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Gravity Is Space-Time Flow

Bernal Thalman

School of Electrical Engineering, Faculty of Engineering, University of Costa Rica, San Jose, Costa Rica
Email: bernal.thalman@gmail.com

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Abstract

From fluid dynamics, we conceptualize gravitational waves as inviscid shock waves within a zero-viscosity medium, where space-time acts as a fluid devoid of mass. This fluidic perspective elucidates gravitational wave phenomena and offers insights into quantum entanglement. Our paper uses a mathematical model called the Minkowski equation to describe space-time. This equation combines space and time into a single framework, as proposed by the theory of relativity. Through theoretical analysis, we aim to understand the dynamic nature of space-time and how it interacts with gravity. Our research provides new information about how gravity functions. Weight results from inertia pushing upward rather than being attributed to the pull of gravity. We build upon Einstein's theory of relativity, which explains that objects in free fall are at rest. Therefore, gravitation does not cause it to accelerate and always has zero acceleration. In free fall, the acceleration is by coordinates. The object will experience coordinate's acceleration but no acceleration of its own and thus no "g" force. There is no force of attraction, and the object in free fall does not accelerate. It is approaching the Earth's coordinates at an increasing rate, making an apparent Earth expansion. Earth coordinates are space-time flow. Our theory defines the universal expansion of space-time as occurring everywhere, including the quantum level. When this expansion happens inside the atoms, it produces a space-time flow by a nozzle effect; this space-time flow is gravity. The general expansion inside matter creates gravity, and outside matter counteracts it. Our approach to explaining this Gravity theory is observing its space-time behavior. Our theory states that expansion is the beginning of time and occurs at present, starting all over above the Planck length space-time. Although we have no mass in space-time, its behavior, similar to that of a fluid, allows us to speak of the nozzle velocity and pressure of space-time and its accelerated flow. We secure this concept because space-time's accelerated frame is the inertia that produces force when the matter is present. The acceleration of gravity is caused by the expansion of space-time within atoms. This expansion resembles the rapid flow from a nozzle or jet. As the space-time flow accelerates, it gradually exerts pressures that propel it towards the outer limits of matter. This process expels the excess space-time from within matter due to expansion, resulting in a flow. Weight gravity is the inertia due to the acceleration of space-time flux produced by space-time inside atoms nozzle effect.

Keywords

Gravitation, Astrophysics, Cosmology, Space-Time, Cosmos Expansion, Gravity, Dark Energy, Nozzle Effect, Relativity, Quantum Gravity

1. Introduction

This manuscript introduces a theory of gravity, shedding new light on its relationship with space-time. We base our study on the mathematical representation provided by the Minkowski equation, which unifies space and time according to the principles of the theory of relativity.

The theory, which extends from Einstein's principles, offers an intriguing reinterpretation of gravitational phenomena. By positing that the apparent broadening of the Earth is a result of the Earth's surface seemingly accelerating towards objects, propelled by a flow of space-time emerging from the Earth, we offer a novel perspective on the nature of gravity. In this framework, gravity is reimagined as a consequence of space-time dynamics, wherein the curvature and flow of space-time influence the motion of objects.

Our theory can contribute to the ongoing exploration and refinement of our understanding of gravity and the fundamental forces of nature.

We focus on space-time expansion above the Planck scale, proposing that a distinct pressure drives this expansion and not conventional mass-related energy. Our theory extends from the microscopic to the cosmological scale, offering valuable perspectives on combining gravity with quantum physics. Our investigation focuses on the concept of space-time expansion above the Planck scale. Incorporating from the microscopic to the cosmological, it unites quantum mechanics with gravity and simplifies the understanding of the fundamental phenomena of the universe.

The weight we feel results from inertia. Contrary to popular belief, weigh-in gravity is not an attraction but a push.

From fluid dynamics, we conceptualize gravitational waves as inviscid shock waves within a zero-viscosity medium, where space-time acts as a fluid devoid of mass.

However, it's important to note that dark energy doesn't correspond to the energy related to mass, as we commonly understand it in physics. It's a different energy source in space-time. The expansion is not driven by conventional mass-related energy but by distinct energy inherent in the universe's structure.

In Einstein's theory of relativity, objects in free fall undergo the absence of gravitational forces.

The gravitational acceleration results from the accelerated space-time flow rather than an external force acting on matter.

Space-time expansion within atoms gives rise to a nozzle effect akin to the flow from a jet.

Universal expansion occurs at all scales, including the quantum level, and space-time behaves as a fluid medium characterized by acceleration gradients. This accelerated space-time flow generated within atoms by the nozzle effect is the gravitational acceleration experienced by objects, highlighting the inseparable link between space-time dynamics and gravitational forces.

This article explores how inertia, free fall, relativity theory, and other phenomena support this assertion. We are based on Einstein's principle of equivalence: Inertia and weight are identical.

Drawing inspiration from Einstein's principle of equivalence, we elucidate the intrinsic connection between inertia and weight, further solidifying our theory within the framework of relativity.

Our gravity theory continues Einstein's relativistic view, propelling scientific inquiry into new frontiers.

By viewing gravity through the lens of space-time expansion and fluid dynamics, we aim to redefine our understanding of gravitational forces.

2. Description

2.1. The Nozzle Effect

Our Universe expansion produces Gravity, which is an accelerated space-time flow.

However, it is essential to clarify that while specific theories propose space-time having properties analogous to fluids in some contexts, the terminology and particular concepts can vary widely depending on the theory being discussed.

Our unique perspective posits that space-time is not just a fluid but an inviscid fluid. This fluid, devoid of viscosity, is known as a superfluid. Superfluid vacuum theory (SVT) is a theoretical physics and quantum mechanics approach that considers the physical vacuum as a superfluid (Santos-Pereira et al., 2021).

The universe, composed of space-time (formerly known as Ether), undergoes expansion in Space-Time. However, this expansion does not involve matter. This understanding aligns with general affirmations, as evidenced by the following references:

"Hubble's law aligns with the general expansion of space between galaxies or galactic clusters and is not specific to the galaxies or clusters themselves. This clarifies that galaxies remain unchanged; instead, it is the regions between them that expand over time (Kolecki, 2003)."

"Both regular matter, dark matter, and radiation decrease in density as the Universe expands due to its increasing volume. However, dark energy and field energy, present during inflation, represent forms of energy inherent to space itself, as new space is continually created in the expanding Universe (Siegel, 2023)" (see **Figure 1**).

Space-time is present both inside and outside matter. Matter is filled with space-time, which permanently expands.

1909, E. Rutherford experimented by launching alpha particles, or helium nuclei, at a thin sheet of gold. To his surprise, most particles passed through the sheet without resistance, while some bounced back. From this, Rutherford concluded that gold atoms must have much empty "space-time" since only a few particles were reflected.

Rutherford's discovery revealed that a minority of particles rebounded after colliding with the nucleus. This breakthrough unveiled the structure of atoms, demonstrating their composition: a dense, positively charged nucleus enveloped by electrons, interspersed with vast interstitial spaces. It is crucial to emphasize that while gold was utilized in the experiment, its selection was not due to uniqueness but rather practicality (see Figure 2).

In quantum mechanics, electrons do not have specific locations like planets orbiting the nucleus of an atom in a classical sense. Instead, their behavior is described by probability distributions known as orbitals. These orbitals represent regions where an electron is likely to be found with a certain probability. The concept of a fixed distance from the nucleus for electrons is a simplified model typically used to introduce atomic structure. However, it only captures part of the complexity of electron behavior.

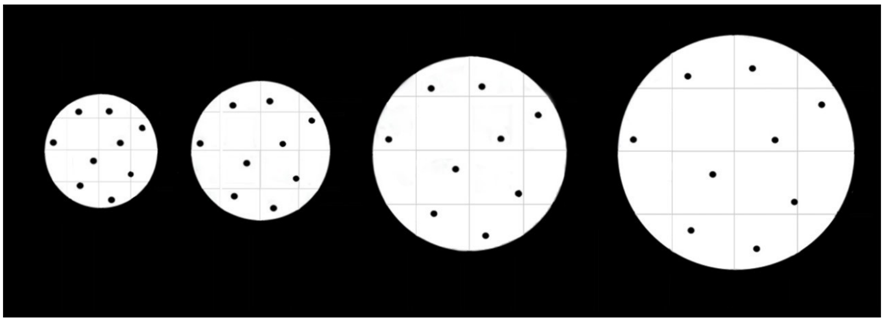

Figure 1. The Universe expands, and matter dilutes.

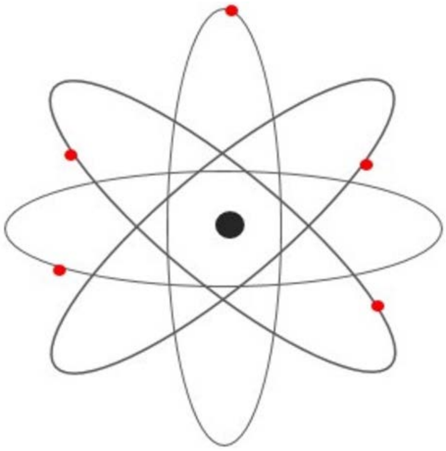

Figure 2. Rutherford atom.

In the context of atoms and standard quantum mechanics, the idea of virtual particles filling the space-time within atoms is not commonly used or necessary for describing atomic behavior.

Virtual particles are primarily a concept arising from quantum field theory, a more advanced framework than standard quantum mechanics. In quantum field theory, virtual particles arise as mathematical entities that describe interactions between particles within the quantum fields that permeate all of space (Virtual particle, 2024).

However, in describing atoms within standard quantum mechanics, the focus is primarily on the behavior of electrons within orbitals around the nucleus, characterized by wave functions and probability distributions. The concept of virtual particles filling the space-time within atoms is not typically employed in this context because the behavior of electrons in atoms is adequately described without invoking virtual particles.

So, while virtual particles are a significant concept in certain areas of quantum physics, they are not typically considered within the framework of standard atomic theory.

The atom consists of a nucleus surrounded by an electron cloud forming its shell. While the nucleus is small and dense, containing protons and neutrons, the shell is significantly larger. Despite occupying a tiny fraction of the atom's total volume, the nucleus contributes almost all its mass. Thus, atoms primarily comprise space or space-time, rendering matter mostly empty. The barriers to the free expansion of space-time are the nuclei of atoms and the energy contained within the electron cloud.

The space-time within matter evades the pressure of expansion by transforming into a perpetually accelerating flow of space-time, referred to in this article as the ‘nozzle effect’ phenomenon.

Nozzles are essential tools used in various fields, including gardening and aviation. Like how an airplane engine generates thrust for optimal performance, a garden hose nozzle helps to facilitate efficient water flow. Gravity plays a crucial role in this process, resulting from the accelerated flow of space-time out of mass.

When the acceleration of space-time flow encounters mass, it results in the manifestation of gravity.

In the first article, we introduced the phenomenon of gravity, which may appear to be the expansion of matter. However, in reality, it is the result of accelerated space-time flux. It is important to note that this perspective remains consistent depending on the frame of reference from which it is observed.

Hence, in classical Newtonian physics, the higher the density of matter, the greater the gravitational attraction.

The acceleration of the space-time flow increases radially in proportion to the number of atoms of the matter, its acceleration greater on the surface of massive objects.

2.2. Space-Time Minkowski Representation

Minkowski represented space-time with a mathematical construct that unifies space and time into a single, continuous entity spanning four dimensions.

In Minkowski's space, three ordinary spatial dimensions and an additional temporal dimension can be distinguished, forming a 4-variety that thus represents space-time.

We base our theory on the Minkowski equation. In mathematical physics, Minkowski space-time is a four-dimensional, zero-curvature Lorentzian manifold used to describe physical phenomena in the framework of Einstein's particular theory of relativity. The model was developed by the German mathematician Hermann Minkowski.

The Minkowski equation represents our four dimensions. It is a representation of our space-time, which is given below.

$$\Delta s^2 = \Delta x^2 + \Delta y^2 + \Delta z^2 - (\Delta t \cdot C)^2$$

Space-Time Representation in the Minkowski Equation.

The equation is known as the Minkowski equation or the space-time interval. It represents the space-time separation between two events in special relativity, where Δs is the space-time interval, Δx, Δy, and Δz are the differences in spatial coordinates, Δt is the difference in time coordinates, and C is the speed of light in vacuum.

The equation explains that the space-time interval remains constant regardless of whether an observer is at rest or in motion. Under the law of space-time, the equation called invariance is a fundamental concept in special relativity.

Special Relativity posits that the laws of physics are the same for all inertial observers (observers moving at constant velocity relative to each other), and this principle of invariance underlies many of the theory's predictions and explanations.

Usually, people talk about living in three dimensions plus time. However, Minkowski, Einstein's professor of mathematics, taught us that time is associated with the speed of light to incorporate it as a fourth dimension that is also measurable in meters.

$$(t \cdot C)$$

Let us break down the Minkowski equation by simplifying it to a single spatial dimension and its implications for the representation of space-time:

By considering only one spatial dimension, we can simplify this equation to:

$$\text{Space-time} = x - (t \cdot C)$$

The equation represents a simplified version of the one-dimensional Minkowski equation, emphasizing the relationship between spatial and temporal dimensions in space-time representation.

Minkowski's space-time simplified representation has two axe—the x-axis representing the spatial dimensions *x*, *y*, and *z*, and the $(t \cdot C)$ axis representing the time-light-speed dimension. The unit of $(t \cdot C)$ is the same as that of "x" (meters). "C" represents the speed of light, which has a unit of meters per second. Therefore, "$(t \cdot C)$" is a dimension in meters, just like Euclidean x, y, and z.

Simplification is beneficial when considering gravitational effects, which often exhibit radial symmetry in the universe.

The gravitational field can be described effectively using a single radial vector originating from the center of mass, and spherical coordinates instead of Cartesian coordinates are often convenient.

The $(t \cdot C)$ dimension already incorporates the Euclidean dimensions. Thus, our three familiar dimensions are inherently embedded within the dimension of 'time-speed-of-light.' It effectively conveys that the combination of time and the speed of light already encompasses the three spatial dimensions of Euclidean space.

The dimension is represented by the product of time and the speed of light. It suggests that the dimensions of space and time are intimately interconnected when considering space-time, with the familiar spatial dimensions being a subset or a part of the larger space-time framework.

The $(t \cdot C)$ dimension in the Minkowski equation shows us how time is connected to spatial dimensions, creating a unified framework that explains light's constant speed and motion's relativity.

C (the speed of light) is radial in all directions; the boundary of our universe also expands radially at the speed of light.

Analyzing the Minkowski equation and incorporating our theory, we see that time begins simultaneously throughout our universe and expands radially from all points where there is space-time. The expansion is at the speed of light and according to the trajectory indicated by the different accelerations of space-time.

As we explain this in the subsequent sections. Remember length contraction.

2.3. Distinction between Time and the Time-Speed-of-Light Dimension

Time is one thing, while the "Time-speed-of-light" dimension $(t \cdot C)$ is another. However, there is an intrinsic relationship between them:

There is a distinction between regular time and the "Time-speed-of-light," our fourth dimension. Regular time refers to the familiar passage of time we experience daily. In contrast, the "Time-speed-of-light" dimension, represented by the product $(t \cdot C)$, is a construct in physics that combines time with the speed of light. This dimension arises in Special Relativity, where space and time are unified into space-time, and the speed of light plays a fundamental role.

Despite the distinction, a fundamental connection or relationship exists between regular time and the 'Time-speed-of-light' dimension. They are inherently linked in the framework of physics. In Special Relativity, the speed of light is a fundamental constant that influences space and time, leading to phenomena such as time dilation, length contraction, and "the dimension where the universal expansion occurs." (Thalman, 2024).

The expansion of space-time appears to occur only in the time-speed-of-light dimension $(t \cdot C)$, pointing out that the $(t \cdot C)$ dimension already incorporates the Euclidean dimensions, our usual three dimensions through the speed of light.

The statement is made within the context of the Minkowski concept, which deals with the mathematical framework of space-time in Special Relativity.

$(t \cdot C)$ already encompasses the familiar three spatial dimensions (length, width, height) through the speed of light. This means that the effects of the speed of light extend beyond just time, influencing all spatial dimensions.

"It can be concluded that the universe's expansion only occurs in the 'time-speed-of-light' dimension."

Understanding the dynamics of the universe's expansion within the framework of Special Relativity emphasizes the importance of the speed of light. Thus, from its frame of reference, an object, along with the space-time it experiences in its trajectory, can be viewed as a system with a flat Minkowski metric.

It's essential to recognize that time isn't a tangible entity, but the time-speed-of-light dimension is fundamental to our universe. Events unfold at various points in this dimension, and our concept of time measures and sequences them. Time extends continuously, allowing us to discern and chronicle its occurrences. In other words, events can be framed.

However, it's important to clarify that while space-time is regarded as a dimension within the mathematical framework of special relativity, it differs from our conventional understanding of time. Time is subjectively experienced as a unidirectional flow, whereas the spatial dimension of space-time permits movement in multiple directions. It constitutes a fundamental aspect of the universal expansion encompassed by the concept of 'time-speed-of-light.'

The Minkowski equation suggests that time behaves as a dimension that expands at the speed of light, a significant concept in physics. This equation reveals a fundamental connection between time and the speed of light within the space-time framework. By representing time as a dimension combined with the speed of light, the Minkowski equation offers insights into why velocity can be undetermined in specific contexts. This understanding extends beyond phenomena like time dilation and length contraction to encompass the nature of velocity in gravitational phenomena.

2.4. Gravity Viewpoint and Perspectives

The gravity experience is subjective and contingent upon perspective. Your understanding of this, along with the first postulate of the theory of relativity, which asserts the uniformity of physics across all inertial frames of reference, is crucial and integral to our discussion.

Einstein's equivalence principle establishes the equivalence between gravitational and inertial mass. This principle is fundamental to our understanding of gravity. It implies that the effects of gravity experienced by an object are identical to those of acceleration in a non-gravitational setting.

We assert that weight arises from the inertia imparted by the acceleration of the space-time flow, a concept that demands careful consideration.

The perturbation caused by matter in space-time inside atoms produces a radially accelerated flow of space-time that causes the acceleration of the massive object during the fall and the upward push of the object (the weight) if it is on the surface.

To understand why we experience a downward pull, we consider that the Earth exerts an upward push on us and over all objects on its surface at a rate of 9.8 m/s^2.

When we are in free fall from above the Earth's surface, the Earth appears to be rapidly approaching us. Our first publication (Thalman, 2023) explains this issue of apparent perception in detail.

Upon analyzing our planetary system, we have observed that despite the perceived acceleration of expansion, the Earth and other elements do not increase in size. This discrepancy is reconciled by understanding that space with its coordinates moves towards us when we are in free fall and do not experience any force. Space movement towards us is described by space-time flux, which plays a crucial role in our perception of objects in motion.

Have you ever experienced the relative velocity effect while standing at a train station? When a train next to us moves, we feel like our train is moving, too, in the opposite direction.

Similarly, when we stand in front of a moving object and start moving forward with it, it feels as if the object's space-time is coming towards us while we remain stationary.

Relativity is the same as saying, I go to space, as space comes to me. (Earth comes to you; it is the same as you fall to Earth).

What is happening is that the flux of space-time is coming out of the Earth, causing a fall towards it. In classic physics, you are falling towards the Earth, which remains the same size and does not expand.

Nevertheless, the inbound flux of space-time passing through you creates the perception that the Earth is approaching. When you're on the Earth's surface, your weight stems from the inertia of the space-time flux's acceleration, which makes the surface propel you upward.

This study posits an alternative investigation of gravity as an accelerated space-time flow out of the interior of massive objects (e.g., the Earth), causing the reference coordinates to move upward and creating the illusion of falling toward the Earth.

The Earth's expansion is apparent and creates the illusion of an expanding Earth; the space-time flow emanating from Earth generates gravity.

We perceive a force pushing us upward when we stand on Earth's surface. This sensation results from the acceleration of space-time flow radiating outward from Earth at approximately 9.8 meters per second squared, giving rise to an apparent expansion of the Earth's surface.

Dark energy permeates the fabric of the universe, driving its accelerated expansion. Cosmic inflation, a key concept, illustrates the continuous widening of space-time.

The expansion of space-time within atoms accelerates space-time flow, akin to a nozzle effect, as it seeks release from matter. Gravity emerges from this accelerated space-time flow.

The enigmatic dark energy permeates the cosmos with its omnipresence, discovered in 1998. It represents a non-analytical energy that manifests as a fundamental property of space-time. This property, inherent to every point in the universe, propels an expansive push, shaping the fabric of space-time itself.

Dark energy is a mysterious energy that exists all around the universe. It was first discovered in 1998 and cannot be easily analyzed. Instead, it is a fundamental property of space-time. This property exists in every point of the universe, and it causes space-time to expand.

2.5. The Space-Time Curvature

Many people assert that Einstein's theory of relativity explains that the presence of mass causes gravity by curving space-time. This statement is correct, but space-time curvature can be simplified for curious people.

We must be very clear that the atomic nozzle produces the space-time flow.

In atoms, there is much space-time between the nucleus and the electrons, which we have called the inter-nucleus-electrons space.

Space-time within matter expands, producing a nozzle effect. It becomes an accelerated jet that comes out, so to speak, through the "pores" of the matter at the quantum level. On Earth's surface, it comes out at 9.8 m/s^2 (see **Figure 3**).

Acceleration is a term used to describe a change in velocity. When an object falls towards the ground, it picks up speed at an increasing rate. If the object is on Earth's surface, it experiences an upward force equal to its mass multiplied by the acceleration of space-time flux coming outward from Earth.

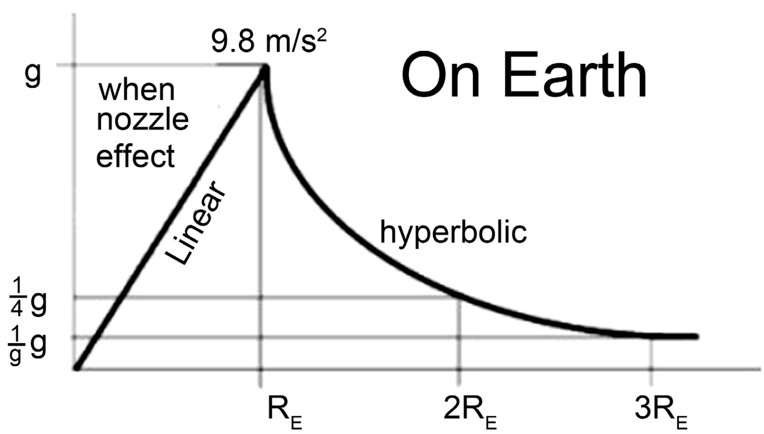

Figure 3. The 9.8 m/s^2 acceleration decreases rapidly as we move up away.

In particular, the speed of the space-time flow remains indeterminate, similar to the speed of any object concerning the speed of light. This concept will be clarified in the next section.

The inherent inertia of space-time becomes evident. This inertia, related to space-time flow acceleration, ensures that space-time maintains its march through time without velocity limitations inside the speed of light despite classical mathematical and physical worldviews.

Once the space-time flow from massive objects leaves out of matter, such as the Earth, it follows a hyperbolic decrease with the square of the radius, shaping concentric spheres characterized by identical flow acceleration.

The acceleration is less and less and always the same for every object of matter, depending on heights or radial distances from the center of mass. Remember the lack of a definite value concerning velocity.

The acceleration is present without change at the same distance from the center of mass, but as we explain later in the next chapter, there is no definite value concerning the velocity of the space-time flow.

Einstein realized that there was no way this man could tell whether he was sitting in a gravitational field or being accelerated. Because of this, these two situations were equal. By extension, Einstein concluded that gravity and acceleration are the same thing (Gravity and Acceleration Are the Same Thing, 2016).

Einstein's ground-breaking realization (which he called "the happiest thought of my life") was that gravity is, in reality, not a force at all but is indistinguishable from and, in fact, the same thing as acceleration (Physics of the Universe, 2024).

$$R = \text{radius of the earth} = 6371\text{ km}.$$

The intensity decreases because it is distributed over the surface of the concentric spheres. The larger the radius of the concentric sphere, the larger its surface area and acceleration smaller.

In simpler terms, the intensity of the space-time acceleration (gravitational field) at any point of these concentric spheres, when this intensity is multiplied by the surface of the corresponding sphere, remains constant. The same value is in all these spheres.

This phenomenon is the same as the behavior of the luminous intensity realized by a source emitting radial radiation, following the inverse square law.

The inverse square law states that the intensity of radiation or light is inversely proportional to the square of the distance from the source.

An asymptotic hyperbola represents the gravitational potential energy.

The apparent gravitational force of attraction due to a mass is radial and dependent only on the distance to the center.

The curvature of space-time is the curvature that Einstein talks about in his general theory. It is a spherical envelope.

Space-time flows (Gravity) radially outward from spherical bodies, forming equidistant spherical surfaces around massive objects with equal acceleration.

The space-time curvature (gravitational equipotential surfaces).

Visualizing the distribution of the gravitational potential field in space is possible with equipotential surfaces.

In gravitational physics, it's often observed that the surface of massive objects tends to approximate a sphere. This spherical shape ensures that each point on the object's surface experiences the same gravitational acceleration. As you move away from the object's center above the surface radially, the gravitational acceleration decreases on concentric spheres. These spheres, characterized by uniform gravitational acceleration, play a crucial role in the curvature of space-time around the massive object.

This curvature of space-time, combined with the translational kinetic energy of the stellar bodies, produces the geodesics we observe as elliptical trajectories.

We can ensure straight paths by converting a reference frame to curved trajectories (My subsequent publication).

Our theory proposes generalizing the Minkowski metric in special relativity to account for astronomical motions within flat space-time. Despite the appearance of elliptical paths, these motions follow geodesic trajectories that are straight and constant at a specific velocity.

The system can be presented with a flat Minkowski metric depending on the reference chosen.

2.6. The Undetermined Speed of the Space-Time Flow

Light always travels or moves at a constant speed of 300,000 kilometers per second, regardless of where or how we observe it, irrespective of the observer's location or perspective.

The speed of light is a constant that remains unaffected by the motion of its source, even if we observe light from a moving object. No matter how fast or slow the object we are in moves, the speed of light remains unchanged, one of the characteristics of the nature of light's behavior.

Just as light maintains its velocity independently of our perspective, the velocity of the space-time flow, regardless or independent of any acceleration, the velocity of space-time remains indeterminate.

We can return here to Minkowski's space-time representation, where the time-speed-of-light dimension shows us the complex interplay of space-time motion: $(t \cdot C)$

$$\text{Space-time} = x - (t \cdot C)$$

Otherwise, the speed of space-time flow would reach the speed of light quickly, but when the space-time flow moves in time, it does not physically move in space. However, it continues to move at the speed of light through time. Minkowski space is a concept that combines inertial space and time manifolds with a non-inertial reference frame of space and time.

Some definitions of the relationship between light, space-time, and acceleration can make the following description comprehensive:

"Inertia built into the space-time flow"

Inertia in the fourth dimension is what we call Virtual Inertia. In Classical physics, we relate energy and inertia with a mass; we call virtual inertia the inertia without related mass.

Also, energy without related mass is called virtual or dark energy.

The concept of inertia refers to the tendency of objects to resist changes in their motion. In other words, the distribution of mass and energy in the universe determines the shape of space-time and how objects move through it. Even relativistically, the universe expands geodesically. The intrinsic link between them shows the connection between space-time and inertia. The energy in space-time changes its acceleration according to inertia. Let's see virtual inertia from space-time as the main frame: The acceleration shape of space-time flux is Gravity manifests itself by the Inertia: $f = m \cdot g$.

The acceleration of space-time flow radially outward from Earth is a 'virtual inertia,' which is 9.8 m/sec2 at the surface of the Earth and is the same force that pushes you upward on the Earth's surface. It is caused by the apparent broadening of matter, a relativistic equivalent of space-time flow.

The effect we have called the nozzle produces a jet of accelerated space-time flow that is a virtual inertia, which, when it encounters matter, makes a real inertia on its mass.

Pushing space-time outside of Earth (Earth does not expand, looks like it) is this space-time flux that makes Earth coordinates move upward to make the falling into Earth. As we saw in the representation of space-time, according to Minkowski, its component is $(-t \cdot C)$. B. Thalman DOI: 10.4236/ojpp.2024.141016 208 Open Journal of Philosophy The inertia we feel due to the accelerated space-time flow causes our weight. This virtual inertia (no mass involved) does not affect the Cartesian spatial dimensions. Then, its shape is accelerated so that when it passes through objects with mass, it causes a force (what we call inertia). $f = m \cdot a$

The present moment (Real-time) is created continuously at the start of a new time.

The acceleration we experience on the surface of the Earth is a result of the inertia built into the space-time flow. This inertia causes the associated velocity ($\mathrm{d}s/\mathrm{d}t$) to be immersed in the appearance of time. The time base of the acceleration ($\mathrm{d}^2 s/\mathrm{d}t^2$) is the same as that of the present, marking the beginning of time in the primary expansion.

The derivative of the velocity with time is the acceleration ($a = \mathrm{d}v/\mathrm{d}t$). The only thing within our reach is the inertia that produces the phenomenon from the space-time behavior in its expansion, which is internal in matter, the nozzle effect that incorporates the shape that represents the virtual inertia that becomes real when encountering mass, the process that deforms the space-time, turning it into a flow.

Like light, space-time has no mass, and its movement has unique characteristics. Space-time flux moves at the speed of light through time; the speed of light is the same for all observers, regardless of their relative motion; while the acceleration of space-time is determined, its velocity is not established.

In essence, space-time, like light, lacks mass and exhibits distinct movement patterns. While its acceleration can be measured, its velocity remains undefined.

2.7. Free-Fall

Unlike classical mechanics, Einstein's first law reframed our understanding of gravity. It no longer viewed gravity as a force. This means that objects in free fall are genuinely free—as traditionally understood, no force acts upon them. It's a common misconception that schools and universities perpetuate, teaching that the weight and velocity increase in a fall is due to a gravitational force. While the calculations are accurate, the interpretation of the phenomenon is incorrect.

This section on free-fall delves into the concept within the framework of Einstein's theory of relativity (Einstein, 2001).

However, because our gravity theory is an extension of Einstein's relativistic view, applying Einstein's theory of relativity to the following examples of throwing a ball upward adds depth to the discussion, such as the Earth's apparent widening due to space-time expansion.

Let's delve into the basic concepts of the theory of relativity in low-velocity motions far from the speed of light (known as C). To illustrate this, we'll use throwing a ball upward (see **Figure 4**). First, we'll analyze it using classical physics principles. Then, we'll apply the general theory of relativity and our extension of Einstein's relativistic view. The ball's motion can be understood as two uniformly accelerated movements: upward and downward. During the vertical launch, the ball will reach its maximum height point with zero velocity.

Figure 4. Vertical throwing of a ball.

The ball in all its path is momentarily suspended, just before starting the descent, permanently in free fall. The ball launched upward to a certain height requires a specific initial velocity also determined. It will leave behind the initial launch point in its free fall and continue its downward trajectory. When the object passes through the launch (**Figure 1**) point, its velocity will take the same value as when the ball was launched but in the opposite direction. In this motion, the acceleration, consistently downward, is the gravitational acceleration approximately (9.8 m/s^2).

According to our theory, the apparent broadening of the Earth is attributed to the apparent acceleration of the Earth's surface towards the ball. This acceleration is posited to be caused by a flow of space-time emerging from the Earth. In this framework, gravity is conceptualized as a consequence of this space-time flow, which influences the motion of objects by causing the Earth's surface to accelerate towards them seemingly. It's important to note that our theory presents an alternative extended from Einstein's theories of relativity.

Our theory is based on Einstein's principles. Of course, it would need to undergo rigorous testing and evaluation to assess its validity and explanatory power compared to existing models.

The ball follows a trajectory previously determined according to its initial kinetic energy and by space-time accelerated flux.

Before throwing the ball, you can feel the acceleration weight pushing you and the ball up. You give the ball an initial upward velocity, added to the acceleration by the Earth's apparent widening caused by the space-time flow going outward from the Earth's surface.

Space-time moves upward faster and faster, and as you stand on the surface of the Earth, it pushes you upward.

When the ball is in the air, it is at rest and only observes what is happening around it: There is only one uniformly accelerated motion, not two separate motions.

While the ball is in free fall, the Earth's surface approaches accelerated due to its apparent displacement. However, it is the space-time fluid that is coming up. The ball sees the ground approaching.

The initial velocity the Earth's push provides is undefined and adjusts over time. In our example, it becomes cero = 0 when the ball is lifted. The acceleration is well-defined. Minkowski's dimensional component- $(t \cdot C)$ well represents this.

Space-time is an incompressible fluid that constantly expands outside and inside matter. It achieves this by pushing its space-time through atoms using its dark energy until it reaches the surface of the matter. This creates a "nozzle effect" that accelerates until the flow escapes the matter. As a result, an accelerated space-time flow is experienced on Earth's surface at a rate of 9.8 m/s^2.

The acceleration represents the force that a mass object will experience according to Newton's second law: $F = ma$.

In the previous upward ball example, there are only vertical vector components, and the space-time displacement always refers to accelerated expansion. Let us now consider the ballistic case, where there is a transverse component to the movement of space-time that is vertical (**Figure 5**).

As the ball descends in free fall, it maintains a constant horizontal velocity, tracing a straight path. Its vertical motion is the Earth moving seemingly upward. However, it is not the surface of the Earth that moves beneath it, but the space-time flow itself. From the ball's perspective, the ground approaches as the space-time flow, with its coordinates, converges, accelerating toward it.

In relativity, the curvature of space-time follows a parabolic shape, which is also a geodesic path.

The ball's translational velocity affects the curvature of space-time. The same happens to light as a wave with propagation energy. The elements follow a geodesic trajectory. The elements always believe that their motion is in a straight line.

In the expanding curved trajectories, these bodies follow lines that do not affect their stable inertia (Inside a fluid medium with different accelerations). In all astronomical objects, the effect of the broadening is because of the space-time flux coming out of matter. It is an apparent expansion of matter.

In free fall, objects experience coordinate acceleration due to the curvature of space-time but do not possess intrinsic acceleration. Therefore, an object in free fall is at rest, as gravitation does not cause it to accelerate, resulting in zero acceleration. The object will undergo the coordinate's acceleration but no acceleration of its own and thus no '*g*' force.

There is no force of attraction; the object in free fall does not accelerate; it is the apparent approach of the earth or its coordinates approaching it at an increasing rate. The space-time flow coming out from Earth.

When you throw a stone, it falls to the ground because the Earth appears to be widening, accelerating the surface towards the rock. However, Earth is not expanding; space-time flows outwards from the Earth in a radially accelerated form.

If you throw the stone with more force, it will fall farther. Adding a mechanism to aid in throwing will result in an even greater distance (**Figure 6**).

Figure 5. The parabolic curve is due to the space-time flux.

Figure 6. The orbit is a form of parabolic fall.

When the experiment is repeated, the stone will fall farther and farther with increasing momentum until its fall exceeds the curvature of the Earth's sphere.

Thus, the stone will always fall, but it will not touch the surface of the Earth since it will not find it; therefore, it will remain revolving around the Earth. One object orbiting another falls freely in perpetuity (Without considering resistance). This is a satellite.

The stone will always fall towards the Earth. However, it can miss the surface and start orbiting around the Earth with enough velocity. Such an object is known as a satellite.

Foundation: Gravitational, Not Attraction: Newton's law of universal gravitation states that objects with mass attract each other. It's what it seems and works, but it's different; we delve deeper into Einstein's insights Wheeler (1973).

The phenomenon isn't attraction but involves the creation of space-time flow, akin to a nozzle effect, accelerating radially around massive objects like the Sun. In addition, the sun's kinetic energy trajectory moves the space-time fluid around it, causing the planets to revolve around it.

Orbital Dynamics: Viewing space-time around the Sun as a dynamic fluid, the absence of viscosity and matter eliminates the traditional notion of "pushing" against a substance. Instead, stellar objects displace the space-time as they move through it. This displacement is driven by the Sun's kinetic energy and the radial space-time flux, illustrating how celestial bodies orbit around the Sun, creating the curvature of space-time stable geodesic orbits for planets.

Elliptical Trajectories are Geodesics: The curvature of space-time dictates the paths of celestial bodies. The complex interaction between the accelerated space-time fluid coming out from the massive objects and their translation motion.

Stable Motion: Celestial bodies maintain stability within the space-time fabric when in a free-fall state. This stability is achieved through a delicate equilibrium between their inherent inertia and the gravitational space-time flux exerted upon them. As a result, their velocity, both in magnitude and direction, experiences negligible change.

Resultant Curvature: The accelerated space-time flow propelled from all massive objects involved results in the overall dynamic curvature of space-time.

Expansion of the Universe: The expansion of the universe also contributes to the overall dynamics of celestial objects; this orbital mechanics structure provides a phenomenon logical explanation.

2.8. Orbital Gravity

Orbital gravity is a geometrical characteristic of space-time. When two objects are involved, as in the case of the earth and the moon, the tangential velocity and its differential radial components must be considered to add them to the approach velocities of both massive objects and thus establish their geodesic. All these geodesic trajectories can be analyzed as hydrodynamics because space-time behavior is like fluid within the space-time flux.

In this and all the cases, the curvature of space-time is like a fluid that moves for two reasons: by the space-time flux coming out through surfaces of the massive bodies and by the kinetic energy of the mass by their movement, the curvature is the resultant vector. Field equations are part of the component of the Einstein stress-energy tensor (Stephani et al., 2003).

In our subsequent publication, we will provide a detailed analysis of orbital gravity. This will include a deeper explanation of the elliptical orbit paths, which are geodesics.

Geodesic trajectories or paths are curves representing the shortest distance (arc) between two points. Every orbit is a geodesic path. The distribution of space-time flux and the object's velocity, concerning that distribution of space-time flux, make the geodesic shape of any object move along. Massive objects travel along a straight line in curved space-time.

In "free fall," objects in orbit experience no acceleration, a state known as "zero gravity" ("zero-g"), which produces a sensation of weightlessness.

Any object falling or orbiting the Earth, such as artificial satellites or objects dropped, which in practical physics does not include the difference in mass because it is negligible compared to that of the Earth. This is the case of the property observed by Galileo, which is that objects of different masses fall with the same velocity, ignoring air resistance (Adler & Coulter, 1978).

3. Conclusion

The space-time flow out of massive bodies integrates the classical, relativistic, and quantum points of view.

As we now understand, weight is not a force of attraction but a push, given the space-time flow. Integrating various aspects we discussed, like the expansion of the universe and the relationship with space-time, can revolutionize our understanding of gravity and the cosmos, opening up new avenues for exploration and discovery.

Einstein's theory of relativity offers a profound and inspiring perspective on the nature of gravity.

Gravity is often simplified by saying it is the curvature of space-time. However, this explanation only captures part of its meaning. One must consider the dynamic interactions between matter and space-time flow, both inside and outside matter, and their interaction with objects that are not just massive.

The concept of gravitational equipotential surfaces, characterized by concentric spheres of uniform acceleration around massive objects, provides a visual representation of the curvature of space-time. This curvature, in conjunction with the translational kinetic energy of celestial bodies, gives rise to the observed elliptical trajectories known as geodesics.

As it happens in the whole space-time, also in the interior of atoms, space-time expands, giving rise to a flow in the form of a nozzle. This space-time flow is an accelerated jet emanating from the electrons-cloud space-time of atoms.

Our conception of gravity was born from Einstein's principle that weight and inertia are essentially the same. In summary, weight results from inertia pushing upward rather than being attributed to the pull of gravity.

Einstein's realization that gravity and acceleration are fundamentally indistinguishable underscores the profound unity in the foundation of the cosmos. The underlying principle remains the same whether one experiences gravitational pull or acceleration.

In our proposal to generalize the Minkowski metric to accommodate astronomical motions within flat space-time, we aim to reconcile the apparent curvature of elliptical trajectories with the intrinsically straight trajectories delineated by geodesic motion. This may provide a new perspective for understanding the universe by shedding new light on gravitational physics.

At the heart of this understanding lies the recognition that within atoms, space-time expands, generating a flow akin to a nozzle effect, which manifests as an accelerated jet emanating from matter's atoms. This accelerated flow, characterized by its indeterminate velocity yet consistent acceleration, shapes the gravitational field surrounding massive objects.

Exploring novel concepts and theories is crucial for scientific advancement, driving us toward new frontiers of knowledge and understanding. As we delve into uncharted territories, the idea of gravitational shock waves holds promise, potentially guiding the endeavors of institutions like the LIGO observatory in unraveling the mysteries of the cosmos. In this spirit of discovery, I urge continued research and exploration into the dynamics of gravity and space-time. Let us harness the collective power of scientific inquiry and collaboration to deepen our comprehension of the fundamental forces shaping the universe.

Accepting the analogy of space-time behaving akin to a liquid devoid of viscosity could offer insights into its peculiar behaviors, echoing Einstein's characterization of quantum entanglement as 'spooky action at a distance.' This comparison suggests that space-time may possess dynamic properties analogous to those observed in fluids, potentially shedding light on phenomena like entanglement, where particles instantaneously influence each other's states regardless of distance. Embracing this perspective may lead to a deeper understanding of the underlying mechanics of quantum phenomena and provide avenues for reconciling quantum mechanics with Einstein's theory of general relativity.

This theory challenges traditional notions of gravity, suggesting that it is not solely a force exerted by massive objects but a manifestation of the intricate interplay between space-time curvature and dynamic flows. Our proposal presents an alternative lens to view gravitational phenomena, inviting further exploration and investigation.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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