OPINION

Electrical nature of the gravity and it sources

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ABSTRACT

Gravity, one of the four fundamental forces of nature, governs the motion of celestial bodies, shapes the structure of the universe, and keeps us grounded on Earth. Traditionally understood as a geometric property of spacetime as described by Einstein's General Theory of Relativity, gravity is typically conceptualized as a purely mechanical phenomenon. However, emerging theories and observations suggest there may be an intrinsic relationship between gravity and electromagnetism, opening the door to a new understanding of its "electrical nature.

Key words: *Gravity; Electrical charge; Coulombs; Milky way galaxy; Electrical constant*

INTRODUCTION

The The classical view of gravity began with Isaac Newton, who described it as a force acting at a distance between two masses. His formulation provided accurate predictions for most phenomena involving gravitational interactions. With the advent of Einstein's General Relativity in 1915, gravity was reinterpreted as the curvature of spacetime caused by mass and energy. This paradigm shift answered many unresolved questions but also left certain mysteries, such as the nature of dark matter and dark energy, unexplained.

No materials were used in preparation of this paper. However, one preliminary experiment was conducted using a torsion beam balance to try to determine, by the velocity of weight rotation, if different metals, including aluminum, copper, and lead, react differently, in a gravitational manner, to a nearby much larger mass. The conditions were not ideal, and the results were inconclusive.

For purposes of calculating universal moles, individual bodies of mass are part of one whole universal body, each mass segment of which contains elements of different proportions, but those proportions are insignificant compared with the proportions of elements in the universe as a whole. The calculation is similar to that of determining moles of a unit of mass of mixed composition, except applied in this case on a universal scale. Therefore, mass is multiplied by mass number, the product of which is divided by atomic weight to obtain moles, which is multiplied by Avogadro's constant to obtain a count of e_2, an extremely small quantum amount of charge generated by primary electrical charge field interactions. Even a slight change in relative composition of the universe will change R_U and therefore G.

Electromagnetism, on the other hand, was unified into Maxwell's equations in the 19th century, demonstrating its dual wave-particle nature and its role as a fundamental force. While gravity and electromagnetism are traditionally treated as distinct forces, some researchers have hypothesized potential interconnections, especially in the context of quantum mechanics and unified field theories.

Theoretical foundations of the electrical nature of gravity

1. Electrogravity Hypotheses: The concept of an "electrical nature" of gravity originates from speculative theories that posit gravitational interactions could be a manifestation of electromagnetic phenomena at a deeper level. These theories often explore the idea that massive objects generate not only gravitational fields but also weak electromagnetic fields due to the motion and distribution of charged particles within them.
2. Einstein–Maxwell Solutions: General Relativity's equations allow for solutions that incorporate electromagnetic fields. The Einstein-Maxwell equations describe how spacetime curvature interacts with electromagnetic fields, suggesting a potential interplay between gravity and electricity.
3. Quantum Considerations: In the quantum realm, particles exchange virtual bosons to mediate forces. For gravity, these are hypothetical gravitons, while for electromagnetism, they are photons. Some theories propose that under extreme conditions, such as those near black holes or at the quantum foam scale, gravity and electromagnetism might converge into a single unified force.

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Observational evidence

1. Gravitational Waves and Electromagnetic Correlations: The simultaneous detection of gravitational waves and gamma-ray bursts from neutron star mergers hints at an underlying relationship between gravity and electromagnetism. These events demonstrate how extreme gravitational environments can produce powerful electromagnetic radiation.
2. Electrostatic Influences on Mass Distribution: Studies of large-scale cosmic structures, such as galaxy clusters, show that electromagnetic fields can influence the distribution of matter. This raises questions about whether gravity alone governs mass aggregation or if electrical interactions play a supporting role.
3. Plasma Cosmology: Plasma, the fourth state of matter, is ubiquitous in the universe. The behavior of plasma is governed by electromagnetic forces, which are vastly stronger than gravity at smaller scales. Plasma cosmology explores how electromagnetic phenomena might shape cosmic structures traditionally attributed solely to gravitational effects.

Proposed mechanisms

1. Electrogravitic Coupling: Some researchers propose that gravitational fields could be modified by the presence of electromagnetic fields. This coupling might occur through the polarization of vacuum energy or quantum field interactions, leading to measurable deviations from Newtonian gravity in high-energy environments.
2. Charge-Mass Interaction: A fundamental principle of electromagnetism is that like charges repel, and opposites attract. If massive objects possess net electric charges, even minimal ones, the resulting electrical forces could subtly alter gravitational interactions.
3. Scalar Fields: Scalar field theories introduce an additional scalar quantity that interacts with both mass and charge. These fields could provide a bridge between electromagnetism and gravity, potentially explaining phenomena such as dark energy and the accelerated expansion of the universe.

Implications for physics

1. Unified Field Theories: Discovering an intrinsic connection between gravity and electromagnetism would advance the quest for a unified theory of physics. Such a theory would reconcile quantum mechanics with General Relativity, resolving long-standing inconsistencies.
2. Technological Advancements: Understanding gravity's electrical nature could revolutionize technologies reliant on gravitational and electromagnetic fields. This includes propulsion systems, energy generation, and communication methods, especially in space exploration.
3. Cosmological Insights: Integrating electromagnetism with gravitational theories could shed light on dark matter and dark energy, two of the most enigmatic components of the cosmos. For instance, weak electromagnetic interactions might explain the "missing mass" problem in galaxies.

Challenges and criticisms

1. Experimental Verification: Gravity is an incredibly weak force compared to electromagnetism, making direct experimental observation of any electrical connection exceedingly difficult.
2. Mathematical Complexity: Extending existing physical theories to include electrogravitic interactions introduces significant mathematical challenges. Such models must be both internally consistent and empirically valid.
3. Conservative Viewpoints: Many physicists remain skeptical of hypotheses suggesting a fundamental electrical nature for gravity, arguing that current models suffice for most observations. These critics demand rigorous evidence before reconsidering well-established theories.