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## Research Article

### THE FUNCTION AND RELATION OF PROTON AND NEUTRON

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#### ABSTRACT

In this paper, we proposed the smallest particles of the composition of the earth, the role of hydrogen atoms, according to the gravitational wave theorem, the variable field theorem and mathematical modeling analysis. The roles and relations of protons and neutrons are elucidated. The linear arrangement of the protons and neutrons in the normal state causes the protons and neutrons to store energy and convert to another kind of energy, even without a loop in the gravitational wave fields. But if there is no conductive loop, they cannot release energy in the direction of fast gradient, and can only release energy slowly. Every neutron can be superimposed and stay in the same potential state, so there is no potential difference.

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#### INTRODUCTION

The universe is an energetic field filled with energy, and the cosmic galaxy is the geometric equilibrium of the energy set [1,2,3]. Each planet is a dynamic motion body of proton group, which tends to spherical through the rotation and revolution [3]. The planet which has the largest energy transfer the energy through the gravitational wave[10] in energy field, also the variable force field. So that the density of the planets which have the small energy gradually increased. And a substance which has a small molecular weight gradually becomes a substance having a large molecular weight, and so on.

We proposed in 2010 that substances change to the direction of increase of atomic weight and molecular weight [1]. And we proposed that spiral trajectory of gravitational waves [4] and the variable force field is the condition of energy conversion in February 2016[5,6]. We also proposed that the motion trajectory of the electrons, proposed the law of motion that, spiral trajectory gravitational wave produces entanglement in the process of convergence and divergence, increases the energy, in the trajectory of Mobius', and spiral gravitational wave convergences inwards in March 2016 [5,6,10]. Inward convergence is equivalent that the centripetal force is greater than buoyancy and other external field forces, outward divergence equivalent buoyancy and other external field force is greater than the centripetal force.

#### Theoretical preparation and definition preparation

#### Generation and propagation trajectory theorem of gravitational waves

**Theorem 1** : (Gravitational waves existence theory) [5,7,8,9,10] : There are A, B two points. A is the wave source of gravitational field, and B is a point in the gravitational field. The existence of energy rotational motion (including proton, neutron, atomic nucleus or planet) at A is the necessary and sufficient condition of the existence of gravitational waves at B. Direction is the bidirection of the path tangent at point B, and the limit of the convergence direction is A point.

Prove : Let say the distance of A and B is r, if A, B are stationary points, it only exists the physical factor of "distance r", do not form elements of waves. Only the rotational movement can generate speed and energy. That is the speed of B point  $V_b$  and the angular velocity of A point  $d_n$  have a functional relationship.

$V_b = f(d_n, r)$ , when time  $\Delta t \rightarrow 0$ , angular velocity  $\Delta_n \rightarrow 0$ , and

$$V_b = \frac{dr}{dt} = \lim_{\Delta_n \rightarrow 0} \frac{[f(n + \Delta_n), r] - [f(n), r]}{\Delta_n}$$

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We have a conclusion that A is the wave source of gravitation, and point B exists the gravitational wave emitted from wave source A.

**Theorem 2**(Gravitational wave stability theory) [5,7,8,9,10] : A is a gravitational wave source, B is a point in gravitational field of A. The necessary and sufficient conditions of stable gravitational wave at B point is :

$$\frac{dr}{d_n} = b, \quad (b \text{ is a constant}) .$$

Prove : According to Theory 1,

$$Vb = \frac{dr}{dt} = \lim_{\Delta_n \rightarrow 0} \frac{[f(n + \Delta_n), r] - [f(n), r]}{\Delta_n} ,$$

The necessary and sufficient conditions of stable gravitational wave is that the speed of B point is stable ;

The necessary and sufficient conditions of stable speed at B point are that the angular velocity of A point is stable;

The necessary and sufficient conditions of stable angular velocity of A point is that the angular velocity of A point and speed of B point is proportional.

That is,

$$\frac{Vb}{d_n} = \frac{dr}{d_n} = b, \quad (b \text{ is a constant})$$

and,

$$r = a + b_n, \quad (1)$$

formula (1) is the equations of gravitational waves, that is the track of gravitational waves.

**Inference of theorem 2** : If a gravitational wave track meet Archimedean spiral, this must be stable gravitational waves.

There is,  $r = a + b_n$  .

r is the distance of A to B; a is the spiral length of A to B; b is the distance between the spirals.

**Potential difference existence theorem**

In the relatively stable gravitational wave field, if there is a rotation of the line, then there exists the following theorem.

**Theorem 3** : The potentials at each point on an independent rotation line are equal and homomorphic.

In the relatively stable gravitational wave field, there are two different rays emanating from the same point A, each having two points B and C, respectively.

**Theorem 4**: The two rays AB and AC at point A rotate at the same time in the clockwise (or anticlockwise) direction, and the potential difference between A and B is generated according to the entanglement of the helix trajectory and the electron.

Similarly, a potential difference between A and C is also generated. And the entanglement force at point A and B is small.

**Inference of theory 4**: there is a plane gravitational wave field, then the maximum potential difference is the gradient direction of the gravitational wave center of the normal direction.

**Theorem 5**: In a relatively stable gravitational wave field region, filled with the same potential difference of homomorphic particles; then the region meets the uniform distribution of particles, and each particle potential difference in the same direction.

**Definition preparation**

We set an atom s as the origin of coordinates and establish two rectangular coordinates. One is the z-axis parallel to the earth's rotation axis of the earth rectangular coordinate system x, y, z; the other is the earth revolution sun revolution plane sun coordinate system p, q, r. The force of the earth's gravitational wave field is expressed by vector x, y and z, and the force of the atom s under the sun's gravitational wave field is denoted by vector p, q and r.

The atom s is in a relatively stable state. A coordinate system is established such that vector x, y, z, p, q, r, the six force variables are represented on the same coordinate system.

**Definition 1**: At the point of atom s, we establish a coordinate space, 4-dimensional 120-degree angular coordinate system, the coordinate origin of which is 0, H1,H2,H3,H4. We call it 4-dimensional coordinate system H.

**Proton and Neutron theorem of Zhe Yin**

The earth's rotation and revolution movement, let the earth tends to become sphere [1,2]. Moon does not rotate during lunar rotation of the earth's process, so the forces on the earth's particles do not consider the impact of the moon's rotating gravitational wave. According to reference[3], The universe is the relative steady state of the energy set of revolution or rotation. The galaxy's stars are all filled with electrons inside and outside the set of energy. In each star, the minimum atom is determined through the external gravitational wave field and the role of gravity (field the equilibrium state from the entanglement and deposition of electrons). The atomic weights of the smallest atoms of each star are different. The smallest atom of the earth is a hydrogen atom.

**Theorem1** : All the substances on earth are made up of different combinations of hydrogen atoms.

The combination of hydrogen atoms satisfies certain law, we study the composition of basis of the base of the hydrogen atom in the following. That is, the mathematical description of the gravitational wave.

**Mathematical model of combined gravitational force field**

We set the rectangular coordinates x, y, z on the earth and the rectangular coordinates p, q, r on the Earth's orbital plane. The particle s is the coordinate origin. There are the following variable field mathematical models.

$$\begin{aligned} \dot{x}(t) &= a_{11}\dot{x} + a_{12}\dot{y} + a_{13}\dot{z} + w_1(t) \\ \dot{y}(t) &= a_{21}\dot{x} + a_{22}\dot{y} + a_{23}\dot{z} + w_2(t) \\ \dot{z}(t) &= a_{31}\dot{x} + a_{32}\dot{y} + a_{33}\dot{z} + w_3(t) \end{aligned} \quad (2)$$

$$\begin{aligned} \dot{p}(t) &= b_{11}\dot{p} + b_{12}\dot{q} + b_{13}\dot{r} + e_1(t) \\ \dot{q}(t) &= b_{21}\dot{p} + b_{22}\dot{q} + b_{23}\dot{r} + e_2(t) \\ \dot{r}(t) &= b_{31}\dot{p} + b_{32}\dot{q} + b_{33}\dot{r} + e_3(t) \end{aligned} \quad (3)$$

Formula(2) is the variable force field model in the rectangular coordinates on earth (referred to as the earth rectangular coordinates), formula(3) is the variable force field model in the rectangular coordinates on the earth revolution plane (referred to as the sun rectangular coordinates). The variable force function is derivable because it is helix. The Taylor expansion or Lagrangian expansion can be used to elicit the above two mathematical models.

x, y, z is the force function of the particle s in the earth variable force field, in the earth rectangular coordinates. p, q, r is the force function of the particle s in the sun variable force field, in the sun rectangular coordinates.

$w_1(t)$  is the nonlinear factor of the earth rectangular coordinates in the x – direction.

$w_2(t)$  is the nonlinear factor of the earth rectangular coordinates in the y – direction.

$w_3(t)$  is the nonlinear factor of the earth rectangular coordinates in the z– direction.

$e_1(t)$  is the nonlinear factor of the sun rectangular coordinates in the p– direction.

$e_2(t)$  is the nonlinear factor of the sun rectangular coordinates in the q– direction.

$e_3(t)$  is the nonlinear factor of the sun rectangular coordinates in the r– direction.

t is the time variable.

There is

$$\frac{d}{dt} \begin{pmatrix} x \\ y \\ z \\ p \\ q \\ r \end{pmatrix} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \\ b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{pmatrix} \begin{pmatrix} x \\ y \\ z \\ p \\ q \\ r \end{pmatrix} + \begin{pmatrix} w_1 \\ w_2 \\ w_3 \\ e_1 \\ e_2 \\ e_3 \end{pmatrix}$$

Among them,  $A_{ij} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}$ ,  $B_{ij} = \begin{pmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{pmatrix}$  is coefficient matrix.

There is function G which makes

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} = G \begin{pmatrix} p \\ q \\ r \end{pmatrix}$$

The variable force field is the premise of energy conversion and energy generation. Earth movement tends to sphere so the limits of change of the coefficient matrix  $A_{ij}$  and  $B_{ij}$  is unit matrix.  $i=1,2,3; j=1,2,3$

#### 4 - dimensional 120 - degree angular coordinate system H

**Theorem 2 :** Any four tetrahedra of the four vertices must fall in the 4-dimensional 120-degree angular coordinate system H

's coordinate axis, through the rotation transformation of coordinate axis.

Because the tetrahedron is bounded and the sum of the inner product of the six edge vectors is equal to zero, just as the three vertices of a triangle can fall on the coordinate axes of the three-dimensional rectangular coordinates through the rotation transformation of the coordinate axes.

The angle between earth's rotation axis and the ecliptic plane is 23 degrees 26 points, the earth's rotation coordinate system with the earth's revolution on the plane of the sun rectangular coordinate system between six axes, is always linearly independent. The six sub-vectors of the relative stable particle on the earth are bounded, and the sum of the sub-vectors is equal to zero.

**Theorem 3 :** Earth has a relatively stable particle s, the force component of gravitational wave force of s particle on the earth rectangular coordinates xyz is the vector ox, vector oy, and vector oz; the force component of gravitational wave force of s particle on the sun rectangular coordinates pqr is the vector op, vector oq, and vector or. There are A, B, C and D points on each coordinate axis of the coordinate system of the four-dimensional 120-degree angle coordinate system H (H1, H2, H3, H4) as following:

$$\begin{aligned} \text{vector } ox &= \text{vector } OA - \text{vector } OB ; \\ \text{vector } oy &= \text{vector } OA - \text{vector } OC ; \\ \text{vector } oz &= \text{vector } OA - \text{vector } OD ; \\ \text{vector } op &= \text{vector } OB - \text{vector } OC ; \\ \text{vector } oq &= \text{vector } OB - \text{vector } OD ; \\ \text{vector } or &= \text{vector } OC - \text{vector } OD ; \end{aligned}$$

And because

vector ox + vector oy + vector oz + vector op + vector oq + vector or = vector 0, so there exists

$$\begin{aligned} &(\text{vector } OA - \text{vector } OB) + (\text{vector } OA - \text{vector } OC) + (\text{vector } OA - \text{vector } OD) \\ &+ (\text{vector } OB - \text{vector } OC) + (\text{vector } OB - \text{vector } OD) + (\text{vector } OC - \text{vector } OD) = \text{vector } 0. \end{aligned}$$

**Definition 2 :** The four unit vectors h1, h2, h3, h4 on the H coordinate system are the basic basis of the description of the force vector representation of the steady state of the earth.

**Theorem 4:** The basic structure of atoms on the earth is based on the basic basis of the coefficient of composition times, tetrahedral structure of the combination. Four tetrahedrons correspond to neutrons and six boundaries to protons.

The three particles (three hydrogen atoms) between the two vertices of the tetrahedron are linearly arranged. In the combined gravitational wave field of the earth and the sun, electrons rotate linearly in a spiral motion. The particle in the middle must be charged, that is protons (there is potential difference). According to the existence theorem of potential difference 5, in a region of homomorphic gravitational wave field filled with homomorphic particles with the same potential difference, the particles in the region are uniformly distributed and the direction of potential difference of each particle is the same. Therefore, there is only one state (the same potential) between the four vertices of the tetrahedron and the adjacent

vertices of other atoms. This node has no potential difference, that is, neutrons.

Neutron equivalent to the reservoir, the proton is equivalent to the river. Neutrons can overlap, with potential capacity, play the role of storage power. Proton has a potential difference, play a role in the production of electricity.

**Theorem 5 Theorem of neutron** Neutrons have the role of electronic energy storage, and overflow when they are fully charged.

## CONCLUSION

In this paper, the composition of the earth's matter is solved and the relationship between protons and neutrons is clarified. The substance is a combination of hydrogen atoms. And the theoretical basis for the future discovery and manufacture of new elements and different forms were proposed. From the fact that Mars atmospheric density is greater than the earth's atmospheric density, we could elucidate that water existed in Mars in the past. To develop Mars, uncover the relationship between Mars' hydrogen and the earth's hydrogen is the key.

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