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The Universe Never Had the So-Called Gravity

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ABSTRACT

This paper challenges conventional gravity theories by revisiting Galileo's discoveries and presenting a counterintuitive perspective. Recent experiments, such as the hammer and feather drop on the moon and vacuum demonstrations on Earth, prompt a reevaluation of our current scientific understanding of gravity. The paper argues that celestial bodies, including Earth, move towards objects, challenging the traditional concept of gravity. Drawing on the equivalence principle and dark matter effects, it contends that objects become stationary when disconnected from their original reference frame. Addressing criticisms, the paper asserts that Earth's perpetual movement ensures uniform gravitational effects globally. Exploring the expanding universe and dark matter's influence, it concludes that objects released in space do not fall but become stationary, prompting a reassessment of established scientific principles. This paradigm shift invites readers to reconsider their understanding of gravity and the universe. The paper is written as a letter to stimulate thought and discussion.

Keywords: Newtonian Mechanics; gravity; dark matter

INTRODUCTION

Gravity, traditionally defined as a fundamental interaction causing mutual attraction between masses, is reconsidered in this paper. Over four hundred years ago, Galileo provided crucial evidence regarding gravity, yet its implications were not fully understood. Galileo's experiments demonstrated that in a vacuum, objects fall at the same rate regardless of their mass due to the absence of air resistance (Kirkland, 2007). This was confirmed in 1971 by astronaut David Scott on the Apollo mission (Compton, 1996).

However, recent demonstrations, such as the BBC's "Brian Cox Visits the World's Largest Vacuum," show similar results with different objects, suggesting a need to reevaluate our understanding of gravity.

UNRAVELING REVERSE TRUTHS

The concept that objects attract each other or fall towards celestial bodies like Earth or the moon is reconsidered. This paper proposes that, contrary to common belief, it is the celestial bodies that move towards objects. For instance, in David Scott’s moon experiment, it is posited that the moon rose to meet the hammer and feather, rather than the objects falling towards the moon.

Figure 1 Feather and Hammer Drop on the Moon

Similarly, the Earth rises to meet objects in a vacuum on its surface. This idea aligns with observations in everyday life. For example, while driving, insects appear to collide with the windshield, but in reality, the car moves towards them. Similarly, the Earth's constant motion results in a perception that objects fall, when in fact, they remain stationary as the Earth moves towards them.

EQUIVALENCE PRINCIPLE AND OBJECTS IN SPACE

According to the equivalence principle, when objects are released from a moving reference frame, they share a common, non-accelerating frame. In an accelerated frame like Earth, the floor moves towards the objects, not the other way around (Ivie, 2015). This concept, supported by Einstein's thought experiments, suggests that objects remain stationary in space while the Earth moves towards them. Einstein's equivalence principle implies that the effects of gravity and acceleration are indistinguishable in a small region of space-time. When considering this principle, we realize that the perceived gravitational pull-on objects is actually due to the acceleration of the reference frame in which the observations are made. Hence, when we see objects falling, it is because the reference frame (the Earth) is accelerating towards the objects. To illustrate, consider Einstein's thought experiment of an elevator in free fall. For an observer inside, the effects of gravity are indistinguishable from acceleration. Mathematically, we can express this equivalence as,

$$g = \frac{dv}{dt} \tag{1}$$

where g is the gravitational acceleration and (dv/dt) is the rate of change of velocity (acceleration) of the reference frame.

OBJECTS' INERTIA AND DARK MATTER

The influence of dark matter on celestial bodies and objects is significant. As the universe expands, dark matter ensures that objects remain stationary in space. When objects are released, such as the hammer and feather on the moon, they do not fall but become stationary as the celestial body moves towards them. As noted by the editors of the (Britannica, 2022), "all points in the body maintain uniform velocity and acceleration."

Dark matter, which makes up approximately 27% of the universe's mass-energy content, plays a crucial role in the dynamics of celestial bodies. It provides the necessary framework within which these bodies move. As dark matter exerts its influence, it creates a scenario where objects appear stationary relative to the moving celestial bodies. This framework challenges the traditional understanding of gravity and prompts a reevaluation of the forces at play. Consider the equation of motion for an object under the influence of dark matter.

$$m\,\frac{\mathrm{d}^2x}{dt^2} = -\nabla\varphi + \rho DM \tag{2}$$

where m is the mass of the object, (d^2x/dt^2) is its acceleration, φ is the gravitational potential, and ρDM is the density of dark matter. This equation suggests that the object's motion is influenced by both the gravitational potential and the dark matter density.

THE ILLUSION OF GRAVITY

The idea of gravity as a force pulling objects towards celestial bodies is challenged. Instead, it is proposed that the Earth and other celestial bodies move towards objects, creating the illusion of gravity. This perspective necessitates a reevaluation of long-held scientific principles and invites new interpretations of phenomena such as falling objects. Consider the following analogy: When we drive a car, we feel a force pushing us back into our seats during acceleration. This force is not due to any external influence but is a result of the car's acceleration. Similarly, the sensation of gravity we experience is not due to a force pulling us down but rather the Earth accelerating upwards towards us. Using Newton's second law of motion.

$$F = ma \tag{3}$$

where F is the force, m is the mass, and a is the acceleration. If we reinterpret F as the force of the Earth moving towards the object, we can rewrite it as,

$$F = m\,\frac{\mathrm{d}^2x}{dt^2} \tag{4}$$

This suggests that the force experienced by the object is due to the acceleration of the Earth towards it.

EXTENDED IMPLICATIONS AND DISCUSSIONS

Implications for Celestial Mechanics

This new perspective on gravity has profound implications for our understanding of celestial mechanics. If celestial bodies are moving towards objects rather than objects falling towards these bodies, it changes the way we model planetary motions, satellite orbits, and even the behavior of galaxies. For instance, the traditional model of orbital mechanics relies on the concept of gravitational attraction between bodies. However, if we consider that planets are moving towards objects in their path, the equations governing their motions would need to be revised. This could lead to new insights into the stability of orbits, the formation of planetary systems, and the behavior of objects in deep space. Consider the equation for orbital motion under traditional gravity.

$$F = G\frac{Mm}{r^2} \tag{5}$$

where F is the gravitational force, G is the gravitational constant, M is the mass of the central body, m is the mass of the orbiting body, and r is the distance between the two bodies. Reinterpreting this with our new perspective, we consider the central body's movement towards the orbiting body.

$$F = m\left(\frac{\mathrm{d}^2 r}{dt^2}\right) \tag{6}$$

This suggests that the force is due to the acceleration of the central body towards the orbiting body, rather than an attractive force between the two.

REVISITING HISTORICAL EXPERIMENTS

Historical experiments, such as those conducted by Galileo and Newton, need to be revisited with this new understanding. Galileo's experiments with inclined planes and free fall provided the foundation for classical mechanics. However, if we reinterpret these experiments in light of the idea that celestial bodies move towards objects, we may uncover new aspects of his findings that were previously overlooked. Similarly, Newton's formulation of the laws of motion and universal gravitation may need to be revised. While his laws accurately describe the motion of objects under certain conditions, they may not fully account for the underlying mechanisms proposed in this paper.

APPLICATIONS IN MODERN PHYSICS

Modern physics, including general relativity and quantum mechanics, must also be considered in this context. General relativity describes gravity as the curvature of space-time caused by mass and energy. If we instead consider that celestial bodies move towards objects, it implies a different interaction with the fabric of space-time. Einstein's field equations in general relativity are given by,

$$R_{\mu\nu} - \frac{1}{2}\, g_{\mu\nu}\, R = \frac{8\pi G}{c^4}\, T_{\mu\nu} \tag{7}$$

where $R_{\mu\nu}$ is the Ricci curvature tensor, $g_{\mu\nu}$ is the metric tensor, R is the scalar curvature, G is the gravitational constant, c is the speed of light, and $T_{\mu\nu}$ is the stress-energy tensor. If we consider the movement of celestial bodies towards objects, we might need to revise these equations to account for this motion. Quantum mechanics, which deals with the behavior of particles at microscopic scales, may also be influenced by this new perspective. The interactions between particles and their reference frames could provide new insights into the fundamental forces of nature.

EXPERIMENTAL VERIFICATION

To validate this new understanding of gravity, we need to design experiments that can differentiate between the traditional view and the proposed perspective. One possible experiment could involve observing the behavior of objects in a highly controlled environment, such as a space station or a deep-space probe. By analyzing the motion of objects in these environments, we can determine whether they remain stationary relative to the accelerating reference frame or exhibit behavior consistent with traditional gravity.

ADDRESSING POTENTIAL CRITICISMS

This paper anticipates potential criticisms and addresses them. One significant concern is the perceived contradiction with everyday experiences of gravity. While it may seem counterintuitive to suggest that objects do not fall towards the Earth, it is essential to consider the broader implications of the proposed model. Critics may argue that this perspective does not account for the observed effects of gravity on a planetary scale. However, by considering the constant motion of celestial bodies and the influence of dark matter, we can reconcile these observations with the proposed model.

CONCLUSION

This paper suggests a paradigm shift in understanding gravity. By considering the motion of celestial bodies towards objects and the influence of dark matter, it challenges traditional gravity theories. This new perspective encourages further exploration and reassessment of established scientific concepts, prompting readers to rethink their understanding of gravity and the universe. The implications of this model extend beyond theoretical physics and into practical applications in astronomy, cosmology, and space exploration. By adopting this new perspective, we open the door to new discoveries and a deeper understanding of the fundamental forces that govern our universe.

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