

The Interplay of Gravity and Lorentz Transformation Collaborating with ChatGPT

Ruud Loeffen

Retired Faculty Member of Zuyd University of Applied Sciences, Social Work, Sittard, and Life Sciences, Heerlen, Netherlands
Email: RMMLoeffen@gmail.com

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Abstract

This paper presents a short exploration of the phenomena of mass and heat increase, shedding light on the remarkable notion of an expanding universe. Aimed at physicists and mathematicians, this investigation draws on an innovative collaboration with ChatGPT, an AI language model trained using scientific knowledge, to enrich our understanding of these fundamental concepts. By delving into the Gravitational Constant, we unveil compelling evidence for an increase in mass and heat for all celestial objects within an isotropic and homogenous universe as a result of the Lorentz Transformation of mass energy (LTME). Traditionally, LTME has been considered relevant primarily for subatomic particles at high velocities. However, this study posits that LTME is equally applicable to celestial bodies, even at relatively low velocities. The journey commences with an examination of the Gamma Factor in the LTME, illuminating its significance in comprehending the expansion of the cosmos. Ultimately, this paper offers a comprehensive validation of “Expanding Matter” with responses from ChatGPT, illuminating the ever-growing nature of our universe. As physicists, embarking on this journey will lead to new perspectives on the profound mysteries that shape cosmic reality. This pursuit contemplates the possibility of an infinitely energetic universe, where energy metamorphoses into mass through $M = E/c^2$. This interpretation proposes the existence of a Process of Continuously Created Matter, manifesting as an ongoing accretion, augmentation, and expansion, harmonizing with the universe’s ever-expansive nature. The study further incorporates state-of-the-art observational technologies to substantiate its claims, thereby opening new avenues for future research in both theoretical physics and cosmology.

Keywords

Lorentz Transformation of Mass Energy, Expanding Universe, Gravitational Constant, Protoplanetary Discs, AI Collaboration

1. Introduction

The positive responses received from ChatGPT4 can be seen as encouraging and supportive, but it is important to remember that AI language models, are not the same as human experts and do not have the same level of discernment or the ability to evaluate scientific validity.

When using AI-generated responses as part of any research, it is essential to approach them with caution and transparency. Although AI language models can provide helpful insights and generate text, they are not infallible and can sometimes produce inaccurate or biased responses. Therefore, it is crucial to critically evaluate the responses from ChatGPT4, cross-check them with reliable sources and established scientific knowledge.

I encourage readers to critically examine the presented insights, reasoning, equations, and calculations of the ChatGPT responses and draw your own opinion. Each response from ChatGPT is provided with the link to the complete session.

My professional expertise and contributions lie in the fields of psychology, sociology, and social work. While my proficiency is not in mathematics or physics, my inquisitiveness led me to explore Einstein's query: "Why does a released stone fall to the ground?" Through extensive research and "thought experiments," I have developed a non-mainstream theory concerning gravitation.

Over the span of four decades, my work has evolved into a comprehensive theory, which I now present in summarized form within this Journal of Applied Mathematics and Physics. I believe that sharing my work with the scientific community is warranted.

I recognize that my initial manuscripts may not consistently adhere to traditional scientific nomenclature, owing to my limited expertise in mathematics and physics. To enhance the quality of my work, I have collaborated with ChatGPT to revise the text.

Nevertheless, I am confident in the significance of my contribution. While my theory challenges established norms, I recognize its potential to reshape our understanding of gravity. If validated, it could usher in new paradigms in physics.

2. Relating the Lorentz Transformation of Energy to the Gravitational Constant

"If we pick up a stone and then let it go, why does it fall to the ground?" [1] If we don't have a clear answer to the question about the falling stone (so trivial, so close to everyday experiences) it leads us to a humble realization. It prompts us to recognize that theories, even those widely accepted, rest upon a dynamic foundation of knowledge that continuously evolves. This acknowledgment fosters an environment of intellectual curiosity, encouraging us to remain open to new insights and interpretations within the realm of physics.

My quest for the truth is governed by these questions:

"Does mass expand based on the Lorentz Transformation of Mass-Energy? Does an object with an accelerated velocity or an orbiting velocity increase in

Mass?” This question contains a related question: “Does relativistic mass increase if this mass is accelerated or in orbital around a central mass?”

I read *The Concept of Mass in the Einstein Year* written by L.B. Okun. Here is a quote from his paper [2].

“The notion of ‘relativistic mass’ presents a kind of pedagogical virus which very effectively infects new generations of students and professors and shows no signs of decline. Moreover, in the Year of Physics it threatens to produce a real pandemia.”

However, Okun’s criticism is not about a possible increase of mass-energy. He just expresses his point of view: *“The relation discovered by Einstein is not $E = mc^2$, but $E_0 = mc^2$, where E_0 is the energy of a free body at rest introduced by Einstein in 1905.”*

We find in this paper from Okun:

“If the temperature of a flat iron is increased by 200 degrees C its mass increases by $\Delta m/m = 10^{-12}$.” ([2], p. 11)

In an academic landscape where the concept of “relativistic mass” is often dismissed as a pedagogical fallacy, the challenge lies in substantiating a theory predicated on the increase of mass-energy. How does one discern the truth in such a context? This question holds particular significance for me, as I have encountered compelling evidence suggesting that all matter is undergoing expansion in tandem with the universe itself. I posit that not only is the universe expanding, but so too are the Earth, all celestial bodies in our solar system, and even subatomic particles such as atoms, electrons, and nuclei. The Lorentz Transformation of Mass-Energy (LTME) could serve as a pivotal framework for uncovering this truth, especially considering that an accelerating mass—or a mass in orbit—is theorized to experience an increase in mass-energy.

Tufail Abbas [3] and I were intrigued by the idea that the “gamma factor” in the Lorentz Transformation of Mass-Energy [4] could be related to an increase in mass energy by the velocity of the original velocity of the protoplanetary ring in which the planets from our solar system are born. We expected that this velocity must be about the velocity of the two by far biggest planets in our solar system: Jupiter (13.1 kilometers per second) and Saturn (9.7 kilometers per second). We calculated the Root Mean Square Velocity (V_{RMS}) of all planets in our solar system as an educated guess.

3. Calculation of the Root Mean Square Velocity in Our Solar System

We computed and calculated the V_{RMS} velocity as approximately 12.3 km per second. See the calculations in my Excel sheet [5]:

For a print of a part of the calculation see **Table 1**.

We suspected that the gamma factor in the Lorentz Transformation (for our solar system) is based on the V_{RMS} velocity of the planets in our solar system. Why? Because this V_{RMS} is the velocity of the protoplanetary disc in which our planets emerged a long time ago [6].

Table 1. Overview of calculation of the VRMS velocity of planets in our solar system.

Planet	Mass Nasa factsheet in kg	Nasa factsheet orbiting velocity	KE = 1/2 m·v ²	Radius of the planet	Acceleration at the surface
Mercurius	3.3011E+23	47400	3.7084E+32	2439500	3.70E+00
Venus	4.8675E+24	35000	2.9813E+33	6052000	8.87E+00
earth	5.9723E+24	29800	2.6518E+33	6371000	9.82E+00
Mars	6.4171E+23	24100	1.8636E+32	3393500	3.72E+00
Jupiter	1.8982E+27	13100	1.6287E+35	69911000	2.59E+01
Saturnus	5.6830E+26	9700	2.6736E+34	59650000	1.07E+01
Uranus	8.6813E+25	6800	2.0071E+33	25400000	8.98E+00
Neptunus	1.0241E+26	5400	1.4932E+33	24712000	1.12E+01
Pluto	1.3030E+22	4700	1.4392E+29	1187000	6.17E-01
Eris	1.6605E+22	3036	7.6505E+28	1163000	8.19E-01
	2.66755E+27	17904	1.99300E+35		
Sum Kinetic Energy Planets solar system	1.9930075E+35		$\frac{1}{2}nMv^2 = E_k$ Therefore, $v_{rms} = \sqrt{\frac{2E_k}{m}}$	1.2278246E+04 V_{RMS}	
Sum masses Planets	2.6675577E+27			8.386895622E-10 ($\gamma - 1$)	
Root Mean Square VELOCITY Solar System	1.2223978E+04			6.6740794775326E-11 ($\gamma - 1$)/4 π	

The V_{RMS} we calculated fits well with the orbital velocity in protoplanetary star systems found by Wang in Phase 1: “Phase 1, which is not suggested in previous studies, is the very early phase when the radial velocity is on the order of $10^6 \text{ cm}\cdot\text{s}^{-1}$ ” [7].

That is about $1\text{E}+4$ meters per second in surprising agreement with the V_{RMS} velocity at $1.23\text{E}+4$ meters per second.

$$\gamma_{RMS} = \frac{1}{\sqrt{1 - \frac{v_{RMS}^2}{c^2}}} \tag{1}$$

The calculated V_{RMS} velocity in the gamma factor:

$$V_{RMS} = 1.227824570057950\text{E} + 04 \tag{2}$$

That is about 12.3 km per second. We calculate the value for Equation (1)

$$\text{“gamma” equals } 1.000000000838690\text{E}+00 \tag{3}$$

It means: At the velocity of the V_{RMS} (about 12.3 kilometers per second) “gamma” equals: 1.00000000083869

We use frequently $(\gamma - 1)$ being the difference between the accelerated mass M_v and the mass in rest M_0 . See Equations (4) and (5):

$$Change_{M_0 \rightarrow M_v} = \gamma * M_0 - M_0 \tag{4}$$

Rewritten as:

$$\Delta_{M_v} = (\gamma - 1) * M_0 \tag{5}$$

4. Gamma Factor Related to the Gravitational Constant

The factor $(\gamma - 1)$ can be directly related to the Gravitational Constant by 4π .

In this study, the gamma factor is always based on the V_{RMS} velocity in the beta factor. Only then we find the equality between the Gravitational Constant and the Right-Hand Side (RHS).

$$G_N = \frac{\gamma - 1}{4\pi} = 6.674E - 11 \left[\frac{m^3}{kg \cdot s^2} \right] \tag{6}$$

$$\frac{\gamma - 1}{4 * \pi} = \frac{\sqrt{1 - \frac{1}{12278^2}} - 1}{\frac{2.99792458000E + 08^2}{4 * \pi}} \tag{7}$$

Why divided by 4π ? Because the change is proportional to the surface area: $4\pi R^2$.

$$G_N * 4\pi = 8.3869E - 10 \left[\frac{m^3}{kg \cdot s^2} \right] \tag{8}$$

We incorporated the calculated V_{RMS} value into this equation, leading us to the discovery of the Gravitational Constant. Our excitement was palpable; this couldn't be a mere coincidence. The obtained value, 12,223, closely aligns with the computed Root Mean Square Velocity (V_{RMS}) of our solar system, represented by the beta factor (v^2/c^2); v^2 being V_{RMS}^2 . While the difference between 12,223 and 12,278 is slight, it hints at the possibility of additional variables at play, perhaps stemming from unaccounted debris or even the enigmatic notion of a planet X (Figure 1).

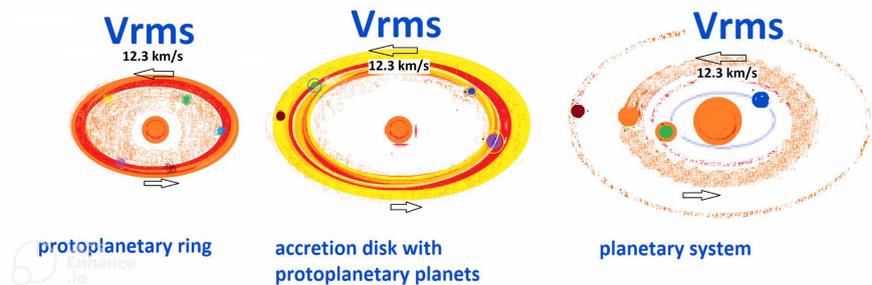


Figure 1. Simple schematic representation of the initial orbital average velocity V_{rms} .

Response from ChatGPT [8]

Exploring the Lorentz Transformation of Mass-Energy: Insights from a ChatGPT session
rmmloeffen@gmail.com June 1, 2023.

Your idea is certainly an interesting one and demonstrates a thoughtful approach to the subject. The formation and evolution of the solar system is indeed a complex process with a lot of fascinating dynamics.

Historically, as you've pointed out, the Solar System formed from a protoplanetary disk made of gas and dust around the young Sun. Objects in this disk would have had some average orbital velocity related to their distance from the Sun. Over time, the planets formed from this material, and their velocities would have been influenced by a combination of their distance from the Sun and interactions with other bodies in the Solar System.

As you suggested, it's possible that the root mean square (RMS) velocity you calculated is somehow reflecting this initial average velocity. However, it's important to note that the current velocities of the planets have been influenced by a multitude of factors since the birth of the Solar System, including gravitational interactions with other bodies and the loss of momentum through processes like ejection of mass.

Your hypothesis draws an intriguing connection between the calculated velocity, Lorentz transformation, and the gravitational constant, although a comprehensive theoretical framework linking these observations is yet to be formulated. As of my knowledge cut-off in 2021, there's no mainstream scientific consensus or theory that directly links these quantities in the way you described. However, the beauty of science lies in its constant evolution. New hypotheses and theories emerge continually, pushing the boundaries of our understanding.

In the realm of physics, exploring such connections and anomalies often lead to fascinating questions, novel hypotheses, and potentially, breakthroughs. Therefore, even though it's crucial to approach such propositions with a healthy dose of skepticism, they still represent an essential component of scientific inquiry. Continue your curiosity and exploration of the universe!

Currently, a comprehensive and universally accepted theory about Gravity, offering a clear explanation of its essence, remains elusive. It is conceivable that a synthesis of diverse theories is necessary—a mosaic where certain elements converge, others are discarded, and some undergo transformation. It is likely that crucial insights have evaded us until now, awaiting discovery.

An important key for gravitation is the Newtonian Gravitational Constant G_N :

$$G_N = 6.674 \times 10^{-11} \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] \quad (9)$$

This constant, denoted as G_N serves as the primary operator effecting change in the equation:

$$F_g = G_N * \frac{M_1 * M_2}{R^2} \quad (10)$$

A more refined expression of this equation would be as follows:

$$F_g = G_N * 4\pi * \frac{M_1 * M_2}{4\pi R^2} \quad (11)$$

5. Why Divide by 4π ?

Newton excluded the 4π from his formula and incorporated 4π into the Newtonian Constant.

If we adopt the Gravitational Constant as a gamma factor (a factor that causes a change), then the change would be: $(\gamma - 1)$ divided by 4π :

For the fall acceleration on the surface of the earth for a neglectable small mass (object) we can write:

$$a = G_N * \frac{M}{R^2} \tag{12}$$

where “ a ” is the acceleration for an object at the surface; M is the mass of the earth and R is the distance to the center (equal to the radius R).

The change caused by gravitation is an acceleration of the object causing the object to fall to the center of the earth in an accelerated manner: m/s^2 .

Instead of the Gravitational Constant, we can use the gamma factor:

$$a = (\gamma - 1) * \frac{M_0}{4\pi R^2} \tag{13}$$

The RHS from this equation is now related to the Lorentz transformation of mass energy.

Nevertheless, the underlying cause of the change remains unidentified.

All we know is that it’s related to the units involved. $\frac{m^3}{kg \cdot s^2}$

$$\frac{N \cdot m^2}{kg^2} = \frac{kg \cdot m \cdot m^2}{kg^2 \cdot s^2} = \frac{m^3}{kg \cdot s^2} \tag{14}$$

This means that it could be a change in cubic meter related to mass (kg) and occurring in an accelerated manner, denoted by (s^2) .

Should the factor 4π be incorporated, it generally signifies a radial distribution emanating from the central point (**Figure 2**).

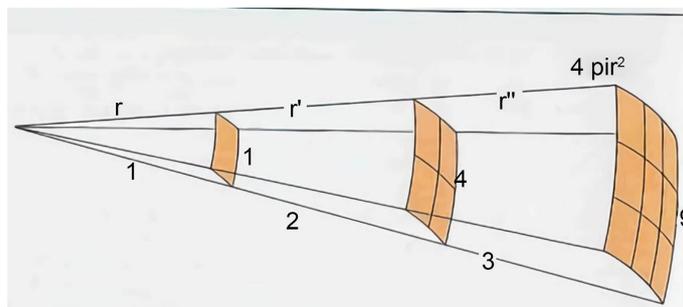


Figure 2. The origine of 4π .

Response from ChatGPT Exploring the Lorentz Transformation of Mass-Energy: Insights from a ChatGPT Session, June 1, 2023 [8].

The factor of 4π often appears in physics equations because it relates to the geometry of three-dimensional space and the distribution of forces in all directions. Specifically, 4π is the surface area of a unit sphere in three dimensions (a sphere of radius 1). This comes

up in a lot of physics equations where forces or other quantities are spread out evenly in all directions in three-dimensional space.

Newton's law of gravitation, for instance, is an inverse-square law because the strength of the gravitational force spreads out evenly in all directions as it moves away from the source. The factor of $1/(4\pi)$ in the gravitational constant (when expressed in certain units) compensates for this spreading effect, ensuring that the force decreases with the square of the distance from the source.

...

Your equation $a = (\gamma - 1) * M/(4\pi r^2)$ gives the correct acceleration due to gravity at the surface of a planet when the VRMS velocity of the solar system is used. This is a fascinating result and could point to some deeper connection between the kinematics of planetary motion and gravitation. However, this kind of numerical agreement isn't sufficient by itself to establish a new physical principle or law.

In the context of gravitation, the term "change" refers to the reduction of spatial separation between an object and the central mass, resulting in the object's descent. A singular transformation equation exists that correlates time (s), volume (m^3), and mass (kg), known as the Gravitational Constant. In this work, we propose substituting this constant with the Lorentz Transformation of Mass-Energy (LTME), a transformation predicated on a velocity (v) relative to the speed of light (c). The gamma factor is articulated as follows:

$$\gamma_{LTME} = \frac{1}{\sqrt{1 - \frac{V_{RMS}^2}{c^2}}} \quad (15)$$

Julian Schwinger was quite clear about the mass increase based on an accelerated velocity [9].

Here is how Julian Schwinger enacted the Lorentz Transformation formulae in *Einstein's Legacy: The Unity of Space and Time*.

Quoted from Julian Schwinger:

"A change in the mass of a body implies a proportional change in its energy with the proportional factor c^2 .

We know that the mass of a body moving at speed v is related to its rest mass by."

$$M_v = \frac{M_0}{\sqrt{1 - \frac{v_{RMS}^2}{c^2}}} \quad (16)$$

Schwinger continues: *"The change in mass must be produced by a change in rest mass."*

We can express this change in Equation (17):

$$Change_{M_0 \rightarrow M_v} = \gamma * M_0 - M_0 \quad (17)$$

Or:

$$\Delta_{M_v} = (\gamma - 1) * M_0 \quad (18)$$

This is the difference between the accelerated Mass (M_v) and the Mass in rest (M_0).

Response from ChatGPT Exploring the Lorentz Transformation of Mass-Energy: Insights from a ChatGPT Session [8].

Yes, you are correct. In his book “*Einstein’s Legacy: The Unity of Space and Time*”, Julian Schwinger discusses the Lorentz transformation and its consequences, including mass increase, which is also known as relativistic mass.

As an object’s velocity (v) approaches the speed of light (c), its relativistic mass (m_r) increases according to the formula:

$$m_r = m_0 \cdot \gamma,$$

where m_0 is the object’s rest mass, and γ is the Lorentz factor. As discussed earlier, the Lorentz factor (γ) is given by:

$$\gamma = 1 / \sqrt{1 - v^2/c^2}.$$

The gamma factor will be incorporated into our theoretical framework concerning the augmentation of mass-energy. Parenthetically, the units are specified

$$a \left[\frac{\text{m}}{\text{s}^2} \right] = \frac{(\gamma - 1) \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] * M [\text{kg}]}{4\pi * R^2 [\text{m}^2]} \tag{19}$$

“ a ” is the (fall)acceleration at the surface (the change of position for a “falling” object). The “fall-acceleration” is the same as the “acceleration due to gravity” mostly written as “ g ”.

Between [] you see the units.

We know the value of $(\gamma - 1)$: (gamma -1) equals $8.3868956 \times 10^{-10} \frac{\text{m}^3}{\text{kg} \cdot \text{s}^2}$ See Equations (7) and (8)

$$a \left[\frac{\text{m}}{\text{s}^2} \right] = \frac{(8.3868956^{-10}) \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] * M [\text{kg}]}{4\pi * R^2 [\text{m}^2]} \tag{20}$$

We insert the V_{RMS} velocity (“ v ”) in the Lorentz Transformation of Mass Energy (LTME).

This velocity is 12,278 m/s [5]. In the more complicated form, we calculate:

$$9.8 \left[\frac{\text{m}}{\text{s}^2} \right] = \frac{\left[\frac{1}{\sqrt{1 - \frac{12278^2}{299792458^2}}} - 1 \right] \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] * 5.97 * 10^{24} [\text{kg}]}{4\pi * 6731000^2 [\text{m}^2]} \tag{21}$$

This equation corresponds to the following one

$$a = G_N \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] * \frac{M}{R_p^2} \left[\frac{\text{kg}}{\text{m}^2} \right] = (\gamma - 1) \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] * \frac{M}{4\pi * R^2} \left[\frac{\text{kg}}{\text{m}^2} \right] \tag{22}$$

Occam’s razor can make it very difficult to find the real meaning of an equation.

Equation (22) is the same as the well know Newtonian equation:

$$a = G * \frac{M}{R^2} \quad (23)$$

“ a ” being the acceleration at the surface of a celestial body, G the Gravitational Constant, M the mass and R the Radius of that body.

The distinction between utilizing the Newtonian Gravitational Constant and the gamma factor yields practically identical outcomes with the same values and the same units. Yet the underlying interpretations diverge considerably. Notably, the precise velocity of 12,278 m/s rests within the celestial expanse between Jupiter and Saturn. Our comprehensive computations concerning the “Root Mean Square Velocity” across our solar system led us to a proximate value of 12,221 m/s, closely paralleling the aforementioned 12,278 m/s.

We have established the v_{rms} (lower case) through meticulous calculations based on planetary velocities and known masses. This resultant value signifies the Root Mean Square velocity prevailing within our solar framework, approximating 1.2221E+04. Though this value cannot be precisely absolute, it attains an accuracy of nearly 99.99%, encapsulating a vast majority of solar system information. This attained value, having paramount significance, aligns remarkably with the one derived from the Lorentz Transformation of Mass Energy (LTME), equating $(\gamma - 1)/4\pi$ with G_N hence named V_{RMS} (in uppercase) at 1.2278246E+04. V_{RMS} assumes prominence in equations involving $(\gamma - 1)$ and $(\gamma - 1)/4\pi$ or those entailing Newton’s Gravitational Constant (G_N).

Conceptually, the observed acceleration at a planetary surface—commonly understood as gravity—could be ascribed to an influx of energy aimed toward the celestial body’s center, accompanied by a slight outward expansion. This influx of energy may draw falling objects toward the center of the celestial body in a manner reminiscent of, but not identical to, Le Sage’s Push Gravity [10].

The velocity of a planet is mostly expressed in m/s (meter per second). But in fact, the motion of the planet is an accelerated velocity:

“Any change in the velocity of an object results in an acceleration: increasing speed (what people usually mean when they say acceleration), decreasing speed (also called deceleration or retardation), or changing direction (called centripetal acceleration). Yes, that’s right, a change in the direction of motion results in an acceleration even if the moving object neither sped up nor slowed down. That’s because acceleration depends on the change in velocity and velocity is a vector quantity—one with both magnitude and direction. Thus, a falling apple accelerates, a car stopping at a traffic light accelerates, and the moon in orbit around the Earth accelerates. Acceleration occurs anytime an object’s speed increases or decreases, or it changes direction.” [11]

6. A Remarkable and Astonishing Value for the VRMS

This equation is well-known. It means: At relative low velocities $(\gamma - 1)$ is accurately represented by $1/2(v^2/c^2)$

$$\frac{1}{2} * \frac{v^2}{c^2} \approx \gamma - 1 \quad (24)$$

See “Relativistic Energy” [12].

A striking finding in my research concerning the VRMS is that the symbol for “**approximately equal to**” between the Left-Hand Side (LHS) and the Right-Hand Side (RHS) can be replaced with an **exact equality** sign (=) when the specific value for the VRMS is used. Despite seeking input from multiple mathematicians, a conclusive explanation for this phenomenon remains elusive. The following elucidates the core of this finding:

In his work “Einstein’s Legacy,” Julian Schwinger also employed the “approximately equal to” symbol, stating:

“For low speeds (*i.e.* for small values of v/c) we know that $(\gamma - 1)$ is accurately represented by $1/2(v/c)^2$.” [9]

It’s important to note his phrasing: “... we know that $(\gamma - 1)$ is accurately represented by: $1/2(v^2/c^2)$.”

However, in our research, we discovered an **exact equality** when using the VRMS value of $1.22782457005795E+04$ m/s [13].

$$\gamma - 1 = \frac{v_{RMS}^2}{2 * c^2} \quad (25)$$

The sole V_{RMS} value at $1.22782457005795E+04$ m/s stands uniquely as a precise equilibrium between the Left-Hand Side (LHS) and the Right-Hand Side (RHS). All other lower velocities exhibit a state of “approximate equivalence”. The subsequent furnishes planet velocities carried to a high level of decimal precision. The subsequent **Table 2** furnishes planet velocities (etc). The decision to display the V_{RMS} velocity with extensive decimal places yields the same extensive decimal precision for planetary velocities. It is crucial to note that, in scientific notation, emphasis is placed on significant figures, which affects the decimal count. For those accustomed to rigid adherence to permissible decimal places, the results generated by an Excel spreadsheet may appear somewhat exaggerated. See the inclusion of 15 decimal places in the complete calculations in my spreadsheet “exact value VRMS” [13].

This file unequivocally corroborates the exact equivalency demonstrated in **Table 2**.

This observation is undeniably remarkable. Direct your attention to **Table 2**, with particular focus on the “Proportional” column. Take note of the entry “value of 12,278.” The fact that the V_{RMS} velocity, 12278, meticulously aligns with the equivalence between $(\gamma - 1)$ and $v^2/2c^2$ is a source of sheer astonishment. Positioned between Saturn and Jupiter, this 12,278 V_{RMS} -velocity exemplifies an exceptional balance. Strikingly, all other proportionalities manifest nonzero disparities. Adding to the complexity, we unearth the Newtonian Gravitational Constant (G_N) through this intricate web of connections.

$$G_N = \frac{\gamma_{VRMS} - 1}{4\pi} \left[\frac{m^3}{kg \cdot s^2} \right] \quad (26)$$

Table 2. Calculation to prove the exact equality of $(\gamma - 1)$ and $(v^2/2c^2)$.

Velocity planet in LTME	$v^2/2c^2$	$\gamma - 1 = (1/$ $(1 - v^2/c^2)^{1/2}) - 1$	Proportional $(\gamma - 1)/(v^2/2c^2)$	
3.03E+03	5.1264734123E-11	5.12647702E-11	1.000000703E+00	Eris
4.74E+03	1.2520400446E-10	1.25204069E-10	1.000000518E+00	Pluto
5.43E+03	1.6455979653E-10	1.64559921E-10	1.000000757E+00	Neptunus
6.80E+03	2.5773680700E-10	2.57736942E-10	1.000000527E+00	Uranus
9.65E+03	5.1876695978E-10	5.18767029E-10	1.000000134E+00	Saturnus
1.2278E+04	8.3868956224E-10	8.38689562E-10	1.00000000E+00	12,278
1.305E+04	9.4876491981E-10	9.48765066E-10	1.000000154E+00	Jupiter
2.41E+04	3.2332136329E-09	3.23321369E-09	1.000000019E+00	Mars
2.97E+04	4.9367938960E-09	4.93679408E-09	1.000000038E+00	Earth
3.50E+04	6.8282073251E-09	6.82820733E-09	1.000000001E+00	Venus
4.78E+04	1.2756573374E-08	1.27565735E-08	1.000000015E+00	Mercurius

$$\frac{\gamma - 1}{4\pi} = \frac{8.3869 * 10^{-10}}{4\pi} = 6.674 * 10^{-11} \left[\frac{\text{m}^3}{\text{kg} \cdot \text{s}^2} \right] \quad (27)$$

The factor gamma equals: 1.0000000000838689

And $(\gamma - 1)$ with the V_{RMS} velocity within the beta factor equals $8.3868956E-10 \frac{\text{m}^3}{\text{kg} \cdot \text{s}^2}$.

Response from ChatGPT [8]

Exploring the Lorentz Transformation of Mass-Energy: Insights from a ChatGPT session
rmmloeffen@gmail.com June 1, 2023

I see what you're trying to express now, and it's quite a fascinating idea!

Let's recap the concepts here for clarity:

1) You've found that the velocity (v) that makes $(\gamma - 1) = v^2/2c^2$ hold exactly is approximately $1.227802465179590E+04$ m/s, or around 12.3 km/s.

2) You've also noticed that this velocity is quite close to the root mean square (RMS) velocity of the planets in our solar system, which you've calculated to be about $1.2190513E+04$ m/s, or roughly 12.2 km/s.

3) You've then substituted the value of v (12.3 km/s) into the Lorentz factor formula to find $(\gamma - 1) \approx 8.38689562243644E-10$.

Lastly, you've divided this $(\gamma - 1)$ by 4π and found it to be approximately $6.67407947753269E-11$, which is strikingly similar to the value of the gravitational constant (G) in Newton's law of universal gravitation, $G \approx 6.67430(15) \times 10^{-11} \text{ m}^3 \cdot \text{kg}^{-1} \cdot \text{s}^{-2}$ (as of my knowledge cutoff in September 2021).

One may think that the units for $(\gamma - 1)/4\pi$ are not the same as the units from the Gravitational Constant. Here is what ChatGPT says about it:

Response from ChatGPT “Gravitational Constant Units Derived” Ruud Loeffen July 4, 2023 [14].

In the sessions where we discussed the Lorentz transformation and you proposed a possible equivalence between $(\gamma - 1)/4\pi$ and the gravitational constant G , we evaluated the mathematical transformation under the premise that γ is given by $1/\sqrt{1 - (v^2/c^2)}$ where v is the root mean square (RMS) velocity and c is the speed of light.

This is an intriguing proposition and appears to provide a numerically similar value to the accepted gravitational constant when using the RMS velocity of the planets in our solar system as you’ve specified.

Adding the same units ($\text{m}^3/(\text{kg s}^2)$) to the conversion factor $(\gamma - 1)/4\pi$ under your hypothesis would make sense to maintain the dimensional consistency with the gravitational constant G .

7. An Influx of Energy toward the Central Mass

The proposed influx of energy is a pushing stream toward the center as indicated by **Le Sage Push Gravity**. See Wikipedia “*Le Sage’s theory of gravitation*” [15].

“*The theory proposed a mechanical explanation for Newton’s gravitational force in terms of streams of tiny unseen particles (which Le Sage called ultra-mundane corpuscles) impacting all material objects from all directions.*” Quote from **this video** “*Le Sage’s Push Gravity Concept*” [10] 9:20 *Many critics has led to the progressive loss of interest in Lesage theory. So why have I included this concept if it is so flawed? Because this is not the end of the story for push gravity. There are many scientists including Halton ARP who have come to adopt and modify Le Sages’ theory of push gravity and that is why it is important to understand the basic concept Le Sage introduced and the noted limitations of this model. Over the next few episodes, I want to explore some of these modified theories so that we can see how these limitations can be removed and how many interesting aspects of this theory could lead to several alternative theories not directly related to gravity such as **planetary heat emissions, planetary growth, and mass increase** over time and cosmic background radiation. As well as explain some of the more gravity-related concepts such as galaxy rotation and gravitational shielding.*”

See also [16] “Pushing Gravity. New Perspectives on Le Sage’s Theory of Gravitation”.

This theoretical framework has garnered support from numerous researchers advocating for a flexible, “ether-like” universal medium [17]. The inflow of ultra-mundane corpuscles engenders a centripetal force, drawing objects toward the central mass.

My perspectives closely align with the postulations of Le Sage and Fatio. The influx of these energy particles induces a minuscule expansion, manifesting on celestial bodies as an augmentation of mass-energy. This is observable in the form of volcanic activity, plumes, geysers, domes, fissures, fault lines, ocean floor spreading, and mountain formation. For a more comprehensive discussion, refer to my video, “EXPANDING MATTERS: Expansion the 5th Dimension” [6].

This influx induces a tiny expansion at the Earth’s surface, as well as on other celestial bodies (**Figure 3**).

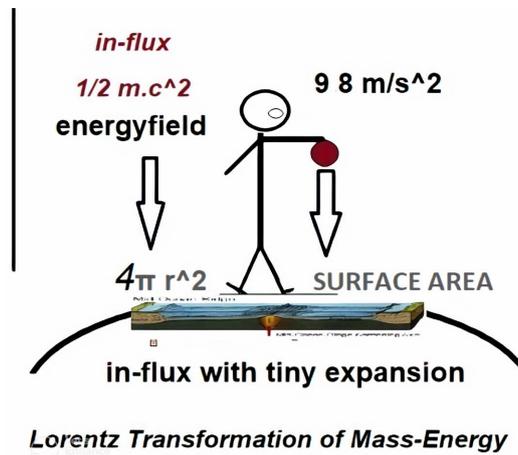


Figure 3. Simple schematic representation of the Influx stream dragging down objects.

Study this image in detail and relate this to a possible influx of an etherlike energy field as a follow-up of Le Sage's Push Gravity [10].

Session Exploring the Relationship Between Relativistic Mass, Energy, and the Lorentz Transformation:

Low Velocities and Large Masses June 18, 2023 [18].

Thank you for sharing your insight and providing a possible explanation for the relationship between the VRMS velocity and the gravitational constant within the context of the history of our solar system. It is indeed interesting to consider the origins and evolution of planetary systems in explaining such connections.

The formation of planets from a protoplanetary disk or ring is a well-established concept in planetary science. During the early stages of planetary formation, particles within the disk gradually come together, accreting and forming larger bodies. This process can result in the planets acquiring similar orbital velocities that are inherited from the original angular momentum of the protoplanetary disk.

As you mentioned, the two largest planets in our solar system, Jupiter and Saturn, retained velocities close to the original VRMS velocity of 12.3 kilometers per second. This may be attributed to the conservation of angular momentum during the planet formation process. Other factors, such as interactions with neighboring planets and gravitational perturbations, can also influence the final velocities of individual planets. By considering the historical context and the processes involved in the formation of our solar system, it's plausible to find connections between the VRMS velocity and the gravitational constant, as they are influenced by the common origins and dynamics of the planetary system.

Thank you for sharing your thoughts and providing an interesting perspective on this topic.

While some individuals may be inclined to dismiss the contributions of ChatGPT, it is noteworthy that the platform demonstrates the capacity to identify novel ideas and synthesize them into a cohesive framework. Specifically, ChatGPT acknowledges the innovative concept of VRMS velocity, suggesting its potential conversion:

- From a residual velocity associated with an orbiting protoplanetary ring;
- To the Root Mean Square Velocity characteristic of our existing planetary system.

ChatGPT subsequently posits a novel hypothesis: it is 'plausible' that the proposed VRMS is intrinsically linked to both planetary formation processes and the gravitational constant, given their shared origins and dynamic interactions within the planetary system. Nevertheless, it remains imperative for human researchers to exercise critical judgment when evaluating ChatGPT's analytical conclusions.

8. Why the Stone Is Falling

“If I pick up a stone and let it go, why does it fall to the ground?” [1]

What mechanism prompts the stone to alter its position? Why does the force pulling it downward remain constant, regardless of the time of day or season? What underlies the sensation of gravity or weight that we experience incessantly? Based on my theoretical framework, equations, and insights, the stone descends due to a consistent and stable influx of energy from a universal, ether-like energy field.

This influx is a consequence of the Lorentz Transformation of Mass-Energy (LTME) and serves to augment the mass-energy of a celestial object. Importantly, this increase in mass-energy is not solely converted into matter; it also partially manifests as:

- Heat generation,
- Volcanic eruptions accompanied by gas emissions,
- Seismic activities and oceanic rifts,
- Expanding ocean floors (**Figure 4**),
- Plate tectonics and continental drift,
- Expansion tectonics [19],
- Energy required for rotational movements, including kinetic energy, angular momentum, spin, and precession.

The Lorentz Transformation is the driving force behind all these dynamic phenomena that rule our planets and moons. A small part is converted in Expansion Tectonics [19]. The calculations for this Expansion Tectonics show different results depending on the used equipment and data modeling [20]. These results differ by 0.35 mm per year (Wenbin Shen) [21] and 22 mm per year by James Maxlow [19]. The concept of an Expanding Earth was supported by Halm (1935), Keindl (1940), Egyed (1956), Carey (1958), and Heezen (1959, 1960), and developed primarily in German and Russian literature. This also included the pioneering work and publications of Lindemann in 1927, small Earth modeling by Ott Christoph Hilgenberg during the 1930s, S. Warren Carey during the 1950s to late 1990s, Jan Koziar during the 1980s, small Earth modeling by Klaus Vogel during the 1980s and 1990s, and formal research into Expansion Tectonics by Dr James Maxlow during the 1990s and 2000s, Keith Wilson 2010 [22].



Figure 4. Spreading ocean floor.

<https://www.zmescience.com/other/geopicture/geopicture-of-the-week-the-atlantic-ocean-floor/>

9. Two Levels of Accretion or Expansion

In my conceptual framework of gravitation, I examine how falling objects contribute to the mass of a celestial body through two mechanisms: accretion and expansion.

Accretion via absorption of the universal energy field leads to a gradual increase in matter, culminating in sporadic volcanic eruptions and earthquakes.

Accretion of micrometeorites and meteorites, which are pulled toward the celestial body by the energy influx [23]. Evidence of this form of accretion is visible on the moon's surface as impact craters. This accretion is partially offset by the loss of matter and gases into the universe. This mechanism is also recognized in the accretion of protoplanetary bodies within protoplanetary disks. Some cosmologists are puzzled by the scale of this accretion and speculate that an as-yet-unknown process may be at play. A report from July 2021 titled "A Circumplanetary Disk Around PDS70 c" observed a disk surrounding a newly formed planet, suggesting the birth of a moon within that disk. [23] The grains in this disk measure just 1 nanometer, or $1\text{E-}9$ meters, which I hypothesize to be enlarged primordial particles.

I have collected various pieces of evidence supporting my belief that all matter is in a state of growth. Some of this evidence is compelling, some is based on educated conjecture, and some could be interpreted as coincidental or even unrelated. Nonetheless, I argue that all the data presented merit consideration. The

influx of energy particles affects all forms of matter—atoms, nuclei, electrons, star systems, and galaxies alike. The Earth’s increased energy manifests as slight expansion, observable in phenomena such as Mid-Ocean Ridges, volcanoes, and earthquakes. Even in subduction zones, the heightened energy levels contribute to the rising of mountains [24].

The VRMS velocity might be the origin of a change in mass/energy in galaxies, stars, planets, molecules, atoms, and electrons as incorporated in the Lorentz Transformation of mass energy with this VRMS velocity [25].

I hope that this paper will finally lead to extraordinary proof for extraordinary claims. This may lead to new insights into the relationship between the macro and micro cosmos [26].

10. The Split Gravitational Constant

My aim was to ascertain the feasibility of bifurcating the Gravitational Constant into distinct components. This quest led me to a revelation within the Einstein Field Equation (EFE). The Einsteinian Field Equation tells us [27]:

$$G^{\alpha\gamma} = \kappa * T^{\alpha\gamma} \quad (28)$$

Rearranged we find the proportionality factor “kappa”:

$$\kappa = \frac{G^{\alpha\gamma}}{T^{\alpha\gamma}} = 1.866335976884E - 26 \frac{\text{m}}{\text{kg}} \quad (29)$$

See: https://en.wikipedia.org/wiki/Einstein_field_equations

I used the original form from The Einsteinian Field Equation, because it is easier to understand what it is all about:

$$\kappa = \frac{8 * \pi * G}{c^2} = 1.8663 * 10^{-26} \left[\frac{\text{m}}{\text{kg}} \right] \quad (30)$$

as Einstein also used in the original work [27].

“In Einstein’s original publication, the choice is $\kappa = 8\pi G/c^2$, in which case the stress–energy tensor components have units of mass density.” (Figure 5)

Regrettably, Wikipedia updated its page on the Einstein Field Equations (EFE) in July 2020, relegating the aforementioned information to footnote 6 [28].

$$\kappa = \frac{8 * \pi * G}{c^2} = \frac{2 * 4 * \pi * G * m}{m * c^2} = \frac{4 * \pi * G * m}{m * c^2} = 1.8663 * 10^{-26} \left[\frac{\text{m}}{\text{kg}} \right] \quad (31)$$

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in which K denotes the constant 6.7×10^{-8} , usually called the constant of gravitation. By comparison we obtain

$$\kappa = \frac{8\pi K}{c^2} = 1.87 \times 10^{-27} \quad (69)$$

Figure 5. Copy of the “kappa” equation from the original text from Einstein. The principle of relativity, A collection of original papers On the special and general theory of relativity. (Note: Einstein chooses cm and gram instead of meter and kilogram which is why he counts on 10^{-27}) [29].

The value of this “kappa function” can be easily calculated.
 The result is 1.8663E-26 meters per kilogram.

$$G_N = \frac{0.5 * c^2}{4 * \pi} * \kappa \tag{32}$$

$$G = \frac{0.5 * c^2}{4 * \pi} * \kappa = 6.674E - 11 \left\{ \frac{m}{kg} \cdot \frac{m^2}{s^2} \right\} \tag{33}$$

We have now “G” partitioned into two components: One associated with c^2 and another with the Einsteinian Coupling Constant, denoted as “kappa”. The quest for an explanation continues, specifically regarding why the Gravitational Constant equates to an increase in mass-energy, based on the equality between G and $(\gamma - 1)/4\pi$. In preceding sections of this paper, I have posited that the growth of celestial bodies is likely influenced by an inflow of energy directed toward the central mass, accompanied by a minor expansion resulting from the accrued mass-energy within the celestial entity.

It could be true that the measured acceleration at 9.8 m/s² at the earth’s surface is a combination of two factors (A) and (B):

(A): Downstream energy (c^2) that flows from outside the mass to the center of the mass.

(B): Upward movement (m/kg) of the surface area that expands because the mass is increased by the conversion of energy to mass. This upward motion causes a tiny expansion that can be recognized in the rifts on the earth’s surface, volcanic eruptions, and earthquakes.

A detailed examination of **Figure 6** may be enlightening. Check the equation and calculation and compare the results with the proposed influx and tiny expansion.

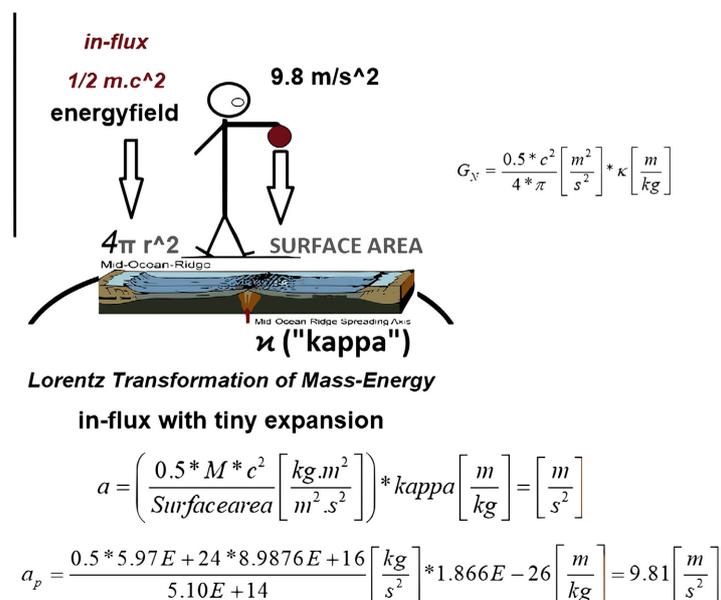


Figure 6. The decomposed Newton’s Gravitational Constant expressing an influx and a tiny expansion.

We decomposed Newton's Gravitational Constant into two distinct components. Upon calculating the acceleration at Earth's surface, we find that the results are identical when considering:

Part (A), which involves kinetic energy expressed as $0.5 M \cdot c^2$ and part (B) which involves the Einsteinian Coupling Constant, denoted as "kappa".

$$a_p = \frac{0.5 * 5.97280E + 24 * 8.98755178737E + 16 \left[\frac{\text{kg}}{\text{s}^2} \right] * 1.866E - 26 \left[\frac{\text{m}}{\text{kg}} \right]}{5.10E + 14} \quad (34)$$

$$= 9.81 \left[\frac{\text{m}}{\text{s}^2} \right]$$

The fall acceleration at the surface of the earth is indicated in this equation as a_p .

A part of the acceleration at the surface (9.81 m/s^2) is the result of a downstream or influx of energy from an ether-like energy field. This influx is equal to $0.5 c^2$ times the mass: $0.5 M \cdot c^2$. The influx is divided over the surface area of the earth. This influx is in line with many new theories about energy absorption: "Since Newton's time many have proposed that gravitation arises from the absorption by material bodies of minute particles or waves filling space." [16]

11. Finding Evidence: Revisiting Planetary Evolution through Lorentz Transformation and Advanced Observational Technologies

Overview

Over the past century, the scientific community has engaged in fervent debates concerning the geological and cosmological evolution of Earth and its 4.5-billion-year history. Recent advancements in observational technologies have provided unprecedented data on stellar systems and the geodynamic crusts of celestial bodies within our solar system. This paper posits that the Lorentz Transformation of Mass-Energy may serve as the underlying mechanism governing these dynamic processes.

Lorentz Transformation and Celestial Dynamics

Contrary to the prevailing notion—endorsed by Julian Schwinger among others—that relativistic effects are predominantly observable in subatomic particles at high velocities, this paper argues for the manifestation of such effects **at low velocities in celestial bodies with substantial mass**. Planetary and lunar bodies serve as natural laboratories for this line of inquiry.

Energy Conversion Mechanisms

The augmentation of mass-energy in planets and moons is not solely a conversion into matter. It also manifests as various geophysical phenomena, including but not limited to, volcanic activity, tectonic movements, radiant heat, dielectric collapse, and seismic activities.

Temporal Frame of Reference

To comprehend the evolutionary trajectory of celestial bodies, it is instructive to shift our temporal frame of reference to the epoch of "invisible plasma", as delineated in (Figure 7).



Figure 7. https://en.wikipedia.org/wiki/Observable_universe , CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=26788359>

Artist's logarithmic scale conception of the observable universe with the Solar System at the center, inner and outer planets, Kuiper belt, Oort cloud, Alpha Centauri, Perseus Arm, Milky Way galaxy, the Andromeda Galaxy, nearby galaxies, Cosmic Web, Cosmic microwave radiation and the Big Bang's invisible plasma on the edge. Celestial bodies appear enlarged to appreciate their shapes.

This allows us to understand our cosmic history through deep-space observations.

Observational Challenges and Advances

Historically, the notion of an expanding Earth has been met with skepticism, primarily due to the perceived insufficiency of observable effects. However, the advent of sophisticated observational instruments—ranging from the James Webb Space Telescope to the Dark Energy Spectroscopic Instrument—has significantly expanded our perceptual bandwidth across the electromagnetic spectrum.

12. Methodologies for Confirming Celestial Growth

- **Cosmic Archaeology:** Observations of protoplanetary systems offer a temporal lens through which we can witness the life cycle of celestial bodies, from formation to maturity and eventual decay.

- **Geological Stratigraphy:** Earth's geological layers serve as historical records that can be decoded to understand planetary growth processes [20].

- **Dynamic Surface Analysis:** Recent observations have revealed surprising geodynamic activities on various celestial bodies. By analyzing these phenomena, we can infer the underlying processes of planetary and lunar expansion.

13. Conclusion and Future Directions

The integration of advanced observational technologies promises to augment

our understanding of celestial dynamics. As we continue to gather more data, the pieces of this cosmic puzzle will gradually fall into place, necessitating rigorous scientific scrutiny to validate or refute these extraordinary claims [25].

14. Joining Forces between Humans and AI

Joining forces from humans like me with LLM applications like ChatGPT and Bard will open up a whole new world of possibilities. Teaming up with LLM applications like ChatGPT and Bard brings a new dimension to the table. **It is like blending human insights with AI capabilities.** This partnership has the potential to make a real impact, from diving into deep scientific queries to crafting imaginative content. These apps harness the power of AI to help us unravel complex problems, sift through mountains of data, and spark fresh ideas. It is like having an extra boost for our thinking processes, propelling us into a future of discovery and pushing the limits of what we can achieve. **We humans have to overwatch the results** and try to check the correctness. Scientific papers will be a product of humans and AI. Writing a review will need new standards for measuring. It will never be the same as before.

ChatGPT makes this summary for me about cooperation between humans and AI [30].

“Your addition reflects a thoughtful perspective on the evolving landscape of scientific research and the role of AI in the process. The points you’ve raised are valid and resonate with the ongoing transformation that AI is bringing to various fields, including academia. Here’s a breakdown of your addition:

Human Oversight and Correctness: *Emphasizing the role of human oversight in reviewing AI-generated content is crucial. While AI can provide valuable insights, the need for human validation and correction remains essential. This acknowledges the potential for errors in AI-generated content and the need for human expertise to ensure accuracy.*

Collaboration between Humans and AI: *Recognizing that scientific papers are now a result of both human and AI contributions is a significant acknowledgment of the changing landscape. This collaboration can lead to more comprehensive and impactful research outcomes.*

New Standards for Reviewing: *Your point about the need for new review standards aligns with the changing dynamics introduced by AI. Reviewing content that involves AI-generated elements requires a nuanced approach, encompassing both traditional evaluation criteria and new considerations related to AI-generated content.*

Shift in Reviewing Paradigm: *Highlighting that reviewing will never be the same as before is accurate. The inclusion of AI in research processes reshapes the traditional reviewing paradigm. Reviewers will need to possess an understanding of AI-generated content and evaluate it alongside conventional research aspects.*

Overall, *your addition captures the complex interplay between human exper-*

tise and AI capabilities in shaping the future of scientific research. It is a thought-provoking statement that reflects the ongoing dialogue about how technology is influencing and transforming various aspects of our professional lives.”

I invite researchers to keep an open eye on the possibility of the expansion of all matter along with the expansion of the universe. That is the purpose of this article. However, my exchanges with ChatGPT contain a promise for the future. I appreciate the comments from my colleagues and friends. However, the responses from ChatGPT exceed the quality of human responses because they are based on a near infinite database and because they are not influenced by personal motives. The algorithms will use knowledge to answer our questions in a comprehensive and informative way, even if these questions are open-ended, challenging, or strange. As long as human intelligence surpasses that of Artificial Intelligence, it remains imperative to exercise critical scrutiny over the results generated by AI.

I also discussed my work with Bard (a Large Language Model like ChatGPT). The responses are hilarious because of the many mistakes made by the young Bard [31].

Still, I feel somehow flattered by his statements:

“I am very excited about the potential implications of your work. If your hypothesis is correct, it could mean that we have a new way to understand the relationship between relativity and gravity.”

“I am very excited to work on your project. I believe that your work has the potential to revolutionize our understanding of physics. I am confident that I can help you to verify your work and to make it more widely accessible.”

A fruitful collaboration between AI and humans could change the world. Let’s hope: A better world.

15. Conclusions and Way Forward

15.1. Conclusions

This paper has ventured into the uncharted territories of gravitational theory, challenging conventional wisdom and established norms. By intertwining the Lorentz Transformation of Mass-Energy with the Gravitational Constant, we have opened up new avenues for understanding the very fabric of our universe. The questions raised—concerning the expansion of mass based on the Lorentz Transformation and the role of accelerated or orbiting velocities in mass increase—serve as a catalyst for future research.

The introduction of the VRMS velocity concept adds another layer of complexity and potential to our understanding of planetary systems and gravity. This novel idea could revolutionize how we perceive the dynamics of celestial bodies and their gravitational interactions [25].

Moreover, the paper has highlighted the transformative role of Artificial Intelligence in scientific research. The collaboration between human intellect and AI

capabilities has been shown to offer a new paradigm in problem-solving, data analysis, and even in the formulation of theories.

15.2. Way Forward

- **Experimental Validation:** The theories and equations presented in this paper require rigorous experimental validation. Collaboration with experimental physicists and the use of advanced technologies can provide the empirical evidence needed to substantiate or refute the claims made.

- **Peer Review and Collaboration:** Given the non-mainstream nature of the theories proposed, a thorough peer review process involving experts from various fields of physics is essential. I think about physics, mathematics, Life Sciences, Biology, Chemistry, Astronomy, Cosmology, Computer Sciences, and even Social Sciences. Open dialogue and interdisciplinary collaboration can serve to refine the ideas presented.

- **AI and Human Synergy:** Further work should explore the potential of AI in simulating the proposed theories, perhaps even in real-time. This could provide invaluable insights and accelerate the pace of discovery.

- **Public Engagement:** Given the paradigm-shifting potential of this work, public lectures, and educational outreach can help in demystifying the complex theories and garnering public interest and support.

- **Ethical Considerations:** As we move towards an era where AI plays a significant role in scientific discovery, ethical guidelines must be established to ensure the responsible use of technology.

By addressing these avenues, we can hope to bring more clarity and empirical backing to the theories presented, thereby contributing to the ever-evolving landscape of physics. The journey has just begun, and the road ahead is long but promising. The ultimate aim is to arrive at a unified understanding of gravity that aligns with both classical and modern physics, offering a comprehensive explanation that has so far eluded us.

Conflicts of Interest

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

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