RELATIONSHIP BETWEEN ELECTROMAGNETISMS AND GRAVITY

Author: Kumar Bittu

Individual Research

Email: iactbittu70@gmail.com

Abstract: This research proposes a new understanding of gravity, diverging from the classical views of both Newton and Einstein. Unlike Newton's gravitational force and Einstein's curvature of space-time, this study suggests that gravity originates from the positive charge force of an atom's nucleus. It posits that gravity is a result of electrostatic interactions, where the nucleus of atoms exerts a weak attractive force on neutral atoms and repels similarly charged atoms. This framework offers an alternative approach to gravity by explaining it as a function of atomic structure rather than mass or space-time geometry. The study aims to establish a theoretical link between gravitational force and electrostatic force, proposing that nuclear charge at the atomic level is central to gravitational phenomena on Earth and throughout the universe.

KEYWORDS: Quantum Gravity, Electrostatic Force, Electromagnetism, Positive Charge Force, Neutral Atom Attraction, Atomic Nucleus, Gravitational Theory, Nuclear Polarization, Electrostatic-Gravity Relationship.

1. INTRODUCTION

For centuries, our understanding of gravity has been shaped by the groundbreaking theories of Newton and Einstein. Newton's law of universal gravitation introduced gravity as a force that attracts masses, while Einstein's general theory of relativity redefined it as the curvature of space-time. However, despite the success of these models in explaining large-scale phenomena, both theories face significant limitations, especially at quantum scales. For example, we do not fully understand the gravitational force at small scales, nor do we know how gravity is produced, or which particle is responsible for it. We are also unable to create gravitational force in a laboratory setting, and our understanding of the behavior of celestial bodies and the nature of the early universe remains incomplete.

This research challenges both Newtonian and Einsteinian perspectives by proposing that gravity originates from atomic forces, specifically from the positive charge force within an atom's nucleus. Rather than relying on mass or space-time curvature, this theory suggests that gravitational effects arise from electrostatic forces at the nuclear level. The group of nuclei as a big nucleus, located in the center of every celestial body which generates gravitational force. This nucleus attracts and repel atom on the basis of their charge.

The study explores the implications of this model for our understanding of planetary, stellar, and galactic structures, ultimately proposing that gravity and electromagnetism are intertwined at a fundamental level. Through theoretical calculations and electrostatic principles, it redefines gravity as a charge-based force, inviting a reevaluation of gravitational theory from the atomic to the cosmic scale.

2. QUANTUM GRAVITY

Sir Isaac Newton says that **every mass in the universe attracts every other mass** with a force that is directly proportional to the product of their masses and inversely proportional to the square of the distance between their centers. Means according to Newton's law, matter attracts each other, but we cannot observe the force of small matter, nor can we see the force exerted by large masses, such as big mountains. This theory doesn't solve gravity correctly. So, Albert Einstein says that gravity is not a force acting at a distance (as Newton described) but rather a result of the **curvature of space-time** caused by massive objects.

According to my research, gravity does not come from mass or space-time curvature. My research will prove that gravity is not a separate force but originates from atoms, specifically from the nucleus of the atom. Rather than arising from space-time curvature or mass of object, this theory suggests that gravity is a force of positive charge(nucleus), that attracting all neutral atoms and negatively charged atoms while repelling positively charged atoms in the area influenced by this nuclear force, which is located at the center of the Earth.

Now, let's see how this nuclear force is responsible for gravitational force and the relationship between electrostatic force and gravity.

2.1 FORCE BETWEEN TWO CHARGES

We already know that the force between two charged particles is:

$$F \propto \frac{Q1 \cdot Q2}{r^2}$$

$$F = Ke \frac{Q1 \cdot Q2}{r^2}$$

F is the magnitude of the force between the charges.
Ke is coulomb's constant, approximately 8.99 × 109 Nm2/ C2.
Q1 is charge of nucleus (in coulomb).
Q2 is positive charge atom (in coulomb).
r is the distance between the two charges (in meters).

This is the force between the two charged particles, like Proton and Electron. And these are subatomic particles, which are free in space.

2.2. FORCE APPLIED BY A NUCLUES ON A CHARGED ATOM

Here, there are many protons and electrons, as we are considering the charge of both the nucleus and the atom. Therefore, the force will depend on the total charge of all protons in the nucleus and the net charge of the atom.

The total charge of a nucleus is equal to total charge of all protons in a nucleus = ΣQp.

The total charge of electrons in an atom will be charges of all electron in a atom = ΣQe.

The net charge on the atom will be: (total charge of electron – total charge of proton), $[\Sigma Qe - \Sigma Qp] = \Sigma Qa$.

If the net charge of the atom is positive, the proton will attract the atom; if the net charge is negative, the proton will repel the atom.

The force between a nucleus and a charged atom will be:

$$F \propto \frac{\Sigma Qp \cdot \Sigma Qa}{r^2}$$

$$F = ke \frac{\Sigma Qp \cdot \Sigma Qa}{r^2}$$

F is the magnitude of force between a nucleus and a charged atom.
Ke is coulomb's constant, approximately 8.99×10^9 Nm2/ C2.
ΣQp is the total charge of all protons of nucleus.
ΣQa is net charge of an atom.
r is the distance between the nucleus and charged atom.

2.3. FORCE OF ATTRACTION BETWEEN A NUCLUES AND A NEUTRAL ATOM

We know that a positive charge can easily attract a neutral atom due to the polarization force. A polarized atom will be neutral, meaning there is no charge on the neutral atom, but the nucleus will still attract the neutral atom. Here, the force does not depend on the charge of the atom because it is zero, so we can easily remove the value of the charge of the neutral atom from the equation.

The force between a nucleus and a neutral atom will be:

$$F \propto \frac{\Sigma Qp}{r^2}$$

$$F = Ke\,\frac{\Sigma Qp}{r^2}$$

Here, the force does not depend on the mass of the object or the charge of the object; it only depends on the charge of the nucleus and the distance between them. This is similar to the gravitational force of the Earth; in this case, the force does not depend on the mass of the object (because any object with any mass experiences the same acceleration), but only depends on the distance between them.

Let's see mathematically how the nucleus's positive charge is responsible for Earth's gravity or the gravity of every celestial body.

$$F = Ke\,\frac{\Sigma Qp}{r^2} \quad \text{is equal to} \quad F = G\,\frac{M1.M2}{r^2}$$

$$Ke\,\frac{\Sigma Qp}{r^2} = G\,\frac{M1.M2}{r^2}$$

We take the mass of the Earth (**M1**) as the positive charge of the nucleus of the Earth (**ΣQp**), and we know the force is not dependent on the mass of the object, so we can remove this mass (**M2**). Since we are dealing with charges, we use **Ke** instead of **G** (since G deals with mass).

So, the equation will be: -

$$Ke\,\frac{\Sigma Qp}{r^2} = Ke\,\frac{\Sigma Qp}{r^2}$$

So, here we see that the attraction force applied by the nucleus (positive charge) on a neutral object is equal to the force applied by the Earth on the object (as they are approximately 100% neutral).

Let's see how much force is applied by the Earth on an object that is on the Earth:

$$F = ma$$

On Earth, the acceleration due to gravity is: $F = mg$

We know that gravitational force is not dependent on the mass of the object, so we can remove m: $F = g$

And we already know the value of g, which is 9.8 m/s^2, So: $F = 9.8\ m/s2$

So, for every object on Earth, the value of the force will be constant at **9.8 N**

For any object on Earth, F = 9.8 N; it only varies when the charge of the nucleus increases or decreases. For other planets or celestial bodies, it can be different because each celestial body may have a different charge of its nucleus.

8. CONCLUSION

This research paper presents an alternative theory of gravity by positing that gravitational forces arise from atomic-level electrostatic interactions rather than mass or space-time curvature. By attributing gravitational effects to the positive charge force of atomic nuclei, this approach offers a unified view linking gravity and electromagnetism. The model proposes that gravity is the result of an attractive force exerted by a nucleus on neutral atoms, while repelling atoms with similar charges. This interpretation challenges classical gravitational theories, suggesting that the phenomena we associate with gravity can be explained by electrostatic forces inherent in atomic structure. If validated, this theory could reshape our understanding of gravity, influencing everything from planetary motion to cosmic evolution. Future research may further explore the mathematical frameworks and experimental validations required to integrate this atomic-level view of gravity with observed gravitational phenomena across different scales.

9. REFRENCE

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