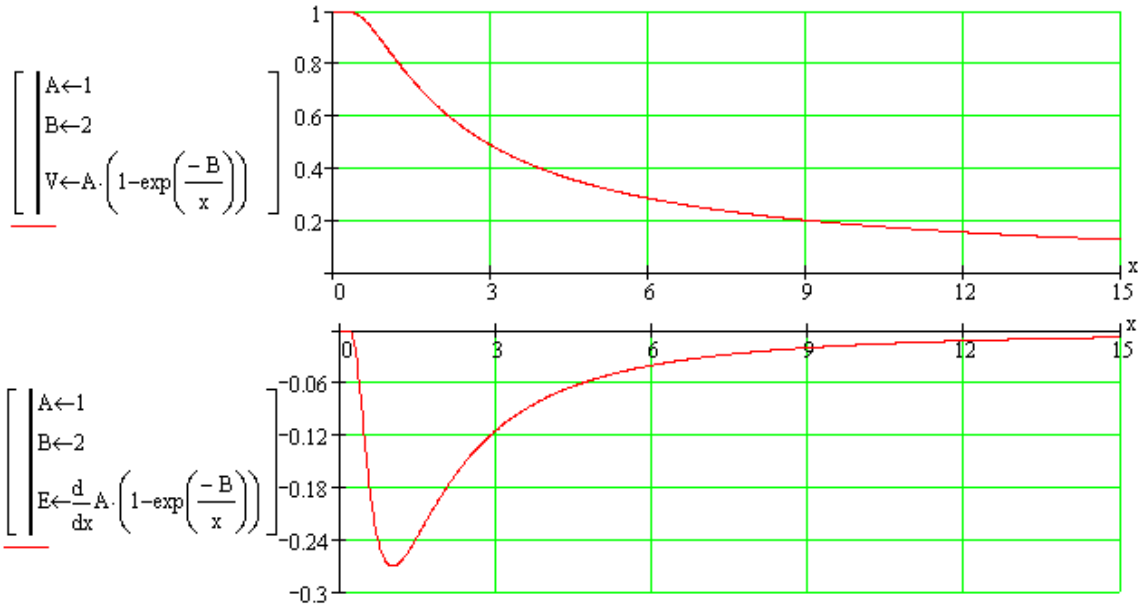
With mega-distance interaction between individual particles - a centrally symmetric fields - and the interaction between all complex structural systems, for example, between the Sun and planets circulating around it, is such, that always manifests itself as a trend to bring together these objects to each other. These objects always accelerate other objects in its side, and this acceleration is quite accurately described by the formula of Newton's law of gravity $a_n = \frac{G \cdot M}{R^2}$. While with nano-distances fundamental particles - that is, cs fields - depending on the distance from the central point may in these places accelerate other similar particles (cs fields) towards the centre of this field, then we can talk about the attraction, or - being in slightly different distances - they may accelerate them in the opposite direction, and then we can talk about repulsion of these particles. Such interaction of fundamental particles, but also the interaction of atoms and molecules, which looks like attraction and repulsion of other similar particles in the area of some small distances from their central areas, is due to existence of an appropriate distribution of field potentials. The described behaviour of fundamental particles, atoms and molecules, is confirmed by experimental facts. It is confirmed by the existence of a stable structure of matter, crystals, atoms. This behaviour results simply from the ability of constituents of matter to create stable structural systems. And these abilities result from the appropriate distribution of potentials in the structural components, which leads to such interaction. We can say more specifically that such properties are the result of the existence of spherical shells in the c.s. potential fields, which concentrically surround their central points.

D) Double, depending on distance, nature of the fundamental interaction

A different way of interaction of fundamental particles and all complex structural systems built of them, with nano-distances and mega-distances can be presented by appropriate mathematical functions. Physical investigations are essential and just to these results must be chosen appropriate functions. It is known that with mega-distances gravitational interaction does not go exactly as Newton presented it. For if it changed with distance exactly according to Newton's law, the orbits of the planets in our solar system would have the exact shape of the ellipse. And they don't have such a shape. The most conspicuous example is the phenomenon that is known as the perihelion motion of Mercury. Perihelion motion of Mercury is slow, because it amounts to 42.98 seconds of arc per century. But the perihelion motion of Mercury means that the actual orbit of the planet is shaped like rosette. The variability of Mercury's orbit can be described more accurately if to the function of Newton will be added exponential factor. The variability of the gravitational acceleration would then be described by means of the function in the form $a_n = \frac{G \cdot M}{R^2} \cdot \exp\left(\frac{-B}{R}\right)$.

To analyse the motion it's more convenient to use the same function, but written as a field intensity, which varies depending on the distance R. It can also be written with a negative sign, which is recommended here in order that the function of the field potential was positive. Then the function of field intensity along any radius coming out from a central point of the field has the form

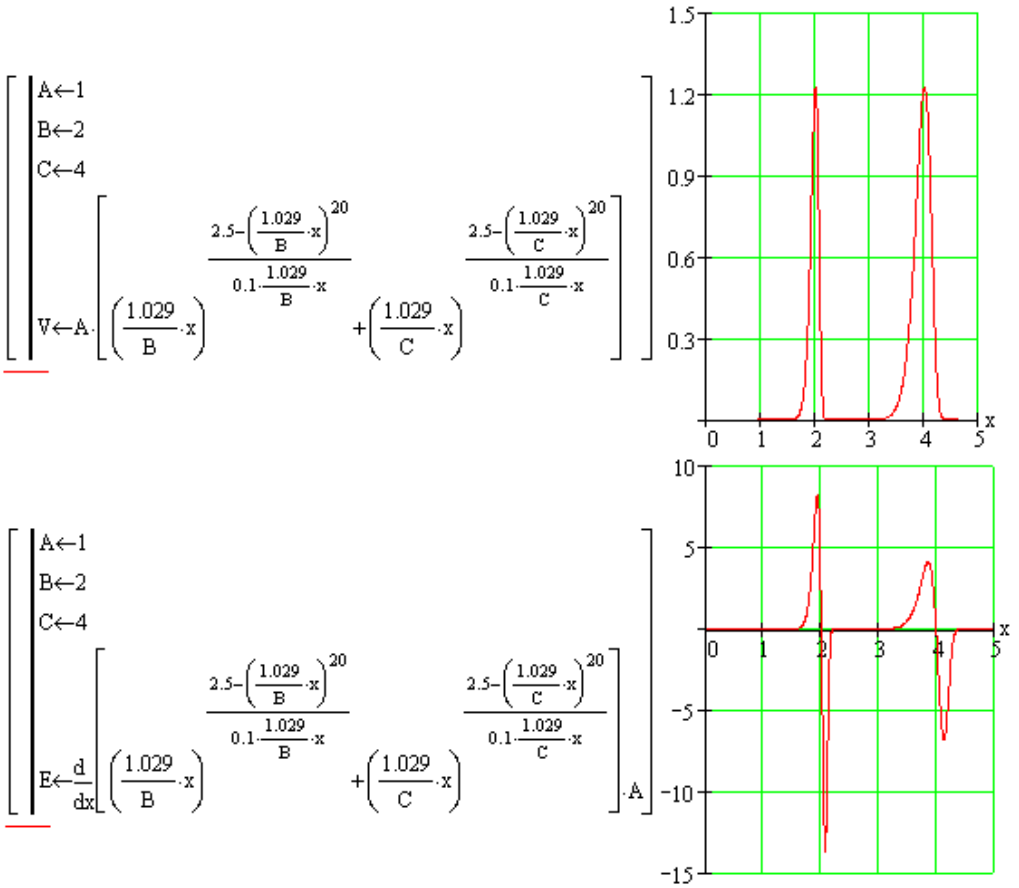
$E_p = \frac{-A \cdot B}{R^2} \cdot \exp\left(\frac{-B}{R}\right)$, and the potential of such a field describes the exponential function, or function E, in the form $V_p = A \cdot \left(1 - \exp\left(\frac{-B}{R}\right)\right)$. In these formulas A is a proportionality coefficient, and B is the exponential coefficient.
Below are presented graphs on which an exemplary field potential (the E function) and field intensity are shown.



Function E – Field potential and field intensity – changes in gravitational field

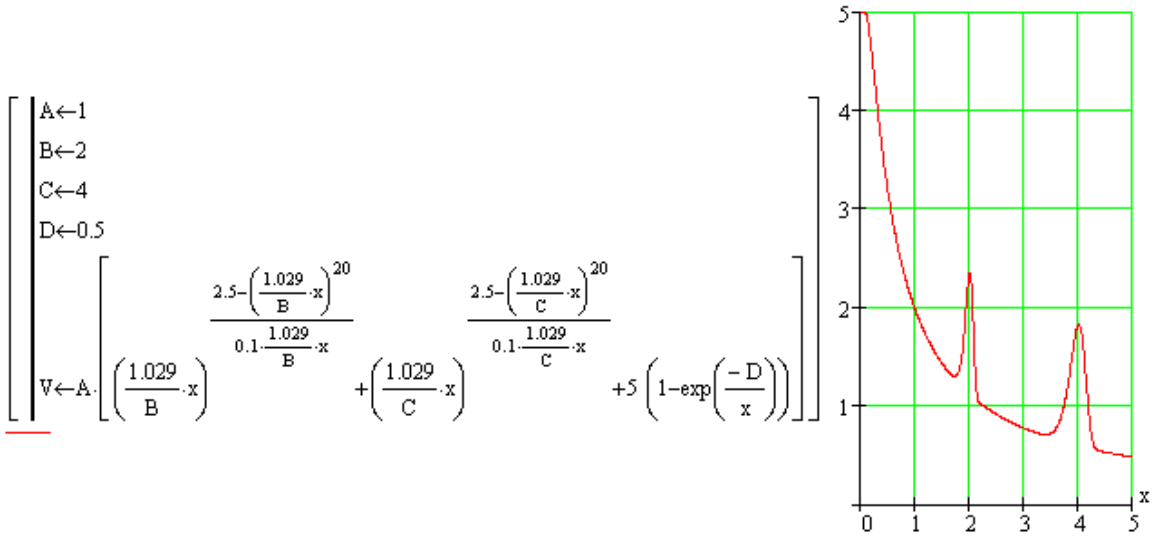
Notation of field distribution in space using the function E and the coefficients A and B has the advantage that helps to unify all interactions. This notation helps to bring all the known interactions into one single common reason for their existence and manifestation - the common cause are interactions between the fundamental constituents of matter. But this notation also helps deunify concept of gravitational interaction of heavenly bodies, which operates from the time of Newton, and see the individual character of the gravitational field of any heavenly body. The individual character of the gravitational field of heavenly bodies is expressed mainly in the fact that there is a perihelion motion of planets and stars. In the case of Mercury and other planets of the Solar System magnitude of perihelion motion is measured of at most tens of seconds of arc per century. But in the case of components of the double star PSR B1913+16 perihelion of their orbits rotates at a speed of 4.2 degrees of arc per year. Logical description of such a movement is made possible by the use of the function E.

With nano-distances at which there exist potential shells enabling the formation of stable structural systems, the distribution of field potential is described by the Poly Exponential Sum function or Function PES. An example of such a function of a field potential and field intensity is shown in the graph below.



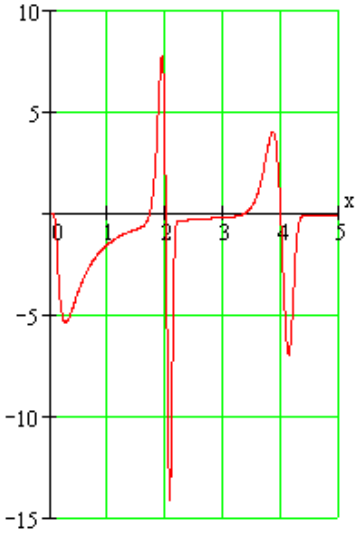
Function PES – polyexponenial sum function –
field potential and field intensity – changes in shell field

At nano-distances, the Function PES is one of the two constituent functions. The resultant Function EPES, which is used to describe the distribution of potential along any radius coming out from a central point of the field, is the sum of two overlapping functions - the Function E and Function PES. The field potential, which is described by the Function EPES, and field intensity on the graph presents as follows.



Complex function - polyexponential sum and exponential - Function EPES -
hypothetical distribution of potential in the vicinity of the centre of c.s. field

$$A \leftarrow 1$$
$$B \leftarrow 2$$
$$C \leftarrow 4$$
$$D \leftarrow 0.5$$
$$E \leftarrow \frac{d}{dx} A \cdot \left[\left(\frac{1.029}{B} \cdot x \right) \frac{2.5 - \left(\frac{1.029}{B} \cdot x \right)^{20}}{0.1 \cdot \frac{1.029}{B} \cdot x} + \left(\frac{1.029}{C} \cdot x \right) \frac{2.5 - \left(\frac{1.029}{C} \cdot x \right)^{20}}{0.1 \cdot \frac{1.029}{C} \cdot x} + 5 \left(1 - \exp\left(\frac{-D}{x} \right) \right) \right]$$

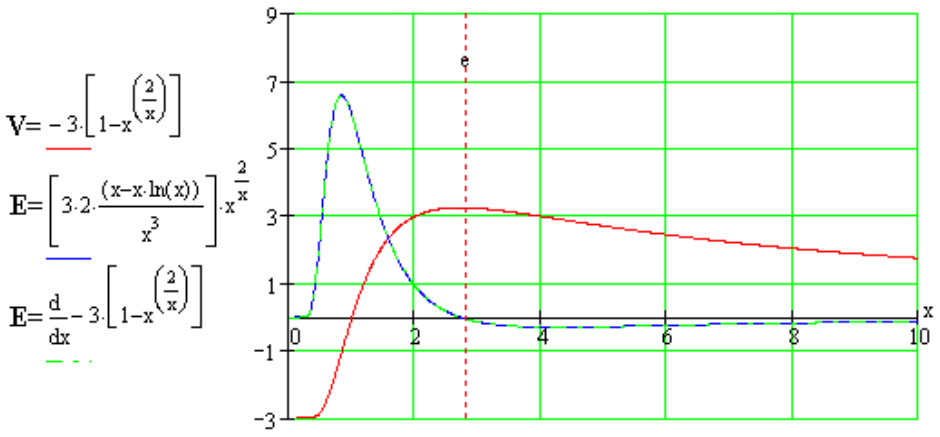


Field intensity in the vicinity of the centre of c.s. field with potential changing according to Function EPES

The fact that constituents of matter have a complex field distribution, which is described by the Function EPES, is closely connected with the existence of the following properties of matter:
- Matter in the concentrated form, for example, in the form of planet, thickens towards the centre of concentration. At such a density distribution there affects the field component, which describes the Function E.
- Matter exists in the form of stable structures, for example, in the form of atoms, molecules and crystals. The formation of stable structures is affected by existence of potential shells, having various radii and arranged concentrically around the centre of the field. Such a field distribution is described by the component function PES.
- When you take into account the existence of a distribution of the field potentials of fundamental components and the way of formation of stable structures, it becomes a base for further interpretation of physical dependences. On this basis, the existence of stable structures testifies to the existence of two types of structural components - heavy particles known as neutrons and protons, and the light ones we know as electrons. Heavy components are the main building blocks of matter. But in if they have their own high-speed, they themselves could not stabilise their motion and create stable structures. Light components of matter play a stabilizing role in the motion of heavy components. And they do it in such a way that during the formation of stable structures divert energy (of motion) outside, beyond the newly formed structures.
- Light components of matter are those components that exist before electrons start form from them - they are called protoelectrons. Light components fill space, which is called physical vacuum. In the matter, which is made of atoms, they fill the spaces between heavy components of matter, and especially the spaces between successive shells and in shells areas. Density of distribution of light elements (protoelectrons) in these structural systems (neutrons, atoms, molecules) grows in a similar way and for the same reason, as density of matter of a planet.
- Neutrons, atoms, molecules exist as stable structures in the form of a stable framework consisting of heavy elements, in volume of which light components coexist. Owing to potential shells of heavy components light components are divided into sectors, where they are trapped and kept with a smaller or greater force. Some sectors are more resistant to shocks, which are more stable than others. During the collision and the sudden change of direction of motion of such a structural system (of atom, of molecule), some sectors are emptied. Because protoelectrons that are there, are not enough firmly kept in order that they could follow along with the structure, keeping pace with change of direction of motion. Dissociating from the structure part of protoelectrons is identified with electron.

To study the properties and behaviour of matter there are useful mathematical functions that reflect the characteristics of matter only in an approximate way. An example might be a function of Newton, which is associated with gravity. For many years physicists, astronomers use it although it describes

gravity as approximate. Another function that is useful for imaging the general properties of matter, is polyexponential function - the Function PE. Below are presented graphs on which the exemplary field potential is shown, described by using the Function PE, and field intensity.



Function PE - Polyexponential function (PE) - Potential V and field intensity E (acceleration of fields) along any radius coming from the central point of the centrally symmetric field

The existence of extremum of the function describing the field potential shows that particles of matter, if they had such potential distribution along any radius, could create a stable structural systems. However with increasing distance x (at large distances from the beginning of coordinate system), value the Function PE, just as Newton's function value and the Function E value, approach zero. Such similarity between these functions, especially the similarity between the functions EPES and PE, which is associated with the possibility of creating models of stable structures of matter and its description, is sufficient for these
functions are suitable for description and modelling of various physical phenomena. Especially important is that they are suitable for describing and modelling the phenomena of electrostatic, magnetic, electromagnetic, electrodynamic, hydraulic, aerodynamic, for describe and modelling the motion of heavenly bodies in space and planetary systems. Such mathematical functions are particularly useful for training purposes.

E) Absolute and relative permeability of the components of matter

Existence of potential shells in spatial distribution of the field, which is here identified with the fundamental component of matter, on the one hand, enables the creation and existence of stable material structures, on the other hand, is the cause of such properties of matter, as: resilience, compressibility, ability to move in the matter of structural deformations in the form of diverse types of waves, and the cause of all other properties of matter. One of the most important properties of the fundamental constituents of matter is the absolute permeability. The absolute permeability to be understood as the simultaneous existence of all components of matter in the same space in the form of interpenetrating fundamental fields. These components co-existing, yet interact with each other and accelerate each other - each component accelerates all the other components accordingly to this, what is the distribution of field intensity. Absolute permeability is completely independent of anything else and there is at any time.

There is an important feature of matter in the form of relative permeability. But this permeability is a completely different category. Relative permeability is manifested by the fact that the given fundamental particle of matter or a complex material structure loses to some extent the ability to impact on the neighbourhood and itself partly ceases to be susceptible to the effects of the components of surrounding matter. The relative permeability appears in the matter because of sufficiently high velocity of some constituents of matter in relation to other ones. Relative permeability is associated particularly with the existence of potential shells. Because especially in areas where are located the shells, there is a large variation in field intensity, which is also a large variation in the ability to accelerate other particles that find themselves in these areas. Thus, even at

relatively low relative velocities, particles can become for each other not very noticeable. For this reason, neutrinos can penetrate deep into the Earth, and even permeate it and go further into space. Because of the phenomenon of relative permeability, one body moving at the same distance close to the Sun may move in a parabolic path. Other body moving at the same distance close to the Sun (at the moment of closest approach in relation to the Sun), but with a much higher velocity, will move in a hyperbolic path. But when the speed of the body, passing near the Sun will be many times greater, then the body will also move in a hyperbolic path, but it will be the path of barely visible curvature. So, in other words, the sun will affect the body (and vice versa, the body will affect the Sun) in barely perceptible way.
The phenomenon of relative permeability is directly connected with the phenomenon of an apparent increase in mass, which clearly makes itself felt in the work of particle accelerators. A large and increasingly growing speed of particles in the accelerator is the cause that accelerating devices of the accelerator during acceleration of particles less and less impact on these particles. So, for further acceleration of particles, with their increasing speed, there is a need to consume disproportionately more energy, and result in a speed increase is getting smaller.
The relative permeability of the matter was described in 2006 as a law of negligible action - an article about this physical law is placed on http://www.pinopa.republika.pl/05_ZakonND.html (pl), http://konstr-teoriapola.narod.ru/05_ZakonND.html (ru).
The relative permeability of matter is also known as Usherenko effect. Interpermeability of material structures at high relative speeds (in the form of microparticles permeating the body of the object) is of great importance for the durability and safety of spacecrafts.

F) The principle of minimizing of space potentials
According to the law of free-falling objects, all objects, regardless of their mass in a gravitational field fall with equal accelerations. The law of free-fall objects is usually considered in connection with the fall of small objects on a massive body. But in nature, it covers various situations of acceleration and falling of heavenly bodies and therefore, also includes the fall of Moon to the Earth and the Earth to the Moon, the fall of the Earth-Moon system to the Sun and the Sun to the Earth-Moon system, etc. The fall of bodies in such cases is only slight, because it's only within the parameters of their orbital motion. But the reciprocal gravitational acceleration of these bodies occurs constantly and through it can arise their orbital motion.
Galileo's law of gravity applies to both heavenly bodies and the smallest ones. And it can also be used when you need to consider interaction of the fundamental constituents of matter. In this case, Galileo's law of gravity becomes a fundamental principle of interaction in matter. Because the physical principle of interaction is the same both then, when the interaction occurs between the two fundamental components and then, when the interaction occurs between two bodies, which consist of the fundamental components. This same physical principle of interaction works both between very distant objects and between objects at small distances between them, down to the smallest distances.

Cause of motion of c.s. fields is revealed by the analysis in changes of resultant potential, that occur in space while the c.s. fields interact with each other and mutually accelerate. The cause of motion is the action of space, which consists in acceleration of centrally symmetric fields that are in it, in such a way that was followed to minimize (decrease) resultant potentials originating from these c.s. fields. Hence the action of space can be defined briefly as functioning of the principle of (M)inimizing of (S)pace (P)otentials (in assumption, gravitational potentials, fundamental potentials), or action of the MSP principle.

The principle of MSP relates to the same phenomenon, which is described by the law of free-fall of bodies in a gravitational field. But regarding a new point of view, the phenomenon of interaction between bodies, particles or c.s. fields, is considered globally as a result of the MSP principle. From this perspective, it is not that centrally symmetric field, particles, heavenly bodies “know” how to accelerate and move other c.s. fields, particles and heavenly bodies. From this point of view, acceleration and motion of c.s. fields, particles and heavenly bodies are managed by space in which they are contained. The MSP principle operates in the physical space in which at every moment, each

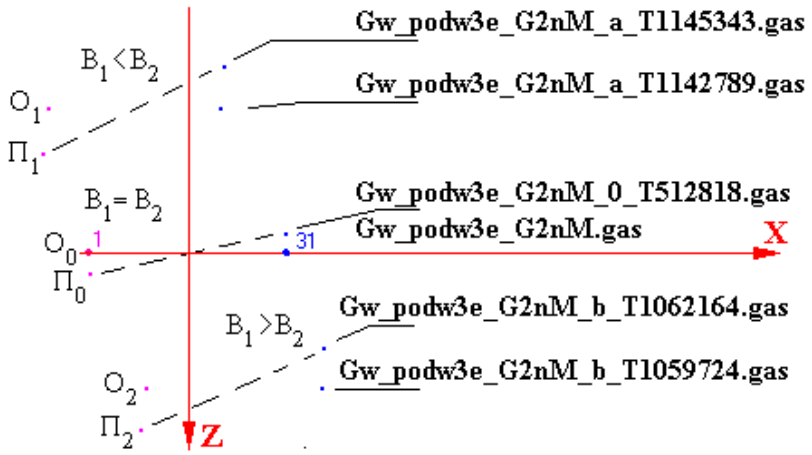
component of matter interacts with all other components. For this reason, the effects of implementing the MSP principle can be analysed only by means of monotonic mathematical component, of the Function EPES i.e., without the involvement of a component of mathematical Function PES. Because the potential shells of c.s. fields that describes the Function PES, apply interactions, which are limited in range. The MPP principle is illustrated in more detail on
http://www.pinopa.republika.pl/ZasadaMPP.html (pl),
http://konstr-teoriapola.narod.ru/17_PrintsipMPP.html (ru).

G) The dynamics of automatic motion of matter

When Newton was studying gravity and properties of matter, he based on a tacit assumption. He assumed, that bodies during gravitational interactions accelerate each other in the same way. Under this assumption, when in the mathematical function (that describes changes in acceleration of bodies depending on the distance) to skip the coefficient of proportionality, the remainder of this function for all the bodies is identical. The existence of such assumptions is evident in the third law of motion, when considered the operation of this law for the case of two bodies that orbit around their common centre of mass. Equality of the forces with which these two bodies interact with each other, just depends on the fact that bodies accelerate each other, and the functions that describe these accelerations, have the same mathematical structure. In this case, both forces are equal, and the common centre of mass remains motionless.

Today is already known that Newton's model describes the gravitational interaction only in an approximate way. About this fact proves the existence of perihelion motion of planets and double stars. Orbital motion of these objects can be more accurately described by a function that is a derivative of the exponential function E, which is $E_p = \frac{-A \cdot B}{R^2} \cdot \exp\left(\frac{-B}{R}\right)$. But this function is also a symbolic expression of the individual nature of the gravitational field of any planet or star. This means that the coefficients B in the functions that describe accelerations of two different objects from the orbital system, may be different. In this instance, in the system of bodies Newtonian dynamics is not working, but the dynamics of self-motion of matter. In the system of bodies orbiting the dynamics of such self-motion is expressed physically in such a way that bodies orbit and at the same time such a system as a whole is moving in space.
Confirmation of the existence of self-motion on the basis of observational data, for example, two stars orbiting system, will be extremely difficult (if at all possible). Because the motion of double star as a whole may be the result of asymmetry in the mutual acceleration of the components of double star (asymmetry caused by different mathematical functions, namely, that $B_1 \neq B_2$), and may be the result of the interaction of the system of stars with other stars, which may be due to effects on system of external factor.

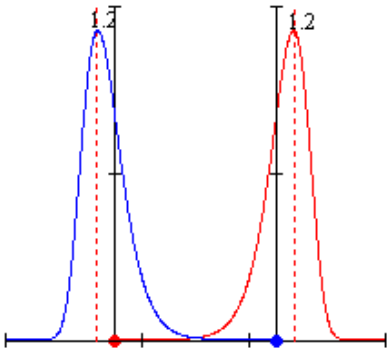
The behaviour of the system as the double star can be traced to the model using the computer modelling program Gas2n-Mercury .*) Below are the changes in the position of components (of the model) of double star in the XZ coordinate system, which come from three different situations. Snapshots from the computer screen that show these situations have been superimposed to show changes in various parameters.



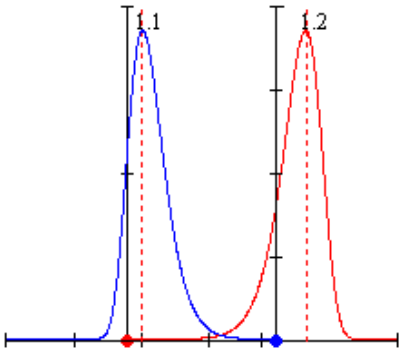
So, at the very beginning of the observation of the process double star components (marked as 1 and 31) are in position O_0. Functions of their acceleration have the same exponential coefficients: $B_1 = B_2$. At the beginning of the observation the system is in the position when its components are in apoaster (or are most distant one from another) and lie on the axis X. The stars orbit on the drawing plane in such a way that their centre of mass is in the zero point of the coordinate system. After some time the centre of mass remains unchanged, but changes the position of the line which connects the components when they are in apoaster. On the diagram this position is marked as Π_0 (pi zero). The modelled situation changes, when with the same initial parameters of the double star system coefficients B for acceleration function of both stars from the system are different from each other. Then the centre of mass moves. Depending on which coefficient is bigger and which smaller, after lapse of some time the stars in the coordinate system are in places that are marked O_1 and Π_1 or O_2 and Π_2.

Example of automatic motion of double star is inconsistent with what today's theoretical physics says. Because in the example above there is the motion of the common centre of mass of two stars, which is the cause of their mutual influence on each other. But it is not apparent from any special properties of matter. This is a result of known behaviour of matter, which lies in the fact that the acceleration of matter is always in the direction of increasing gravitational (or fundamental) field, which (this field) is related to the neighbouring matter. But it is also due to the fact that the field associated with the various constituents of matter does not vary in the same way. In other words, the various components of matter cause accelerations of other components of matter that change in a different way.

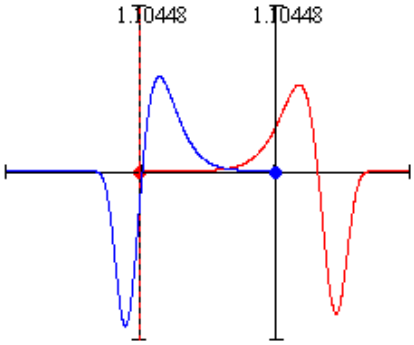
Described behaviour of matter and its components can be traced using the concept of potential shells, thanks to which there exist stable material structures. Two identical particles, each of which is in the area of potential shell of its neighbour, create a stable system. Position of the particle in the potential field of its neighbour schematically looks like in the figure below .**)



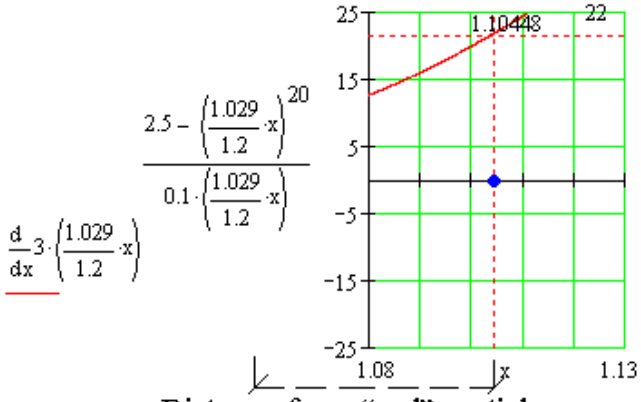
Particles accelerate each other and vibrate. But always they are accelerated in the direction where there is maximal potential. During the motion at any time, the particles are equally distant from the place where is the maximum of the function that describes the potential of neighbouring particle. At any time when one particle is accelerated “left” the second particle in the same way is accelerated “right”. This is precisely because the particles are identical - the radius of the potential shell for both particles is 1.2 units long. If the oscillatory motion of particles was halted, then they stopped at such a distance from each other, that they were in the area of highest potential, where the acceleration is zero.
Quite different is the situation when in this system of two particles to exchange one particle for such, of which the potential shell radius will be equal to 1.1 units of length. Diagram of this new situation is shown below.

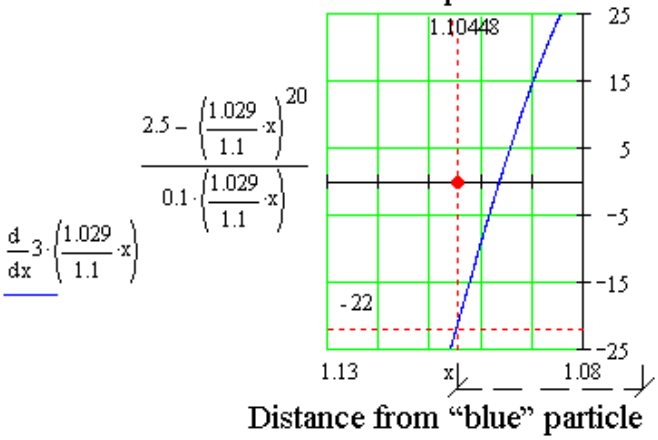


In this situation, the particles can vibrate relative to each other, they can also be halted. But they will not in this situation set in places with the greatest potential in the field of its neighbour. Because if one of them is located in the position of the maximum potential field of its neighbour - let it be that Because if one of them is located in the position of the maximum potential field of its neighbour - let it be that the “red” particle is distant 1.1 units of length from the “blue” one - then the “blue” particle is on the “left slope” of potential shell of the “red” particle and the acceleration acts on it, which is directed “to the right”. Thus, this particle will move away from “red” particle and “red” particle will also be on the “left slope” of potential shell of the “blue” particle. In the case of deceleration of mutual vibrations of the two particles, both particles will be located on the "left slopes", in places with equal gradients of slopes. In other words, the two particles will have approximately the same accelerations to the "right". This will be done when the distance between them is about 1.10448 units of length. After overlapping the diagrams of field intensity of both particles are shown below.



More details can be seen in the following graphs.





Basing on the pattern in which the particles are on the background of the graph of the field intensity of its neighbour, you can read the following information. “Blue” particle is in the positive field intensity of “red” particle, therefore, is accelerated in the direction of growth of the distance from the “red” particle, that is right. “Red” particle is in the negative field intensity area of “blue” particle, so it is accelerated in the direction of reduction of the distance from the “blue” particle, which is also accelerated to the right.

H) Automatic motion of matter in the light of experimental facts

Automatic motion of matter may be considered in two different contexts. In one context, the automatic motion of matter exists in the sense that components of matter are moving (for example, atoms) relative to each other. This is a result of the mutual acceleration. But the system of atoms and their common centre of mass does not change its position and does not accelerate in any direction. So

behave, for example, the gas molecule, which is a structural system, which consists of two identical atoms of the gas.

So far, no one has studied the atoms in terms of their accelerating abilities. Therefore, the functions that describe their field intensity, are not yet known. For the time being by necessity there is a need to use hypothetical models of fields and particles, and structural systems, which by means of them can be created.
Here is the simplest example of such a system - it consists of two particles, and its initial parameters are stored in the working file DC_1.2-1.2.**). After reviewing the exercise, which can be done with this file via a computer program Gas2n.exe, it can be stated that immobility of the centre of mass of the system of two particles is related to the fact that the mathematical functions that describe accelerations of what each of these particles gives the second particle are identical, and most of all there are identical values of the exponential coefficient B in these functions - they amount to 1.2. Quite different are the properties of two particles, in which values of the exponential coefficient B for the two functions are different. Then there is the automatic motion of matter, which must be understood quite differently. Then there is a mutual acceleration of particles, as in the previous case, but there exists also a kind of asymmetry in the mutual acceleration of the particles. The consequence is a resultant accelerated motion of particles. Exercise of such a system of particles can be performed using the working file DC_1.2-1.1.gas.

When you start the process, the output parameters of which are stored in the working file DPC_1.2-1.1a.gas, you can see the connected two pairs of particles. Each pair (if is separately) automatically accelerates and these accelerations have opposite directions. But two pairs of particles linked together do not move away from each other, because the whole is hold in a stable position by the two central particles - “green” particles. This is an example of a stable system, whose centre of mass remains motionless, even though the components of this system (in the form of pairs of particles) have a tendency to self-accelerated motion. In this case, the stability of four particles is durable. This means that despite the existence of small oscillations of components around positions of equilibrium ***) and the existence of pairs of particles tendency to self-accelerated motion, there is no increase in amplitude of vibrations of particles and consequently there is no breakage of particles system.
This particle system is durable even after the time at which you made over a hundred thousand iterations of computing - the state of such a system is stored in the file DPC_1.2-1.1a_T100079.gas. For the time that elapses in the process, make it more real and have for it a comparative unit, you can compare it with the amount of computational iterations that fall on one period of vibration of the particle of this system. Approximately for one period of vibration of a particle falls about 200 iterations.
Another system, which consists of the same four particles, but its middle particles are two “yellow” ones, behaves quite differently. Initial parameters of the system are stored in the working file DPC_1.2-1.1b.gas. This system is also a stable one, but the process of holding of a stable state must take a course in different conditions. Namely, it will be stable only when after starting the process there is active the “Cooler” button. Then increase of energy of the system will be discharged outside the system. When observation of the system behaviour is carried out without switched on “Cooler” button, then the system as the whole does not even stand up to time in which falls 5000 computational iterations. Such a system of particles, that is coming asunder, is saved in the working file DPC_1.2-1.1b_T4717.gas.
Observing the process, whose initial parameters are saved in a file DPC_1.2-1.1b_T4717.gas, there can be observed two phenomena that are associated with the particle system – the one which existed until recently as a whole and with individual pairs of particles, which were linked together.

After running the process pairs of particles at the beginning of the process are moving in opposite directions, and the particles vibrate in a visible manner. After turning on braking process of moving particles by means of “Cooler” button there comes to stopping of the accelerated motion of particles, then begins an accelerated motion in the opposite direction. In such a way there reveals the fact that

with the functions which describe accelerations of particles, is associated the existence of two different directions in which these pairs of particles can self-accelerate. Acceleration in one direction - it is acceleration, which existed at the beginning of the process when the particles were strongly vibrating - it can be relatively easy to halt and eliminate. When this occurs, there starts process of acceleration in the opposite direction, in spite of the braking action that was started with the “Cooler” button.
The second phenomenon is associated with various durability of systems, which arise from these two pairs of particles in two situations: 1) when these pairs are linking together in one system by means of “green” particles and 2) when they link together by means of “yellow” particles. To see the difference, run a process whose initial parameters are saved in the file DPC_1.2-1.1b_T4717.gas. To avoid excessive acceleration of pairs of particles resulting in their dispersion and disappearance from the field of the screen, do not wait too long and use the “cooler” button to start braking the particles. When you start braking first pairs of particles stop and then start accelerating “towards each other”. The “Cooler” button should be active all the time. Pairs of particles are approaching each other, until at some point, “yellow” particles will be at such a distance in which they happen to be, when they participate in the creation of a stable system. But the motion of particles will not stop and there will not be formed a stable system. (It can be concluded that in order to do this there should be much stronger braking of particles.). Pairs of particles will keep moving until “green” particles find themselves in a similar distance in relation to each other. Only then will cease accelerated motion of pairs of particles and arise a stable system of four particles.

Behaviour of presented here self-accelerating pairs of particles is the example of behaviour of the simplest system. Self-accelerating structural systems may consist of a large number of particles, but their behaviour will be similar. At certain positions relative to each other their resultants of acceleration may have the same direction, and then they will follow the line side by side in the same direction. In appropriate conditions, such particles can bind with each other by already known way and create a bigger, stable, self-accelerating particle. The same particles in other orientations relative to each other will have opposite directions of self-acceleration and when joined together form a stable particle, which will have ability to self-acceleration.

Self-accelerating particles in composed systems of particles, I will also interchangeably call them particles-barons. Because these particles-barons resemble an episode from the life of Baron Munchausen, who himself, together with his horse, which he gripped between his knees, pulled from the deep swamp by pulling his own hair. Particles-barons are very hard to see in physical phenomena, and the difficulty is due to one reason. To see in matter particles similar to the particles-barons, you need to have at least a vague suspicion smouldering in the mind that these particles may in general exist in nature. If “a priori” to say that in nature there are no indication, hint, or evidence that the particles-barons exist, then their abilities and traits have no right to exist in the interpretation of physical phenomena.
Then all phenomena, which can easily be explained by properties of particles-barons, and first of all by means of differentiating of acceleration functions must be explained in another way or do not have any explanation. The existence of particle-barons results from the experimental facts, therefore these facts must be presented. Because they testify to the fact that constructive field theory is not incompatible with experimental facts and correctly describes the world of physical phenomena. Here are some of these experimental facts.
Fact 1. Radioactivity of radioactive elements in the form of decay of atoms is due to destabilisation of the structure of atoms. The very process of decay of atoms is the escape of components from their structure - particles-barons. Such a particle-baron is alpha particle, or linked two protons and two neutrons. On the accelerative properties of alpha particle affect the fact that neutron and proton accelerate each other according to different functions. But this is not the only difference. Because there are such consequences that proton as a heavy component of matter (about heavy and light components of matter there is mentioning in item D) relatively easy loses part of its protoelectron cloud that (this part) is identified with electron.
On the other hand neutron, as a combination of heavy component (for which I do not invent a separate

name here) and surrounding and permeating it cloud of protoelectrons, firmly holds that cloud in the area of ??its potential shells. Combination of two different heavy elements with each other, neutrons and protons in a suitable structural system (even when protons will be surrounded by clouds of protoelectrons, in which there are no losses, and outside such structures will manifest itself as non-ionized atoms) when it is in a structure of heavy atom, is always a potential cause of disintegration of this large atom. Unsettled balance of such a structural system can contribute to separation of particle-baron from the whole. Then it moves away with its appropriate self-acceleration. This is what happens in the case of radioactive decay, which is connected with the emission of alpha particles.

Fact 2. The existence of asymmetry in accelerations of protons and neutrons is also the cause of motion of beta particles. During the nuclear processes in the form of decay and reorganization of the structure, the difference in accelerating impact of heavy components of atomic nuclei is also manifested in the form of resultant acceleration of light components, or electrons. In view of the reason this process is identical with the contact phenomenon in the form of electrical current flow and the formation of electric potential at the point of contact between two metals, for example, Fe-Cu contact. But the contact phenomenon involves potential shells of components, which have much larger radii and other distributions of potentials in the area of these shells, than in the area of shells of small radii. For this reason, electrons in the contact phenomenon (until the maximal value of electric potential appears on the electrodes) move with much lower speeds than the speed of beta particles, which emanate during radioactive decay.

Fact 3. This fact will be presented first with regard to theoretical point of view, and then presented in connection with physical phenomena in nature. Using the working file DPC_1.2-1.1.gas, you can perform two exercises of particles-barons. In one exercise, you can observe motion of the particle-baron with the active “Cooler” button, when motion of particles is braked, and the particles during each computational iteration lose 1% of its speed. In the second exercise, you can observe motion of particle-baron, when this motion is not braked. After carrying out exercises, on the basis of their results, there can be stated as follows.
- In the absence of braking factor particle-baron keeps approximately constant acceleration. Thus after a sufficiently long time of its travel it can attain any large speed.
- If there is a braking factor, the particle-baron is moving with accelerated motion only for a short time at the beginning of the process. Discharge of appearing excess energy results that the accelerated motion ceases and the particle-baron further moves in uniform motion with a certain speed.
Presented dependences can be seen in the results that come from a few sample exercises – they are included below.

DC_1.2-1.1.gas
X=0 u(x)=0

DC_1.2-1.1_T10001_Cr.gas
X=7.24097650550874 u(x)=0.731264075261031

DC_1.2-1.1_T20002_Cr.gas
X=14.5543485221943 u(x)=0.731264075261031

DC_1.2-1.1_T10001.gas
X=365.741734289613 u(x)=73.1337299325783

DC_1.2-1.1_T20002.gas
X=1462.89380382228 u(x)=146.267445444155

In the working files DC_1.2-1.1_T10001_Cr.gas and DC_1.2-1.1_T20002_Cr.gas are saved parameters of one of the components of the particle-baron – of green “particle” (after 10,001 and after 20,002 computational iterations). The process proceeded with the simultaneous braking of motion of

the particle-baron. You can see that after 10,001 computational iterations and after 20,002 iterations the speed was the same. So this means that when energy from particle-baron is taken over, then at a certain speed the reception of energy balances the energy gain (which is related to acceleration of particle) and particle velocity does not grow.
In two other two files there are saved parameters of “green” particle after similar duration of the process, but without braking motion of particle-baron. In this case, we can see that the accelerated motion after twice as long passage of time led to the situation that velocity of particle-baron doubled. This happens in the case of uniformly accelerated motion.

In nature there are a variety of particles that travel at various speeds. On the causes of velocities of particles one can spin various guesses. You can associate with them the reasons that work briefly and accelerate them into enormous speed at the beginning of their motion, and you can guess that they are particles-barons, and cause of motion of each such particle is directly related to it, and is its physical feature. There are good reasons to believe that in nature there are two causes of motion.

The cause of ejection of particles from the material structures that during their motion behave in accordance with Newton's laws of motion, is a short-term accelerated motion. This initial phase of motion of particles arises in the structure of those areas where there are potential shells. The cause of ejection of particles from the material structures that during their motion behave in accordance with Newton's laws of motion, is a short-term accelerated motion. This initial phase of motion of particles arises in the structure of those areas, where exist potential shells. Particles, creating structural systems interact with each other most energetically at these distances and transmitted by them accelerations are greatest. At the appropriate positions of particles relatively to each other, there may originate large resultants of acceleration, which acting on (other) particles in a short time of action give them high speeds.
And just in connection with acceleration capabilities and conditions under which accelerated particles then move, can be inferred speeds of motion at which both particles can move.

Existence in the physical vacuum of material medium in the form of protoelectron atmosphere, on the one hand, allows propagation of various waves, some of which we perceive as light waves, on the other hand, is the cause of braking of motion of particles, which in this medium are moving at high speeds. Hence one can conclude that particles that travel in space at speeds close to the speed of light, couldn't be accelerated to such huge speeds during short-term acceleration, for example, during a nuclear explosion.These particles exhibit the characteristics of particles-barons. Because particles that are accelerated during a short-term process, even if they reach high speeds, due to resistance of the medium in which they move, they reduce their speed to smaller and smaller values. And only particles-barons can theoretically accelerate to arbitrarily high speeds. But to all intents and purposes, due to the braking effect of protoelectron medium that exists in physical vacuum, the speed of particles-barons is limited just because of the medium resistance.

Considering theoretically, protoelectron medium has various density in different places of space. In physical vacuum, in areas that are very distant from large concentrations of matter, this medium is the most sparse. It may therefore happen that in such area particles-barons by self-acceleration reach such high speeds, that thanks to the phenomenon of relative permeability there will almost disappear their interaction and impact both on protoelectrons and on the rest of matter. Then such particles-barons are in a sense, lost for our material world. Because they will continue to accelerate themselves to more and more higher speeds and they never can be observed in any way.
The motion of particles-barons could be recognized by one particular trait. If you happen to watch the motion of a particle in a spiral track and and in conjunction with this pitch of the spiral would be bigger and bigger, it would be an indication that the particle-baron is just moving, also rotates very slowly. Interpretations of many other physical phenomena can be found in articles on http://www.pinopa.republika.pl/_2SpisTresci.html (pl), http://konstr-teoriapola.narod.ru/index.html (ru).

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*) Note: Computer modelling programs that can be copied from the “pinopa's website” work properly

on computers running Windows ME and Windows XP.
To perform exercises with the model of double star, copy the file Merkury.zip (http://pinopapliki2.republika.pl/Merkury.zip), in which there are two executive programs exe and working files gas. Using the executive program Gas2n-Merkury.exe open the summary file "Gwiazda_podwojna", open the selected working file in format gas and start running the process. In the working file are encoded initial process parameters: position in coordinate system and initial velocity. And changes in motion of objects during the process follow on the basis of their mutual acceleration. To observe occurring on the screen process, click 12 times the left mouse button (holding the cursor on the panel of the modelling program) on the black arrow which is directed obliquely "to the top - right". Then the modelled objects are visible on the screen.
**) To perform other exercises of the reciprocal acceleration of particles, use of the executive program Gas2n.exe. After opening the program activate button "PES" in the table "Formula". Because particles interact with each other in accordance just with this mathematical function.
To braking the motion of particles, or extraction of part of their energy that is associated with the running process, use the "Cooler" button. When the "Cooler" button is active, then when calculating successive positions of particles in the coordinate system, during each of the computational iteration, speed of particles is reduced by 1%.
***) Small vibrations around the equilibrium positions of the components, that seem on the screen to be situated motionless, can be observed, when the button "Show Listing" is enabled. Then the table "Listing" shows changing velocities of particles or their positional parameters. To switch velocities of particles to their positional parameters (or a change in the opposite direction) on the table "Listing " is obtained by double-clicking the left mouse button while the cursor is on the white field of the table. When the button "Show Listing" is enabled, the modelled process slows down considerably, which allows more accurate stopping of the program in the time needed to save the process parameters.

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