

Active Functions of Elementary Particles and the Interaction of Nuclear Force⁽¹⁰⁾

- The nuclear force of a proton has a vacuum suction function. -

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Abstract

1. All elementary particles permanently have their own active function. In other words, they retain their autonomous vibration of contraction and expansion and their particle models are sustained by the dynamic function of autonomous vibration. Also, the contraction energy and the expansion energy of the autonomous vibration inside the elementary particles always maintain an equilibrium at the same magnitude. However, the form of the contraction energy and expansion energy consist of different conditions.

2. During the contraction of a proton, a vacuum depression is formed, and it is expressed as the nuclear force of the suction function. The nuclear force can only be applied to a neutron at the contact condition, and neutrons are used as a medium.

3. Protons and neutrons are alternately arranged in a repeated manner inside the nucleus of an atom, and the same kinds of elementary particles do not face each other. Also, the higher the atomic number, the greater the proportion of neutrons used as mediators. As a result, a nucleus with a high ratio of protons releases α particles while a nucleus with a high ratio of neutrons releases β ray.

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Sequence

- I. Introduction.
- II. Body.
 1. Structural differences between protons and neutrons.
 2. Nuclear force of protons and the role of neutrons.
 3. Conversion process of the nucleus and the conditions of isotopes.
- III. Conclusion.
- IV. References of the Cyber site.

I . Introduction

In quantum mechanics and the theory of relativity in modern physics, all types of elementary particles(or quark) are recognized as having firm solid structures. In addition, their "**basic interactions**" are divided into 4 different types: gravity, weak interaction, electromagnetic force, and nuclear force. Here, each of these types must have its own mediating particle and each operation principle of the mediating particles must be explained in different conditions.

Elementary particles of solids cannot have additional components of mass and charge. Also, it cannot produce various types of gravitational field, electromagnetic field, and nuclear field simultaneously, and cannot control various types of mediums(fermion, gluon, boson). Therefore, the process of explaining the basic interactions of elementary particles is very complicated from the perspective of quantum mechanics and the theory of relativity with the premise of solid elementary particles.

One of the reasons why it is complicated to explain quantum mechanics and the theory of relativity is because it interprets physical phenomenon in terms of the logic of the analytical means. For instance, if an electromagnetic field of an elementary particle occurred, it would be assumed that a charge component exists inside the elementary particle. Also, if the inertial force of an elementary particle takes place, it is assumed that a mass component exists inside the elementary particle.

This logic of analytical means could be very convenient, but it is difficult to arrive at the essence of the problem.^[1]

<http://batangs9.com/E-1.pdf>

As written in the paper introduced earlier titled "The Components of Outer Space and the Conditions for the Existence of Light Waves", all areas in outer space is composed of batangs(ether in classical physics). In outer space, a solid elementary particle like a hard sand cannot exist. This is because the batangs in space interfere with the motion of elementary particles(solid). Therefore, a new elementary particle model is needed to replace the solid elementary particles in outer space with batangs.^[6] <http://batangs9.com/E-6.pdf>

Light wave energy is propagated in terms of the elastic force of light velocity by using the batangs of space as a medium. Also, if the light wave energy of the light velocity is influenced by a strong impact, it could be converted into a stationary vibrational energy. This stationary vibrational energy permanently retains the "autonomous vibration" (self-oscillation) of contraction and expansion at its position. In other words, the light wave energy of the light velocity and the stationary vibrational energy are the same object.^[7] <http://batangs9.com/E-7.pdf>

The light wave energy of the light velocity is converted into stationary "autonomous vibration" and the first elementary particle is creatively generated through the process of maintaining a stationary "autonomous vibration". That is, the stationary vibrational energy constitutes the elementary particles of individual units and this can only be retained and conserved through the mechanical function of "autonomous vibration". The individual units of these elementary particles symbolize the unity of simple mechanical energy, and does not have any additional physical element. Therefore, all elementary particles are not composed of a hard

solid.

The vibrational energy of elementary particles acts as the elastic force of the light velocity by using the batangs of the outer space as the medium. Therefore, elementary particles of autonomous vibration can have a permanent active function of the light velocity and this active function of the light velocity must act in the current process. Also, elementary particles having an active function of the light velocity can instantly absorb(embrace) the light wave energy of the light velocity, and release it instantaneously.

The light wave energy and vibrational energy of elementary particles are substituted with equal values, and have functional continuity. For example, the vibrational energy of elementary particles is converted into light wave energy, and vice versa in the process of collapse and generation of a pair(electron and proton) of elementary particles. The interconnection of these conditions should be called "**The Equivalence Principle of Light Wave Energy and Vibrational Energy**".

As described in the paper introduced earlier titled "**The Structure and Active Functions of Elementary Particles**", contraction energy is converted to expansion energy and vice versa inside elementary particles. In other words, the mutual conversion of contraction energy and expansion energy is infinitely repeated. Therefore, the contraction and expansion energy of elementary particles can be permanently preserved and cannot be wasted. This effect does not violate the law of conservation of energy just like superconductivity or the operating principles of the perpetual motion machine.^[7] <<http://batangs9.com/E-7.pdf>>

The microscopic world and macroscopic world are not differentiated in the elementary particle model of autonomous vibration. This is because

the basic interactions(gravity, weak interaction, electromagnetic force, nuclear force) can be interpreted as a consistent logic through the active function of autonomous vibration. Therefore, quantum mechanics and the theory of relativity in modern physics which choose the elementary particle model of solids and the space model of the vacuum void should be discarded.

Elementary particles(*A*) of autonomous vibration infinitely produce various energy fields(nuclear field, electromagnetic field, gravity field) in the form of waves. Also, the energy field in the form of waves provides a spatial environment(conditional transform of space) in which the energy field can move freely against other elementary particles(*B*) of autonomous vibration. Therefore, elementary particles of autonomous vibration have a function of both producing an energy field and reacting to an energy field. In the elementary particle model of autonomous vibration, the role of the medium such as gluon, gauge boson, and graviton is unnecessary. ^[1]

<<http://batangs9.com/E-1.pdf>>

Elementary particles of autonomous vibration can simultaneously produce various types of energy fields. For example, a proton can simultaneously produce inertial force, electromagnetic field, nuclear field and gravitational field(gravity factor). Also, an electron can generate inertial force, electromagnetic field, and gravitational field, while a neutron can produce inertial force and gravitational field. These energy fields are converted to kinetic effects of basic interactions(gravity, electromagnetic force, nuclear force) in the process of reacting with elementary particles of autonomous vibration. ^[8] <<http://batangs9.com/E-8.pdf>>

When elementary particles of autonomous vibration generate inertial force, it can be misinterpreted that a mass component really exists inside the elementary particles. However, inertial force is produced by the dynamic function of autonomous vibration, and mass is an imaginary

component. That is, the mass of a physical component does not exist. For instance, the vibrational energy of an elementary particle produces a reaction against the batangs of the outer space, and the reaction of the vibrational energy is released as the inertial force of a resistance function. In this process, the role of mass is unnecessary.

When an elementary particle of autonomous vibration produces an electromagnetic force, it can be misunderstood that a charge component actually exists inside the elementary particle. However, the electromagnetic field is composed of waves, and the wave energy of the electromagnetic field is infinitely generated by the autonomous vibration of elementary particles. In other words, the charge of a physical component does not exist. For example, the batangs of the outer space is synchronized with the autonomous vibration of elementary particles, and the batangs' synchronization effect is released in the form of wave energy of the electromagnetic force. In this process, the role of charge is unnecessary.

The interior of the nucleus consists of protons and neutrons of autonomous vibration. Also, the strong nuclear force of protons takes place due to the active function of autonomous vibration. That is, a very low vacuum depression is formed during the process of the contraction of protons and the vacuum depression is released as the nuclear force of the suction function. However, neutrons of autonomous vibration do not produce a nuclear force and are only used as the medium of nuclear force between protons.

In the body of this thesis, I will explain the reason why the autonomous vibration of protons is perpetually maintained. Also, I will elaborate the process in which the nuclear force of the suction function occurs through the autonomous vibration of protons. Lastly, I will talk

about the situation wherein neutrons are used as the medium in the process of nuclear force generation.

II. Body.

1. Structural differences between protons and neutrons.

As described in the paper introduced earlier titled "**The Structure and Active Functions of Elementary Particles**", all elementary particles permanently maintain their autonomous vibration of contraction and expansion. Also, the vibrational energy of elementary particles acts in the current process. Therefore, elementary particles of autonomous vibration always keeps its own unique active function and generates various types of energy fields simultaneously. This active function of autonomous vibration can be misinterpreted as the action of a super string which modern physics insists.^[7] <<http://batangs9.com/E-7.pdf>>

The contraction energy and the expansion energy of elementary particles permanently maintains a perfect equilibrium of the same magnitude. However, the contraction and expansion energy of elementary particles act in different forms. The type of positive and negative charges are determined depending on the form of the contraction energy and expansion energy.

Protons and electrons maintain their autonomous vibration in different forms. In addition, the shapes of the contraction and expansion energy are formed under different conditions while maintaining the autonomous vibration of protons and electrons. Therefore, the contraction energy of protons and expansion energy of electrons act in similar forms and so do the expansion energy of protons and contraction energy of electrons.

During the process of autonomous vibration of elementary particles, the forms of the contraction energy and expansion energy have asymmetric

and distinct characteristics. Therefore, the wave state of the energy fields (electromagnetic field, nuclear field, gravitational field) which are generated by the vibrational energy of elementary particles has asymmetric and distinct characteristics. For example, an advancing wave and a retrograding wave of the positive electromagnetic field which are produced by the vibrational energy of protons have different forms (wavelength, height of a wave).

The vibrational energy of protons produces a wave energy of the positive electromagnetic field, and the wave energy of the negative electromagnetic field is propagated through the batangs of the outer space as the medium. Here, the vibrational energy of protons (or electrons) and the wave energy of the positive electromagnetic field have similar magnitude (wavelengths, volume). Therefore, the vibrational energy of protons and the positive electromagnetic field can mutually act (correspond) with each other in the fine grain level of the wave size.

When the vibrational energy of protons acts against the wave energy of the positive electromagnetic field, the distinct characteristics of the contraction energy and expansion energy are released (expressed) as the motion of the protons. This motion of the protons means the **"mutual interaction of electric force"**. Here, the **"mutual interaction of electric force (the effect of the motion)"** is determined in the narrow interior of protons. Also, the **"mutual interaction of electric force"** is done autonomously (actively) by the biased modification of autonomous vibration. In other words, during the process of **"mutual interaction of electric force"**, the protons do not move heteronomously (passively) by the exchange of intermediary particles.

However, when the vibrational energy of protons acts on an object which is bigger than the diameter (the magnitude of the wave) of protons, the

distinct characteristics of the contraction energy and expansion energy disappear. Under this condition, the autonomous vibration of protons is not modified tendentiously, and the movement of the electric force does not occur. For instance, when the wave of a small tide hits a heavy ship, the heavy ship does not go along with an advancing wave and a retrograding wave, and the wave energy of the tide is not converted to the motion of the heavy ship.^[8] <<http://batangs9.com/E-8.pdf>>

Like the mutual interaction of electric force, the nuclear force and gravitational force of elementary particles are generated by the active function of autonomous vibration. That is, the motion of elementary particles which is made through the action of nuclear force and gravitational force, is done autonomously(actively) through the biased deformation of autonomous vibration. Also, the motion of the gravitational force and nuclear force is determined in the narrow interior of elementary particles. Therefore, the role of the particles(fermion, gluon, boson) which are exchanged at the exterior of elementary particles is unnecessary, and quantum mechanics and the theory of relativity in modern physics should be abolished.^[1] <<http://batangs9.com/E-1.pdf>>

All areas of outer space is filled with batangs. Here, the batangs of the outer space are classified of two types: “pyeongs” and “taes”. The “taes” of the outer space are used as the medium of the neutrino, nuclear force, and gravity, while the “pyeongs” are used as the medium of electric force, electromagnetic force, and light waves(electromagnetic waves). Therefore, gravity which uses “taes” as the medium, and electric force which uses “pyeongs” as the medium do not mutually interact.^[6]

<<http://batangs9.com/E-6.pdf>>

Depending on the conditions, taes and pyeongs have different magnitude of elastic force. In case of a transparent glass(a dielectric), the

elastic force of pyeongs decreases in the inner part while that of taes does not change. Therefore, the propagation speed of light waves which utilizes pyeongs as the medium decreases and that of the neutrino which uses taes as the medium maintains its original size. In the inner part of the transparent glass, light waves propagate at a slower rate than the neutrino, and the law of constant light velocity are not met.

The taes of the outer space reacts with the contraction and expansion energy of protons at different elastic forces, and the forms of the contraction energy and the expansion energy act under different conditions. For example, the contraction energy of protons has high vacuum force(height of a wave) and fast velocity(time), and the expansion energy has low pressure and slow velocity. This autonomous vibration of protons are expressed as shown in Figure 1 below.^[8]

<<http://batangs9.com/E-8.pdf>>

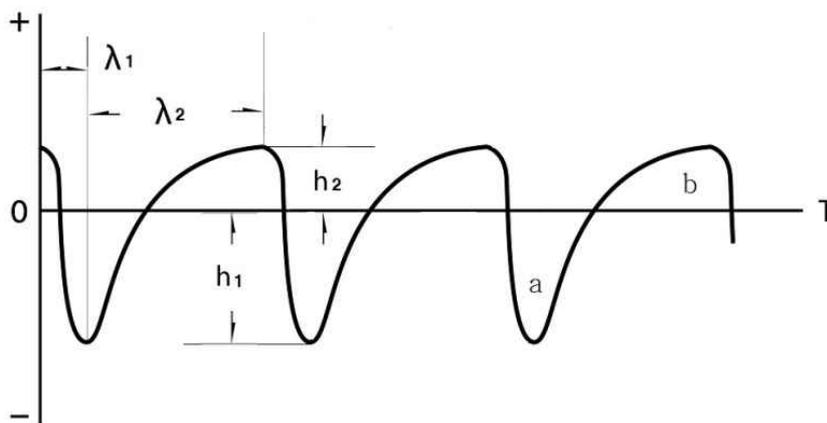


Figure 1. Diagram of the autonomous vibration which produces the nuclear force of protons

According to the diagram in Figure 1, + and - of the Y -axis represent the density(height) of the energy, the T of the x -axis shows the change in time, λ_1 is the time of the contraction, λ_2 is the time of the expansion, h_1 is the vacuum force of the contraction energy, and h_2 is the compressive force of the expansion energy. In Figure 1, the

expansion of protons rises with a gentle slope while its contraction goes down with a steep slope.

However, the momentum of the contraction energy and expansion energy has the same magnitude, and maintains a perfect equilibrium. In other words, the area of “a” which represents the momentum of the contraction energy and the area of “b” which represents the momentum of the expansion energy are the same.

If $|h_1|$ represents the absolute value of the vacuum force produced during the contraction process of protons and $|h_2|$ represents the absolute value of the compressive force generated during the expansion process, these absolute values are expressed as the difference of $|h_1| - |h_2| = h_d$. Here, h_d is called the depression of the contractile action. This depression of the contractile action is shown in Figure 2 below.^[8]

<http://batangs9.com/E-8.pdf>

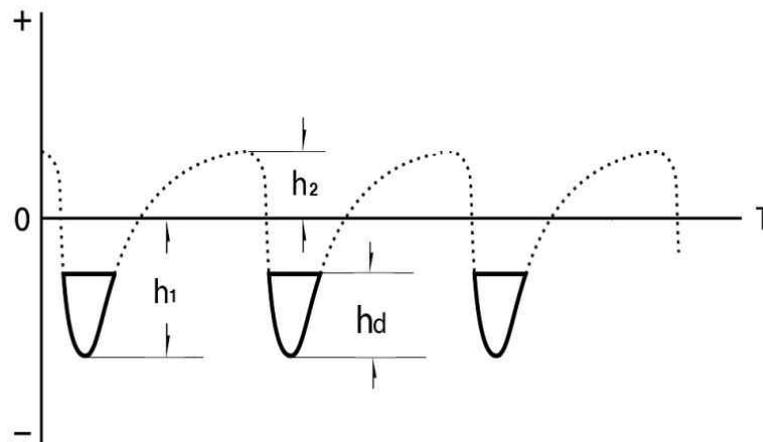


Figure 2. The structure of depression formed during the contraction process of the protons

Like the structure in Figure 2, the depression of the contractile action has a force(intensity, density, height of potential energy) that is more dominant than the compressive force of the expansion. Protons of autonomous

vibration infinitely generates a depression of the contractile action. However, during the production process of depression, no additional energy is supplied. Also, the depression of the contractile action takes place in the interior of protons. Therefore, it can be misunderstood that protons have components of positive charges.

During the vibration process of protons, contraction energy and expansion energy have asymmetric and distinct characteristics. However, the contraction energy and expansion energy of neutrons are composed of the same model, and they do not have asymmetric and distinct characteristics. The autonomous vibration of these neutrons is shown in Figure 3 below.

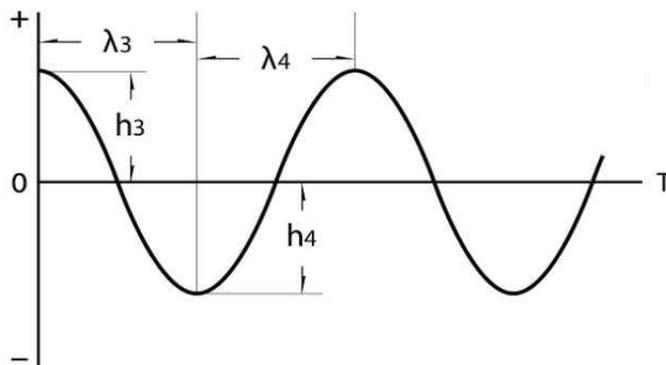


Figure 3. Diagram showing the process of autonomous vibration of neutrons

In Figure 3, the + and - of the y-axis shows the energy densities, O is the neutron center, T in the X -axis is the change in time, λ_3 is the time of the contractile action, λ_4 is the time of expansion, h_3 is the compressive force of expansion, and h_4 is the vacuum force of the contractile action.

In Figure 3, the contraction time λ_3 and expansion time λ_4 are composed of the same magnitude, and the compressive force h_3 and

vacuum force h_4 have the same absolute values of the height. Therefore, the wave energy which was generated by the autonomous vibration of neutrons cannot form the electromagnetic field (electric force), and the neutrons of autonomous vibration are not controlled by the electric force. In other words, neutrons of autonomous vibration do not react to the motion effect on the electromagnetic field of the wave state.

2. Nuclear force of protons and the role of neutrons

Protons permanently maintain their "autonomous vibration" of contraction and expansion. Here, the contraction energy of protons acts rapidly, and has a depression with a very low vacuum. Also, this is expressed as "nuclear force" of the suction function which strongly attracts the contact objects around.^[7] <<http://batangs9.com/E-7.pdf>>

Protons of autonomous vibration infinitely produces the "nuclear force" of the contact suction function, and the "nuclear force" acts in the current process. Therefore, the contraction energy of protons is proportional to the nuclear force. Here, if the nuclear force of protons is En , and the vacuum force of contraction energy is Eg , their relationship could be expressed as $En = Eg$.

The nuclear force of protons is generated by the contraction energy. Also, the electric force of protons is produced by the contraction energy. Therefore, the nuclear force and electric force of protons share a common feature. However, they have completely different operating principles and different impact.

Protons of autonomous vibration produces an electromagnetic field of the wave state, and the wave energy of the electromagnetic field is propagated using the batangs of the outer space as the medium. Here, the wave energy of the electromagnetic field must have a working

distance r and decreases at the rate of $\frac{1}{r^2}$. However, the nuclear force of protons is directly propagated to neutrons in contact. This nuclear force does not have a working distance r , and always maintains a constant magnitude.

The energy density of an electric force and a nuclear force can be expressed in a comparative form. If the electric force is Ew , the nuclear force is En , the energy density of the electric force is De , the energy density of the nuclear force is Dp , then their relationship would become

$$Dp : De = En : Ew \quad \text{and compared in the form of} \quad Dp = De \times \frac{En}{Ew}$$

$$(De = De' \times \frac{1}{r^2}).$$

The nuclear force of protons only acts on the neutrons of contact objects. However, the neutrons do not generate a nuclear force, and are only used as mediums of nuclear force. These neutrons are always controlled by nuclear force, and passively act with nuclear force.

Nuclear force does not act between proton(A) and proton(B). In other words, the depression of proton(A) and the depression of proton(B) cannot be integrated together. Also, nuclear force does not act between neutron(C) and neutron(D). That is, only the relationship between a proton and a neutron has nuclear force.

Protons of autonomous vibration can share 2 to 3 neutrons simultaneously. In addition, a neutron used as a medium of nuclear force can share 2 to 3 protons simultaneously. Hence, neutrons are controlled by nuclear force, and are restrained by a strong force. Therefore, it is possible that neutrons controlled by the nuclear force of protons will be mistaken as having a nuclear force like a proton.

When two protons meet and come into contact, one of them releases β ray. Also, the contraction energy and expansion energy of the proton which releases β ray can have the same type of symmetric structure. In other words, the vacuum function of depression formed in the contraction process of protons are transformed into β ray. Here, the fact that the shape of the contraction energy and expansion energy has the same symmetric structure means that the proton is converted to neutron.

The β collapse of neutrons does not occur through the interaction of elementary particles. It is a phenomenon in which neutrons are autonomously converted in the interior of the neutron. That is, the β collapse of neutrons does not reflect the relationship between elementary particles but the internal conditions of elementary particles. This β collapse of neutrons cannot be included in the "**basic interactions of elementary particles**".

While neutrons are controlled by nuclear force, the contraction energy and expansion energy of neutrons have the same type of symmetric structure. However, when neutrons are out of the control of nuclear force, the form of contraction energy and expansion energy is changed into asymmetric structure, and asymmetric contraction and expansion energy is restored by the autonomous vibration of protons. In other words, neutrons outside the control of nuclear force cannot exist independently.^[7] <<http://batangs9.com/E-7.pdf>>

3. Conversion process of the nucleus and the conditions of isotopes

Protons perpetually produce nuclear force of the contact suction function, and neutrons are only used as the medium of nuclear force. Therefore, protons and neutrons must be arranged repeatedly in the nucleus. For example, a neutron is placed between protons, and a proton

is placed between neutrons. This cross arrangement of protons and neutrons is applied to all direction of X, Y, Z axis. As a result, the three-dimensional array structure of protons and neutrons is very complex.

Inside the nucleus, the same types of elementary particles do not face and come into contact with each other. Also, the proton which is placed at the last array of the nucleus is given two different choices – one is to hold onto the neutron of the medium and another is to give it up. For neutrons in the last array, two choices are given. One is to give up a proton and another is to hold onto it. This choice can determine the type of the isotope. Therefore, the higher the atomic number, the greater the number of isotopes.

When different neutrons enter the interior of the nucleus, the proportion of protons and neutrons becomes imbalanced, and the arrangement of protons and neutrons can be changed. To keep the repetitive arrangement of protons and neutrons in the nucleus, a neutron should be converted into (conversion of the nucleus) a proton.

When multiple protons constitute a nucleus, the vibrational energy of protons can interact or resonate each other. Therefore, the more the number of protons, the more unstable the regular arrangement of the nucleus is. Also, if the arrangement of the nucleus is unstable, a proton or a neutron at the last array should be released to the exterior of the nucleus.

Even if any spare proton is left in the nucleus, one proton is secured to have ${}_2\text{He}^4$ at first and then released with a unit of ${}_2\text{He}^4$. Here, the reason why a proton has a unit of ${}_2\text{He}^4$ is that its unit constitutes the most powerful aggregate. In other words, when two protons and two

neutrons are arranged diagonally, they can form the strongest cluster.

In a nucleus with low atomic number, the number of protons and neutrons are proportional. For example, an atom of oxygen(${}_8\text{O}^{16}$) is composed of 8 protons and 8 neutrons. However, in a nucleus with high atomic number, the number of neutrons used as the medium increases and has a higher proportion. For instance, an atom of uranium(${}_{92}\text{U}^{235}$) is composed of 92 protons and 143 neutrons.

Generally, when uranium of ${}_{92}\text{U}^{235}$ is divided into two atoms, ${}_{56}\text{Ba}^{141}$ and ${}_{36}\text{Kr}^{92}$, two spare neutrons would remain and be released. The effect which releases the two spare neutrons which are left during the separation process of uranium disprove the claim that the higher the atomic number, the greater the proportion of neutrons.

To stabilize the arrangement of the nucleus, the number of protons and neutrons should be limited. The limited number of protons and neutrons has the size of ${}_{92}\text{U}^{235}$. That is, if the nucleus exceeds the size of ${}_{92}\text{U}^{235}$, the regular repetitive arrangement of protons and neutrons cannot be stabilized by the mutual interference and resonance of nuclear force.

III. Conclusion

All types of elementary particles permanently maintain their autonomous vibration of contraction and expansion. Also, the contraction energy of protons acts with a stronger force than the expansion energy. Protons of autonomous vibration have a nuclear force of the contact suction function.

The nuclear force of the contact suction function created by the contraction energy of a proton only acts on a neutron. Here, neutrons are used as the medium of nuclear force. Also, inside the nucleus, all protons and neutrons are repeatedly arranged and the same types of elementary

particles do not come into contact with each other.

The higher the atomic number is, the greater the number of neutrons used as a medium. Here, the nucleus with high proton ratios emits α particles. However, inside a nucleus with a high rate of neutrons, neutrons are converted into protons and emits β ray.

Elementary particles(A) of autonomous vibration produce various kinds of energy fields simultaneously. Also, the energy fields provide the conditions(environment) in which the particles can freely move against other elementary particles(B) of autonomous vibration. In other words, elementary particles of autonomous vibration both have the function of producing an energy field and reacting to an energy field. In this elementary particle model of autonomous vibration, the role of intermediary particles is unnecessary, and quantum mechanics and the theory of relativity in modern physics should be abolished.

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*** Difference becomes specialty, Ideal becomes reality,
at the center of world in the name of center**

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