The Conjecture of the Essence of Gravitation

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Abstract. The purpose of this paper is to explore the causes of universal gravitation, and the law that the gravitation produced by the motion of matter and the absolute dead matter has no mass was put forward. Combined with Newton's law of universal gravitation, Einstein's equation of mass loss, cosmic expansion phenomenon, black hole phenomenon, matter infinitely separable theory and so on, this paper discusses the essence of gravitation. Through universal gravitation, electric field force, magnetic field force and quantum entanglement phenomenon, the concept of wave-point force is put forward, and a theory of gravitation law is obtained, that is, the forces of different wave points do not interfere with each other. Combining dark matter and cosmic expansion, the hypothesis of dark matter gravity law is put forward. Finally, some conclusions are summarized, and this paper puts forward some conjectures.

1. Introduction
In 1687, Newton published the law of universal gravitation, which stated that any two particles are attracted to each other through the force on the direction of the concentric line. The magnitude of the gravitational force is proportional to the product of their masses and inversely proportional to the square of their distance, independent of the chemical composition of the two objects and the type of medium between them [1].

\[ F = G \frac{Mm}{r^2} \]  

In formula (1),
- \( M \) -- the mass of object 1
- \( m \) -- the mass of object 2
- \( r \) - The distance (magnitude) between two objects (R represents the radial vector)

According to the international system of units, unit of \( F \) as the Newton (N), \( M \) and \( m \) units for the kilogram (kg), \( r \)'s unit is meter (m), the constant \( G \) approximately equal to \( 6.67 \times 10^{-11} \text{ N} \cdot \text{m}^2/\text{kg}^2 \).

Einstein, on the other hand, believed that in the process of energy release, the mass decreases. Formula (2) is Einstein's mass energy equation.

\[ \Delta E = \Delta MC^2 \]  

The \( \Delta M \) of formula (2) is the variation of the quality of the stationary object, it appears mostly in the form of quality loss. The \( \Delta E \) is the energy variation of stationary object, and \( C \) is the speed of light.

That is, when an object loses energy, its mass decreases. But in tests like nuclear fission, there's a release of energy, there's a reduction in mass, but there's no reduction in total matter, so we need to
talk about the essence of quality. The mass of an object on the Earth is essentially gravitational, the gravitational attraction of matter varies proportionally with the energy of matter, so the $\Delta M$ in Einstein's equation, is quality reduction, rather than loss of gravity. The following is an ideal hypothesis to explore the nature of gravitation.

2. The Study of the Nature of Gravity

2.1. The State of Complete Death of a Substance

2.1.1. The Infinitely Divisible Theory of Matter. On January 15, 1955, when chairman MAO communicated with Qian Sanqiang, the father of China's atomic bomb and China's atomic energy science, Chairman Mao put forward the theory of material infinite separability based on philosophical theory.

But as early as 369 B.C to 286 B.C, Chuang tzu, a representative of the Chinese Taoist school, he said that A short stick will never disappear even if people cut it in half every day forever.

That is to say, the theory of infinite separability of matter has been put forward in China for at least 2300 years, and this paper will take it as the theoretical basis to think about matter and gravity.

2.1.2. Experiments in which Matter Releases Energy Completely. If matter is decomposed an infinite number of times, and releasing energy completely at each decomposition. If a molecule is broken down into atoms and releases energy, and the atom is broken down into nuclei and electrons and releases energy. Electrons and nuclei are broken down and released with energy, protons, neutrons and the product of electron decomposition are broken down and released with energy. And so on and so forth, and so forth, that the ultimate ideal matter is the completely dead substance, figure 1 shows the model diagram of the decomposition process.

This is the definition of a completely dead matter, which has the essential characteristic that it contains no energy inside and has no energy released to the outside world.

2.2. The Cause of Gravity

Firstly, we discuss the phenomenon of black hole. The external gravitational force of black hole can be considered as the superposition of the gravitational force caused by its own universal gravitation and its own high-speed motion. Both external gravitation are universal gravitation, so we have reason to believe that universal gravitation is generated by motion [2].

Then there are two basic problems:
(1) How to explain the gravitational attraction between two objects at rest?
(2) How to explain electric field force, magnetic field force and quantum entanglement force?

2.2.1. A Discussion of the Gravity of Completely Dead Matter. If there are two completely dead matter points named A and B, they are relatively static, and there is no matter or energy in the universe except A and B matter, as shown in figure 2.

If there is the original universal gravitation between these two points, then point A and point B will be close to each other due to the gravitational force, and gravity will begin to do work.

According to the laws of physics, it takes energy to do work on matter,

And according to the characteristics of completely dead matter in the premise, there is no internal energy in substances A and B, and A and B doesn't release energy to the outside,

So there is no relative motion between A and B without energy.

This contradicts the original hypothesis that there is gravitational attraction between matter A and matter B.

Therefore, it can be deduced that there is no universal gravitation between A and B, and the mass of both A and B is 0.

Therefore, according to Newton’s law of universal gravitation, it can be concluded that the completely dead matters has no attraction with any matter.

![Figure 2. Gravity model diagram of completely dead matter.](image)

2.2.2. An Explanation for the Generation of Forces. To sum up, it can be concluded that in real life, the gravitational attraction between two stationary substances is generated by the internal motion of matter, and the motion of matter is driven by energy.

Similarly, the force of an electromagnetic field is generated by the internal motion of the matter that makes up the electromagnetic field. The motion of the matter is driven by the internal energy. The magnetic field is generated by the motion of the electron, while the electric field is generated by the motion of the matter inside the electron. Moreover, since the electron mass is not 0 at rest, there should be at least two motions within the electron, one that produces an electric field and the other that produces a gravitational attraction.

In the interpretation of quantum forces, the first step is to classify quanta,

Quanta can be divided into those that exist as matter particles and those that exist as energy,

It follows from the foregoing that the entanglement between the quantum states of matter particles is also caused by the internal motion of matter particle. Quanta in the form of energy are generated by the energy itself,

And because the quantum in the form of energy does no work when it moves, the quantum entanglement will not weaken if there is no interference from the same kind of energy.

2.3. The Relationship between Matter and Energy
This chapter summarizes the relationship between matter and energy as follows:

(1) There is no mass in matter. Mass is not an essential characteristic of matter.
(2) All forces are created by energy, including forces between matter and non-matter.
(3) Substances without energy are invisible and undetectable.
(4) Energy without attachment to matter has no practical significance.

3. Wave-point Forces and Dark Matter
Wave-point force refers to a set of forces of the same type, and the classification criterion is that
different wave-point forces do not interfere with each other. Therefore, the existing gravitational or repulsive forces can be divided into universal gravitation wave-point forces, electromagnetic wave-point forces, quantum entanglement forces, and so on. Different wave point forces can be combined, but there is no direct mutual interference.

According to the current research on dark matter, there is a force between dark matter and matter, and it is directly related to gravitation. Therefore, it can be considered that the force of dark matter on matter belongs to universal gravitation wave-point force.

In recent years, research and monitoring have shown that the expansion of the universe is accelerating \[3,4\], which means that the speed at which material at the edge of the universe is moving outward is accelerating.

First, suppose that the gravitational wave-point forces of an ideal universe are generated only by matter and dark matter \[5\]. We can draw the following logical inferences:

1. Mutual attraction,
2. Mutual repulsion
3. Close repulsion and distant attraction.

Assuming that the forces between dark matter and matter are mutually attractive, then according to Gauss’s theorem.

In the range of gravitational wave point forces the flux of the gravitational vector through any closed surface is equal to the integral of the divergence of the gravitational vector over the volume range enclosed by the closed surface \[6\]. That is:

\[ \oint \int F \frac{dS}{m} = \frac{1}{\varepsilon_0} \sum M \]

Where \( \frac{F}{m} \) is the gravitational field intensity of galaxies and matter. \( M \) is the mass of a sphere with the center of the universe as the center and the distance between the center of the universe and the galaxy as the radius, the mass is the sum of the mass of matter and the mass of dark matter.

As a result, the dark matter's gravitational pull on the galaxy increases as it moves farther away from the center of the universe, add in the gravitational pull of matter in the universe, and galaxies will gradually slow down, and the expansion of the universe will gradually slow down. The forces on the galaxy are shown in figure 3, which is inconsistent with the monitoring situation.

However, when the force between dark matter and matter is repulsive at close distance and attractive at long distance, the following situation will occur: within the range of neutralization of the gravitational and repulsive forces between the galaxy and dark matter, the force of dark matter on the galaxy is zero; outside this range, the result is similar to that of mutual attraction. In figure 4, the force exerted by the dark matter in the neutralizing region on the galaxy is 0.

![Figure 3. The gravity diagram 1 of matter in the universe.](image-url)
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When the force between dark matter and matter is repulsive, the ideal galaxy behaves in accordance with the detected situation.

(2) There are three possible interactions between dark matter and dark matter

1) Mutual attraction,
2) Mutual repulsion
3) Close repulsion and distant attraction.

If the force between dark matter and dark matter is repulsive, the dark matter will gradually move away from the center of the universe under the action of cosmic matter and other dark matter, and the dark matter will accelerate away from the center of the universe. When the speed away from the dark matter is greater than the relative speed of the galaxy and the center of the universe, according to Gauss's law, the force exerted by the galaxy is always the gravitational force pointing to the center of the universe, so the velocity of the galaxy will continue to decrease, the matter will not accelerate to leave the universe, so the expansion of the universe will not accelerate.

When dark matter moves away from the center of the universe faster than galaxies do relative to the center of the universe, according to Gauss's law, the gravitational pull of the galaxy toward the center of the universe will gradually decrease, and when the galaxy and the universe exceed a certain distance, the galaxy will receive a push toward the universe [7], as a result, matter began to accelerate out of the universe, and the expansion of the universe began to accelerate.

If the force between dark matter and dark matter is repulsive at close distance and attractive at long distance, as shown in figure 5, the repulsive force between the cosmic matter and dark matter will cancel the gravity of dark matter and dark matter, then a stable dark matter layer will eventually form.

In the figure 5, Fy is the gravitational force between dark matter and Fe is the repulsive force between matter and dark matter.

If the interaction between dark matter and dark matter is only attractive, the result could be unevenly dense dark matter clumps and dark matter rarefied regions.
4. Summary and Guesswork

This paper is mainly summarized as follows:

(1) The motion of matter produces gravity, independent of direction
(2) The motion of dark matter generates repulsive forces with the motion of matter, independent of direction
(3) Completely dead matter has no gravity, no electric charge, no magnetic field, no quantum entanglement. Therefore, a completely dead matter is a matter that has no mass and is not bound by gravitation. Only the matter that has energy can have the action of force.

This paper makes the following conjectures:

(1) Dark matter motion and dark matter motion produce repulsive forces at short distances and attractive forces at long distances, which are similar in nature to intermolecular forces.
(2) The edge of the universe is wrapped in layers of dark matter.
(3) There are other universes out there.
(4) Time is irreversible.
(5) The production of gravity is independent of time.

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