Inverse (inner) and outer electric field of electrically charged particles as fourth and fifth space deformation

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Abstract

On link http://viXra.org/abs/1410.0040 it is described the first and second space deformation, while on http://viXra.org/abs/1502.0097 described the third space deformation. The fourth and fifth space deformation is a consequence of the presence of a proton and an electron in the dynamic space, after the inevitable end of the primary neutron (beta decay). So, it is caused an electrostatic induction of positive and negative units of the surrounding space and an inverse electric field of the proton (nucleus) is created, with reduction of the space cohesive pressure. The nuclear force now is interpreted as an electric force, 100 times stronger than the corresponding force of the outer electric field that extends beyond the potential barrier.

The Universal and the particulate (see http://viXra.org/abs/1501.0111) antigravity force is complemented by the stronger nuclear antigravity force, since at the lower nuclear field the reduction of the cohesive pressure is rapid and contributes to the architecture of the nuclei structure. Moreover, the reduction of cohesive pressure at the lower nuclear field is the cause of the neutron mass deficit, while protons do not undergo mass deficit, as it will be described below.
1. The electrically charged particles cause electrostatic induction of the dynamic space

On links [http://viXra.org/abs/1410.0040](http://viXra.org/abs/1410.0040) and [http://viXra.org/abs/1502.0097](http://viXra.org/abs/1502.0097) it is described the [Genesis and structure of the neutron](http://viXra.org/abs/1410.0040), which accepts the effect of the [antigravity force](http://viXra.org/abs/1410.0040) (Universal), that causes [centrifugal accelerated motion](http://viXra.org/abs/1410.0040) towards areas of increasing [cohesive pressure](http://viXra.org/abs/1502.0097). When the neutron is found in an environment of stronger cohesive pressure it becomes unstable and is cleaved ([beta decay](http://viXra.org/abs/1511.0025)), producing a [proton](http://viXra.org/abs/1511.0025) by the detachment of \( \sim 10^6 \) [negative units](http://viXra.org/abs/1502.0097) (see below). These negative units form an [electron](http://viXra.org/abs/1502.0097), while on the remaining proton cortex \( \sim 10^6 \) [positive units](http://viXra.org/abs/1502.0097) outweigh and for the conservation of the system momentum, the [antineutrino](http://viXra.org/abs/1511.0025), is created (see [http://viXra.org/abs/1511.0025](http://viXra.org/abs/1511.0025)).

The [positive charge](http://viXra.org/abs/1410.0040) of a proton causes the [electrostatic induction](http://viXra.org/abs/1502.0097) of positive and negative units, creating [electric or quantitative deformation](http://viXra.org/abs/1410.0040) of the proximal space, consisting of the repulsion of positive units and the attraction of negative ones. The result is the alteration of the [background density](http://viXra.org/abs/1410.0040) \( \rho_0 \), which is the density of electric charge per length \( (Cb/m) \) of equal number of positive and negative units.

The alteration of the background density \( \rho_0 \) consists of displacement of positive and negative units, during which an excess of positive charge and at the same time a lack of equal amount of [negative charge](http://viXra.org/abs/1410.0040) in a region is created. We define by \( \rho(+) \) and \( \rho(-) \) the equal [relative densities](http://viXra.org/abs/1410.0040) of positive or negative units per length, so the [absolute value](http://viXra.org/abs/1511.0025) of density is \( \rho_a=\rho_0+\rho(+) \) and \( \rho_a=\rho_0+\rho(-) \).

The repulsion of positive units and the attraction of negative ones by the proton create an excess of positive or a lack of negative units, which weakens with distance.

The proton ([Figure 1](http://viXra.org/abs/1502.0097)) with [electric charge](http://viXra.org/abs/1410.0040) \( +e \) is at position 0, where the background density \( \rho_0 \) of the positive and negative units was, while the axes represent the relative density \( \rho \) (it is proportional to the potential \( V \) of the electric field) and the distance \( x \). The top of the hill is the [potential barrier](http://viXra.org/abs/1410.0040) \( B \), internally of which extends the [inverse](http://viXra.org/abs/1410.0040) (inner) [electric field](http://viXra.org/abs/1502.0097), as [fourth space deformation](http://viXra.org/abs/1410.0040) and externally extends, as [fifth space deformation](http://viXra.org/abs/1410.0040), the [outer electric field](http://viXra.org/abs/1502.0097), the intensity of which declines until the distance \( x\approx 10^{14} \cdot 10^{20}=10^6 \) \( m \) (see below).

The density \( \rho=e/\lambda \) of the electric field of a proton is declining until a distance of \( x\approx 10^6 m \), where it takes its minimum value, which is identical with the [most elementary electric charge](http://viXra.org/abs/1410.0040) \( q_0 \) of a unit \( (q_0=\rho) \) at this position. Substituting the proton charge \( e=1,6 \cdot 10^{-19} Cb \), it is \( q_0=e/\approx 1,6 \cdot 10^{-19}/10^6\approx 1,6 \cdot 10^{-25} Cb/m \Rightarrow q_0 \approx 1,6 \cdot 10^{-25} Cb \), that is the most elementary electric charge of the unit.

So, from the neutron a number of \( e/q_0\approx 1,6 \cdot 10^{19}/1,6 \cdot 10^{-25}\approx 10^6 \) negative units are detached ([beta decay](http://viXra.org/abs/1511.0025)), which structure the [negative cortex](http://viXra.org/abs/1511.0025) of an electron.
Figure 1: Inverse (inner) and outer electric field of proton ($\rho = e/x, V = Ke/x, V = K \rho$, where $K$ is a ratio constant and $B$ the potential barrier)

The negative units (~$10^6$) removed from the neutron are very few compared to the total number (~$10^{58}$) of its units. Therefore, we can consider the radius of a proton cortex of the same magnitude as that of a neutron, that is $r_c \approx 10^{-34} m$, while its radius of core vacuum is $r \approx 10^{-54} m$, whereby the size $r_c/r \approx 10^{20}$ is the extent ratio of the space deformations. Therefore $r_c/r \approx 10^{20}$ and $r_c \approx 10^{20}, 10^{-34} \approx 10^{-14} m \Rightarrow r_c \approx 10^{-14} m$ is the radius of the electric cortex of a proton. It is $r_c/r = x/r_c = R_0/x \approx 10^{20}$, wherein $x$ is the extent of the outer electric field and $R_0$ the radius of the Universe (Figure 2).
So, it is $x \approx 10^{20} r_{el} \approx 10^{20} \cdot 10^{-14} \approx 10^6 \text{m}$. Similarly, it is $R_0 \approx 10^{26} x$, so $R_0 \approx 10^{26} \text{m}$, equal to the magnitude of the Universe radius, as estimated today by Cosmology.

In modern Physics the radius of hydrogen nucleus is $\approx 10^{-14} \text{m}$, namely equal to the radius of the electrical cortex of a proton. Therefore, whatever is considered as indeterminate matter of quarks and «gluons», it is defined by Gosdas’s Theory of Dynamic Space as an electrical cortex ($r_{el} \approx 10^{-14} \text{m}$) of a proton, into which there are strong electric (nuclear) attractive forces (see paragraph 2). In this huge extent of electrical cortex many admirable phenomena can occur (see paragraphs 5 and 6).

2. Dynamics of inverse electric field - Nuclear force

In the outer electric field of a proton, which extends beyond the potential barrier (Figure 1), the positive units outweigh, while equal is the reduction of the negative ones. There, a positive charge is repelled from the proton, due to the higher density of units on the side of the proton.

What happens, though, at the inverse electric field (Figure 3) on the left of the potential barrier $B$? It there happens the opposite of what happens at the outer field. On the left of $B$ a positive charge is attracted by the proton, repelled more strongly by the units of higher density on the right of the positive charge, but less strongly by the units of lower density on the left of the positive charge ($\rho_2 < \rho_1$ hence $F_2 < F_1$). Therefore, at the inverse field takes place
the «paradox» that a positive charge is attracted by the positive proton, namely the homonyms are attracted and the oppositely charged particles are repelled, since on a negative charge the negative outweighing units are acting. This is confirmed by the braking radiation emitted from rapidly moving electrons, as they are passing close to the nuclei and are not attracted from them but repelled, due to the inverse electric field and are slowing down while radiating.

![Figure 3: Attraction of a proton at the nuclear field, where B is the potential barrier](image)

\[ F_1 = K(e/2)(2\rho_1), \quad F_2 = K(e/2)(2\rho_2) \]

So, we conclude that protons in the nuclei, due to the inverse electric-nuclear field, are not repelled but attracted. Therefore, the strong nuclear force is not due to the presence of «gluons», but it is the fourth force of Nature, the evident electric-nuclear force of the inverse electric field as a result of the fourth space deformation.

3. Electric field intensity

Coulomb’s Law

If an electron A, with cortex diameter \( \Delta x \) and charge \(-e\), is located at the outer electric field of another electron (Figure 4), then electric forces between the units of that field and the units of electron’s (A) cortex are exercised.

As the relative densities \( \rho_1 \) and \( \rho_2 \) of units change equally (excess of negative or lack of positive charge) on either side of electron A, they are calculated twice (\( 2\rho_1 \) and \( 2\rho_2 \)), exercising repulsive electric forces on the respective charge \( e/2 \) of electron A. Therefore, it is \( F_1 = K(e/2)(2\rho_1) \), and \( F_2 = K(e/2)(2\rho_2) \) with resultant of \( F = F_1 - F_2 = Ke(\rho_1 - \rho_2) \), so \( F = Ke\Delta p \) where \( K \) is a ratio constant.
The above formula can be written as: $F = (K \Delta x) e \Delta \rho / \Delta x$, where $K_c = K \Delta x$ (electric constant), so $F = K_c e \Delta \rho / \Delta x$. Then, the electric field intensity is $E = F / e$ and by substituting, it is $E = K_c e \Delta \rho / \Delta x$.

The electric field density of an electron is $\rho = e / x$ and its derivative as of $x$ is $\Delta \rho / \Delta x = -e / x^2$, so the above formula of intensity becomes $E = K_c e / x^2$ omitting sign $(-)$, since on the outer and inverse (inner) field it is already defined how electric charges are attracted or repelled.

Figure 4: Repulsive electric forces between two electrons

Figure 5: Electric field of positive charge $Q_1$ ($E = K \tan \omega = K_c \Delta \rho / \Delta x$)
If \( +Q_1 \) is a positive charge (Figure 5) as a sum of \( n \) charges \( +e \), then \( Q_1 = ne \) and the relative density of the positive units will be \( \rho = \frac{Q_1}{x} \), whereby the absolute density is \( \rho = \rho_0 + \rho_1 = \rho_0 + \frac{Q_1}{x} \Rightarrow \rho = \rho_0 + \frac{Q_1}{x} \), and its derivative as of \( x \) is \( \Delta \rho / \Delta x = -\frac{Q_1}{x^2} \) and \( \varepsilon = -K_e \frac{Q_1}{x^2} \).

If at the above field a second positive charge \( Q_2 \) is placed, then the electric force \( F \) exercised on charge \( Q_2 \) will be \( F = \varepsilon Q_2 \), whereby \( F = K_e Q_1 Q_2 / x^2 \), which expresses the Coulomb's Law.

The maximum intensity of the outer electric field at the potential barrier \( B \) is \( \varepsilon = K_e e / x^2 \), namely \( \varepsilon = K_e e / r_{el}^2 \), wherein \( x = r_{el} \approx 10^{-14} \text{m} \) (Figure 2).

The intensity, however, of the lower inverse nuclear field (see paragraph 4), for \( x = r_{el} / 10 \) is \( \varepsilon = K_e e / (r_{el} / 10)^2 \), namely \( \varepsilon = 100 K_e e / r_{el}^2 \).

Comparing the two above intensities of the outer \( (K_e e / r_{el}^2) \) and inverse \( (100K_e e / r_{el}^2) \) electric field, we conclude that the nuclear force is 100 times stronger than the maximum electric force, as it is also accepted in modern Physics.

4. Potential \( V \) of nuclear field

In figure 6 curve \( BC \) is symmetrical to curve \( BM \) as of \( BA \) and therefore it is the continuity of hyperbole \( \rho(+) \) of the outer field. **Potential \( V \)** of inverse electric-nuclear field is \( V = K \rho(+) = K \rho(-) \), namely it is proportional to the relative density \( \rho(+) \) or \( \rho(-) \) at point \( P \), that is \( V_p = PZ = Ke/x \).

**Figure 6**: Potential \( V \) of the proton’s inverse electric-nuclear field
At point \( B \) (potential barrier) the potential is \( V_B=\frac{NZ}{r_\ell} Ke/\ell \), wherein \( r_\ell \) is the radius of the electric cortex of a proton, \( e \) its electric charge, \( x \) the distance from that proton and \( K \) a ratio constant.

Due to symmetry of the curves, it is \( P\,N=P\,'N \), so the potential of \( P' \) is \( V_{P'}=P'Z=NZ-P'N=NZ-PN=\frac{N-\left(PZ-NZ\right)}{2}=\frac{2NZ-PZ-2V_B-V_P}{2} \), and, therefore, the potential of inverse electric-nuclear field is \( V=2Ke/r_\ell-Ke/x \).

For \( 2Ke/r_\ell=Ke/x \), the potential at position \( x=r_\ell/2 \) of the field, namely at the middle \( M \) of the radius of electric cortex, becomes zero. For the interval between \( M \) and \( E \) the potential is positive, until its maximum value at \( B \). Between \( O \) and \( M \) the potential is negative and takes very large values. Besides, potential follows curve \( \rho(+) \) of relative density of positive units. Consequently, from \( E \) to \( M \) there exists the upper inverse field and from \( M \) to \( O \) the lower inverse field, where the increase of potential, in absolute value, is rapid.

If in the above formula the proton charge \( e \) is replaced by the charge \( Ze \) of the nucleus and the radius \( r_\ell \) of the proton’s electrical cortex with the radius \( r \) of the nucleus, then the potential \( V \) of the nuclear field is \( V=2KZe/r-KZe/x \).

### 5. Nuclear antigravity force

The change of relative density \( \rho \) of the inverse electric field affects directly the cohesive pressure of proximal space, since it depends on the number of pairs of electrically opposite units, which have remained in the field. Moreover, the cohesive pressure \( P_0 \) caused from tensions \( (F=kL_0) \) of electric dipole between electrically opposite units, which prevail to the repulsive forces between homonyms units. Accordingly, the remaining cohesive pressure \( P \) is proportional to the number of pairs of electrically opposite units, which have remained in the field and especially in the lower one, where this change happens rapidly. Therefore, if \( \rho \) is the relative density at a position of the inverse field, then the absolute density \( \rho_0\rho \) is proportional to the number of pairs of opposite units, the attractive forces of which create the remaining cohesive pressure \( P \) at this position. Consequently, the cohesive pressures \( P_0 \) and \( P \) are respectively proportional to \( \rho_0 \) and \( \rho_0\rho \), that is \( P/P_0=(\rho_0\rho)/\rho_0 \Rightarrow P=P_0(\rho_0\rho)/\rho_0 \).

Thus, in the inverse nuclear field, we expect a change of the space cohesive pressure as a function of the relative density \( \rho \) of the units. Hence, buoyancy conditions for the particles entering into the nuclear field are created.

Therefore, in the upper inverse nuclear field (see paragraph 4), for \( \rho=\rho_1 \) and \( \rho=\rho_2 \), it is \( P_1=P_0(\rho_0\rho_1)/\rho_0 \) and \( P_2=P_0(\rho_0\rho_2)/\rho_0 \). As \( \rho_2<\rho_1 \), it is \( P_1<P_2 \), so the \( \Delta P=P_2-P_1 \) creates an attractive antigravity force \( F_\alpha' \) (Figure 7). Therefore, in the upper nuclear field both the antigravity force \( F_\alpha' \) and the resultant \( F_1-F_2 \) of the electric forces are attractive forces.
Figure 7: In the upper inverse nuclear field an attractive antigravity force $F_a'$ is created, while in the lower field a repulsive force $F_a$ is created.

The opposite happens in the lower inverse nuclear field, where the relative densities are $\rho_4 < \rho_3$ or their absolute values $\rho_3 > \rho_4$ and the respective cohesive pressures $P_3$ and $P_4$ are $P_3 = P_0(\rho_0 - \rho_3)/\rho_0$ and $P_4 = P_0(\rho_0 - \rho_4)/\rho_0$, resulting $P_4 < P_3$, and therefore the $\Delta P = P_3 - P_4$ creates a repulsive antigravity force $F_a$ in the lower inverse nuclear field (Figure 7).

This reduction of cohesive pressure in the lower inverse electric field happens rapidly, as rapid as the change of the electric density of the units. This results in the appearance of a repulsive nuclear antigravity force $F_a$, which opposes to the attractive electric force. This repulsive force $F_a$ maintains protons at a distance and at some stationary structures in the nuclei, while neutrons move in circular orbits around these structures of protons (see paragraph 6).

The antigravity force of the lower inverse nuclear field is much stronger than the weak Universal antigravity force. This happens because of the strong pressure difference $\Delta P$ created in the lower inverse field and corresponds to the core vacuum of a particle entering in this field. Thus, the pressure difference $\Delta P$ causes the antigravity force $F_a$, in the lower field and tends to repulse and equilibrate the nucleons. This is achieved because force $F_a$ in the lower field takes sufficient repulsive value due to the rapid reduction of cohesive pressure and balances the attractive resultant $F_4 - F_3$ of the electric forces. The role, therefore, of the nuclear
antigravity force is not to allow the approaching of nucleons, a very important property for the nuclei structure. Consequently, it is concluded that the extent (namely the distance between two particles) maintains the role of the first structural element of the Universe at the very foundations of Nature.

6. Mass deficit $\Delta m$ of neutrons

The reduction of cohesive pressure in the lower inverse electric-nuclear field is responsible for the mass deficit $\Delta m$ of neutrons, when they enter in this field. The reduction of cohesive pressure $P_0$ causes at the core vacuum of neutron (that enters in the lower field), a reduction of its total gravity force $F_0=4\pi r^2 P_0$, which is identical with its gravity mass (see http://viXra.org/abs/1410.0040) and is accompanied by a reduction of radius $r$ of its core vacuum (Figure 7). However, the dynamic energy of neutron is $E_0=F_0r/3$, which decreases proportionally to the $F_0$ and $r$. Therefore, the reduction of cohesive pressure $P_0$ in the lower inverse field creates a reduction of the dynamic energy of neutron, resulting on its mass deficit $\Delta m$.

The reduction of the total force $F_0$ (mass deficit) makes the neutrons stable into the lower inverse nuclear field, which is characterized as their «salvation shelter» into which a lower cohesive pressure prevails.

However, for the protons there is no mass deficit. When a proton enters in the lower inverse nuclear field the cohesive pressure $P_0$ of the field decreases, due to the increase of negative units (attracted close to the positive cortex of proton) of the above nuclear field. This negativity in the environment of the lower field causes an attraction force on the positive cortex of the proton, equilibrating its possible shrinkage and a loss of energy-mass. Therefore, the role of protons is to create the inverse electric field and of neutrons to suffer the consequences of the mass deficit. However, protons contribute to the increase of the nuclei mass deficit, because they increase (by entering in the nuclear field) the negativity of the field, thus contributing to the reduction of cohesive pressure $P_0$ and therefore to the increase of the neutrons mass deficit.

In the lower inverse nuclear field the neutron behaves as a positively charged particle with the cloud of positive units of its field, resulting on one hand to affect the nuclear field and the cohesive pressure of the proximal space and on the other hand its violent acceleration, while it repels the closest proton, which is now moving on a helical orbit emitting gamma radiation and is finally immobilized. This radiant energy of the proton transmitted by the neutron is measured as mass deficit $\Delta m$ and is equal to half of the kinetic energy of the neutron. Therefore, neutrons are those that move into the nuclei, with the remaining half of their kinetic energy, moving on circular orbits around immobilized protons that have spin only (see bibliography: The Structure of Nuclei).
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