

The unified theory for calculating the speed of light and superluminal speeds: relativity in the Holy Quran

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Abstract

It has been demonstrated that tachyon particles travel at speeds significantly greater than the speed of light, following a quadratic rather than a linear law. This is illustrated through the application of the tachyon Lorentz factor in verse 4 of Surah Al-Ma'arij. Furthermore, a unified theory has been proposed to calculate the normal speed of light alongside tachyon speed, particularly in relation to verses 5 of Surah As-Sajdah and 4 of Surah Al-Ma'arij. The numerical results from this theory have shown promise.

These findings reinforce the notion that the speed of light remains constant in both verses, while tachyon speed reveals a minimum value in verse 5 of Surah As-Sajdah and a maximum value in verse 4 of Surah Al-Ma'arij. Such discoveries are unprecedented in both theoretical physics and the study of scientific miracles, representing significant evidence that could enable physicists to develop a theory of particles that travel faster than light, known as tachyons.

In this research, the speed of tachyon is explained in more detail, as the speed of light has already been thoroughly addressed in our reference [9].

Keywords

Scientific miracle; speed of light; superluminal speed; tachyon particles; Lorentz factor; tachyon Lorentz factor

المخلص

تم اثبات ان جسيمات التاكيون تسير بسرعة ضوئية فائقة أكبر بكثير من سرعة الضوء وتتبع قانون تربيعي لسرعة الضوء وليس خطيا من خلال تطبيق معامل لورنتز التاكيوني على الآية الكريمة رقم 4 في سورة المعارج. وكذلك تم افتراض وجود النظرية الموحدة لحساب سرعة الضوء العادي وسرعة التاكيون وتطبيقها على الآيتين رقم 5 من سورة السجدة والآية رقم 4 من سورة المعارج واعطت نتائج رقمية جيدة تفيد بان سرعة الضوء ثابتة من خلال كلا الآيتين معا، وان سرعة التاكيون تتمتع بسرعة دنيا من خلال تطبيقه على الآية 5 من سورة السجدة وسرعة عظمى من خلال تطبيقه على الآية رقم 4 من سورة المعارج. وهذه النتائج لم يسبق لاحد ان اوجدها سواء في دراسات الفيزياء النظرية ام في دراسات الاعجاز العلمي وتعتبر من اهم الدلائل العلمية التي يمكن من خلالها تمكين علماء الفيزياء من اكمال نظرية الجسيمات التي تسير بسرعة أكبر من سرعة الضوء والمسماة بجسيمات التاكيون اصطلاحا. تم شرح سرعة التاكيون بتفصيل أكثر لان شرح سرعة الضوء موجودة بالتفصيل في مرجعنا رقم [9].

الكلمات المفتاحية

الاعجاز العلمي؛ سرعة الضوء؛ السرعة فوق الضوئية؛ جسيمات التاكيون؛ معامل لورنتز؛ معامل لورنتز التاكيوني.

1. Introduction

Tachyons are hypothetical particles that travel faster than the speed of light, a term coined in 1967[1-3]. Derived from the Greek word (Tachys), meaning "very fast," there is no experimental evidence confirming their speed as a specific value. The tachyon is a hypothetical particle with imaginary mass, formulated through equations based on relativistic mathematics. These equations have been adapted into what is called the inverted relativistic theory (tachyonic theory), which defines general properties of tachyons. Notable modifications include the use of absolute values or rearranging variables within square roots to eliminate negative signs [4-6]. These are some properties of speeds associated with these particles:

- The minimum speed is the speed of light (c), which is the lowest maximum speed at which the tachyon speed can reach, just as is the case with the maximum speed at which ordinary particles can attain.
- The relationship between energy, speed, and the Lorentz factor for tachyons appears in the opposite way to that of normal particles; the more energy they lose, the faster they speed. Attempting to slow them down to reach the speed of light requires infinite energy.
- These particles can penetrate the speed of light barrier as well as the speed of sound barrier. In the absence of experimental results and through the theoretical physical perspective of the scientific miracle with the availability of theoretical material about the tachyon's penetration of the light barrier, we find that Einstein's equations in the theory of special relativity [7,8] constitute a fertile ground for studying the properties of the tachyon, especially since the speed of light is proven theoretically and experimentally, and it can be said that speeds are divided into three speeds:

○ Speeds described by Newton's laws are significantly lower than the speed of light and relate to the physical world and the strong gravitational effects of objects. As an object's speed increases, its mass also increases, which means that it is impossible to reach the speed of light.

○ All speeds governed by the laws of special relativity are constant and equal to the speed of light. This absolute speed can be calculated using special relativity based on **verse 5 of Surah As-Sajdah: "He arranges [each] matter from the heaven to the earth; then it will ascend to Him in a Day, the extent of which is a thousand years of those which you count (Saheeh international)"**, The ratio of a thousand years to one earth day corresponds precisely to the Lorentz coefficient ($\gamma \gg 1$) in special relativity, which is fundamental to this theory. It is important to note that some people [10] use Newton's theory to calculate the speed of light based on this verse, but this approach is incorrect and undermines the profound scientific significance of the verse.

○ The speeds that fall under the laws of tachyonic special relativity are those that exceed the speed of light. Although their exact values have not yet been proven, this research seeks to numerically establish these speeds by referencing **verse 4 of Surah Al-Ma'arij: "The angels and the Spirit will ascend to Him during a Day the extent of which is fifty thousand years (Saheeh international)"**, We will match the numerical ratio in this noble verse by comparing fifty thousand years to one earthly day with the Lorentz factor (γ) in special relativity. Since we are discussing superluminal speeds, and in accordance with the inverse theory of relativity, the inverse of this ratio represents the Lorentz tachyon factor ($\gamma_T \ll 1$). Through it, the superspeed of the tachyon is determined.

In summary, the Quran delineates two types of universal physical speeds. The first is the speed of light, as reflected in verse 5 of Surah As-Sajdah (Ratio of a thousand years to one day), the

second type involves speeds greater than that of light, as mentioned in verse 4 of Surah Al-Ma'arij (ratio of fifty thousand years to one day).

It is important to note that these verses should be interpreted based on ratios of time to time and length to length, in accordance with the principles of special and inverse relativity. They should not be viewed as ratios of length to time for calculating light or superluminal speeds using Newtonian mechanics. Such calculations, which suggest that tachyon speed is equal to the speed of light multiplied by fifty, are deemed incorrect and scientifically invalid.

Achieving an accurate value for the speed of light does not imply that the method used is accurate or acceptable to physicists. Modern physics lacks a direct equation to calculate tachyon speeds since tachyons are hypothetical particles arising from relativistic mathematics and have yet to be experimentally observed. For clarity, key numerical data is summarized in Table 1.

Earth Data	Moon Data
Solar year = 365.25 days, day = $1 \div 365.25$	Lunar year = 354.37 days, day = $1 \div 354.37$
Ratio of 50,000 years to a day = $\frac{50000 \text{ year}}{1/365.25 \text{ year}}$ = 365.25×50000 = Lorentz factor	Ratio of 50 thousand years to a day = $\frac{50000 \text{ year}}{1/354.37 \text{ year}}$ = 50000×354.37 = Lorentz factor
Its reciprocal = 5.475×10^{-8} = Lorentz tachyon factor	Its reciprocal is = 5.6438×10^{-8} = Lorentz tachyon factor.
What the Earth travels in 50,000 years = What it travels in a year $\times 50,000$ = 940 million $\times 50,000$ km	What the moon travels in 50,000 years = What it travels in a year $\times 50,000$ = $25,831,347.24 \times 50,000$ km
What the Earth travels in one day (24 hours) = 2,573,579.7399 km	What the Moon travels in one day (24 hours) = 72,893,718 km
Earth day = day = 24 hours = 86164 seconds	Lunar day = 36.39 Earth days, not astronomical days. See reference [9] = 3144096 seconds

Table (1): Numerical data for the Moon and Earth

2. Theoretical Data on Superluminal Speeds

Supporters of tachyon theory have attempted to develop new mathematical transformations to address the issue and avoid imaginary numbers [11-14]. These efforts are known in theoretical physics as "Extended Special Relativity." In this framework, the average tachyon speed must exceed the speed of light, which reverts to the ether theory since zero rest mass requires a medium for propagation. This new scenario does not conflict with Einstein's theory but complements it. Tachyon theoretical data are derived from relativity, aiming to eliminate the imaginary number appearing in energy, speed, momentum equations, and Lorentz factor due to superluminal speeds. The Lorentz coefficient is considered the basic factor in the theory of special relativity and is given by the following relationship:

$$\gamma = \frac{1}{\sqrt{1 - v^2 / c^2}} \quad (1)$$

Where (v) is the speed of the particle, and (c) is the speed of light, and since the speed of the tachyon is greater than the speed of light, the denominator becomes imaginary. To solve this dilemma and get rid of (i), physicists assumed (in 1967) that the rest mass of the tachyon is purely imaginary (Imaginary Mass), and it can eliminate (i) through the relative energy expression, as follows:

$$E = \frac{m_0 c^2}{\sqrt{1 - v^2 / c^2}} \quad (2)$$

where m_0 is the rest mass in the theory of special relativity. The energy in relationship (2) can be converted into tachyon energy containing a tachyonic Lorentz factor (γ_T) and speed tachyon (v_T) as follows:

$$E_T = \frac{imc^2}{i\sqrt{v_T^2/c^2 - 1}} = \frac{mc^2}{\sqrt{v_T^2/c^2 - 1}} \quad v_T^2/c^2 > 1 \quad (3)$$

- At the speed of light, $v = c$: the denominator becomes zero, meaning that tachyons require infinite energy to slow down and reach the speed of light (which explains why they can never land below it).
- At infinite speed (v to v infinity): the numerator becomes infinite, making energy (E) approach zero. This means a tachyon with zero energy moves at infinite speed, called a Transcendent Tachyon.

From this, the tachyonic momentum (p_T), tachyonic speed (v_T), and Lorentz tachyon factor γ_T are expressed:

$$\begin{aligned} p_T &= \frac{mv_T}{\sqrt{v^2/c^2 - 1}} \\ v_T &= c \sqrt{1 + \frac{m^2 c^4}{E^2}} \\ \gamma_T &= \frac{1}{\sqrt{v_T^2/c^2 - 1}} \end{aligned} \quad (4)$$

Where (γ_T) is the Superluminal Lorentz(tachyon) Factor, which is central to this research. It notes that mathematical solutions and equations similar to the Lorentz factor have been proposed for speeds exceeding the speed of light. Since tachyon speed (v_T) is always greater than light speed, the value of $\sqrt{v_T^2/c^2 - 1}$ remains positive, ensuring (γ_T) is a real number. Consequently, energy and momentum values stay physically meaningful without imaginary mass in some reference frames. This modified Lorentz tachyon factor (γ_T) reflects relativistic effects like time dilation and length contraction, but in a manner opposite to that of ordinary particles.

Regarding the terms and symbols used in tachyonic relativity calculations, they are the same as those in special relativity. The measured length of a moving object is symbolized by (ℓ_0), while the length measured by a stationary observer (Earth) is symbolized by (ℓ). The time measured by the stationary observer is (t), and the time measured by the moving body (tachyon) is (t_0).

The tachyonic time dilation equation, called inverted time dilation, is expressed as follows:

$$\begin{aligned} t &= \gamma_T t_0 \\ t &= \frac{t_0}{\sqrt{\frac{v^2}{c^2} - 1}} \end{aligned} \quad (5)$$

Since tachyons travel faster than light, their Lorentz tachyon factor decreases as their speed increases. Approaching infinity, the factor nears zero, implying that time for an Earth observer nearly stops, while tachyons traverse space in zero time from a fixed observer's perspective and infinite time for the tachyon

itself. This causes the perception of tachyons moving backward in time, from future to past, creating the famous causality paradox.

$$\begin{aligned}\ell &= \frac{\ell_0}{\gamma_T} \Rightarrow \gamma_T = \frac{\ell_0}{\ell} \\ \ell &= \ell_0 \sqrt{\frac{v^2}{c^2} - 1}\end{aligned}\quad (6)$$

In classical relativity, lengths contract with increasing speed. However, in tachyonic expansion equations, the opposite occurs: as tachyons approach speeds much greater than light, the value under the square root in relation (6) increases, leading to relative length expansion from the Earth's observer perspective, which is one of the most unusual mathematical properties in tachyon physics.

The study later called the Hill and Cox theory in 2012 [15] sparked considerable debate in scientific circles. They linked the reference frames of particles moving at subluminal speeds (v) and those moving at superluminal speeds (v_T) using mathematical relations that extended beyond special relativity. Their approach eliminated imaginary numbers and produced two important results: a tachyonic Lorentz factor and a controversial quadratic relation connecting the two velocities with the speed of light as described

Below:

$$\begin{aligned}\gamma_T &= \frac{1}{\sqrt{v_T^2 / c^2 - 1}} \\ v_T \cdot v &= c^2 \Rightarrow \gamma_T = \frac{v}{\sqrt{c^2 - v^2}} \\ v = 0 &\rightarrow \gamma_T = 0 \rightarrow v_T = \infty \\ v = c &\rightarrow \gamma_T \rightarrow \infty\end{aligned}\quad (7)$$

And in this research, we will compare the study's results and derived mathematical relationships with Hill and Cox theoretical results as well.

In summary, mathematics eliminated the imaginary value of tachyons in classical physics by introducing the hypothesis of imaginary mass. Quantum mechanics, however, used this imaginary value to describe a temporary, unstable state the universe experienced at its beginning, allowing it to stabilize and acquire its current real mass.

Let us now try to compare the temporal or spatial ratios to link the normal Lorentz coefficient and the reciprocal of the Lorentz coefficient (the tachyonic Lorentz coefficient) according to the inverse theory of relativity as follows:

From expression (5), which contains the relationship between two different time measurements: one measured by a moving observer (t_0) and the other by a stationary observer (t). The Lorentz tachyon factor (γ_T) links these times and is very small, reflecting the ratio of the object's speed to the speed of light. When the object exceeds the speed of light, this factor approaches zero, indicating extreme relativistic effects. To make the ratio of the verse from Surah As-Sajda (verse 5) much smaller than one, the reciprocal of the Lorentz factor is used, analogous to comparing one day to 50,000 lunar years. Using the relative times in Table 1 and applying them to Equation (5) (for the moon and earth data), the Lorentz tachyon factor is calculated, leading to the determination of the tachyonic speed, a key interest for researchers in this field. by applying the time numerical ratios of the moon and the earth as follows:

$$\begin{aligned}
\frac{t}{t_0} = \gamma_{moon} &= \frac{1}{\sqrt{1-v^2/c^2}} = \frac{50000 \text{ year}}{(1/354.37) \text{ year}} = 50000 \times 354.37 = 17718500 = 59.06 \times c/u \approx 1 \\
\frac{t}{t_0} = \gamma_{earth} &= \frac{1}{\sqrt{1-v^2/c^2}} = \frac{50000 \text{ year}}{(1/365.25) \text{ year}} = 50000 \times 365.25 = 18262500 = 60.8 \times c/u \approx 1 \\
\gamma_T &\approx \frac{1}{\gamma_{moon}} \approx \frac{1}{\gamma_{earth}} \approx (5.643 \pm 0.2) \times 10^{-8} \approx \frac{u}{59.9 \times c} \approx 1 \quad (8)
\end{aligned}$$

In equation (8), the Lorentz factors were divided by 300000, the numerical value of the speed of light, to simplify calculations; the result was then divided by a velocity of order one (u) to ensure consistent physical units.

The Lorentz tachyon factor is significantly less than one, approximately equal to the reciprocal of the digital speed of light multiplied by 60. This meets the theoretical criteria and is utilized to calculate the speed of tachyon.

From expression (6), which discusses the relationship between the length measured by a moving observer (ℓ_0) and a fixed observer (ℓ), involving the Lorentz factor.

The relationship between the numerical ratio of the verse and the relative lengths of the journey of the moon, which lasts fifty thousand years, compared to the journey of one day of the moon, as well as the ratio of the fifty thousand years' journey of the Earth to the journey of one day of the Earth, as mentioned in Table 1, will yield the Lorentz coefficient. From this, we first calculate the ordinary Lorentz coefficient; then, by taking its reciprocal, we obtain the tachyonic Lorentz coefficient as follows:

$$\begin{aligned}
\frac{\ell_0}{\ell} = \gamma_{moon} &= \frac{25,831,347,240 \times 50 \text{ km}}{72,893.718 \text{ km}} = 17718500.27 = 59.06 \times c/u \approx 1 \\
\frac{\ell_0}{\ell} = \gamma_{earth} &= \frac{940000000 \times 50000 \text{ km}}{2,573,579.7399 \text{ km}} = 18262500 = 60.8 \times c/u \approx 1 \\
\gamma_T &\approx \frac{1}{\gamma_{moon}} \approx \frac{1}{\gamma_{earth}} \approx (5.643 \pm 0.2) \times 10^{-8} \approx \frac{u}{59.9 \times c} \approx 1 \quad (9)
\end{aligned}$$

It is noted that the relative numerical results are identical time to time and its reciprocal, as well as length to length and its reciprocal, to calculate the normal Lorentz factor and the tachyonic Lorentz factor, both of which are inverses of the other, which is the basic condition for the theory of special relativity and its reciprocal. It was found that the Lorentz coefficient is sixty times the speed of light, while the tachyonic Lorentz coefficient is the reciprocal of the ordinary Lorentz coefficient in both cases.

3. Methods Used in Speed Calculations According to the Tachyonic Lorentz Factor

The miraculous physical consensus and the comparison between the Holy Verses and Einstein's Special and Inverse Relativity Theories in verse 4 of Surah Al-Ma'arij and in verse 5 of Surah As-Sajdah, regarding the calculation of the speed of light and the speed of tachyons based on the numbers mentioned in the two Holy Verses above, is definitive. This is because this theory utilizes a ratio of two times, a ratio of two lengths, and a ratio of two masses, each of which equals the Lorentz factor (γ) [9], while their reciprocal yields the tachyonic Lorentz factor. Those verses perfectly describe these factors because their content encompasses both relative times and relative lengths. Furthermore, the Holy Verses describe the depth of this theory by scientifically deriving the speed of light and the speed of tachyons (Superluminal speed). The

inverse relativity theory factor will now be applied; whether using the lunar year or the solar year, the results will not differ.

3.1 First Method: Using the method of extended inverse time or tachyonic time, relationships (5) and (8):

First, assuming a lunar year (354.37 days): Calculations indicate that the tachyon speed equals 59 multiplied by the square of the speed of light. This implies a quadratic proportionality rather than the linear relationship found in the theory of relativity. Given that this velocity vastly exceeds the speed of light, the value of 'one' was omitted from beneath the square root, and the speed of light was approximated at a numerical value of 300,000 to simplify computations. The resulting minor mathematical discrepancies do not affect the overarching conclusion, as this is a general study.

$$\gamma_T = 1 / \sqrt{v_T^2 / c^2 - 1} \approx c / v_T \Leftrightarrow \left(\frac{50000 \text{ year}}{(1/354.37) \text{ year}} \right)^{-1} = \frac{u}{59.06 \times c}$$

$$\gamma_T = \frac{c}{v_T} = \frac{u}{59.06 \times c} \Rightarrow$$

$$v_T u = 59.06 \times c^2 \quad (10)$$

It is observed that the velocity of diffraction and the spirit is approximately equal to the square of the speed of light multiplied by 59. This value is naturally within the range of fifty, as will be demonstrated in the subsequent sections. However, within the scope of approximate calculations and the absence of experimental data, these figures remain acceptable, where the tachyonic Lorentz factor equals the reciprocal of the days of the lunar year multiplied by 50,000.

Second, assuming a solar year (365.25 days): the tachyonic Lorentz factor (γ_T) is calculated, yielding a value thousands of times smaller than one. Subsequently, the tachyon velocity is computed as demonstrated in the following calculation:

$$\gamma_T = 1 / \sqrt{\frac{v_T^2}{c^2} - 1} \approx \frac{c}{v_T} \Leftrightarrow \left(\frac{50000 \text{ year}}{(1/365.25) \text{ year}} \right)^{-1} = \frac{u}{60.8 \times c}$$

$$\frac{c}{v_T} = \frac{u}{60.8 \times c} \Rightarrow v_T u = 60.8 \times c^2 \quad (11)$$

This is approximately the same result as in the case of the lunar year. That is, the velocity of diffraction and the spirit are roughly equal to the square of the speed of light multiplied by 59. It is also noted that the tachyonic Lorentz constant is the reciprocal of the solar year multiplied by 50,000. This embodies the essence of the inverse special theory of relativity, which dictates that the measurement of superluminal light speed remains constant from any frame of reference in the universe.

3.2 Second Method: Utilizing the tachyonic length contraction approach from relations (6) and (9):

For the moon: from Table (1), we take the reciprocal of the distance traveled by the moon in 50,000 years, divided by the distance traveled by the moon during a single day, which corresponds to the apparent length of the moving object. Note that the ratio here is the distance of fifty thousand years for the moon to the distance of a single day.

$$\gamma_L \approx c / v_T \Leftrightarrow \gamma_L = \left(\frac{25,831,347.240 \times 50000 \text{ km}}{72,893.718 \text{ km}} \right)^{-1} \approx \frac{u}{59.06 \times c}$$

$$v_T = c / \gamma_L \Rightarrow v_T u = 59 \times c^2 \quad (12)$$

For the Earth: from Table (1), we take the reciprocal of the distance traveled by the Earth in 50,000 years, divided by the distance traveled by the sun during a single day.

$$\gamma_L = \left(\frac{940,000,000 \times 50000 \text{ km}}{2,573,579.7399 \text{ km}} \right)^{-1} \approx \frac{u}{60.8 \times c}$$

$$v_T u \approx c / \gamma_T \approx 60.8 \times c^2 \quad (13)$$

It is noted that the tachyonic Lorentz constant remains unchanged when calculating either the temporal or spatial ratios, and the results are identical, which confirms the constancy of the tachyon velocity anywhere in space. This marks the first time that the correlation between Quranic verses and the inverse special theory of relativity is treated from a purely physical perspective, entirely removed from speculation. I hope this study proves to be more comprehensive than what has been previously investigated and published.

3.3 Equations (8) through (13) generally match Equation (7) of the Hill and Cox theory and can be combined into a unified relation as follows:

$$\text{from (7)} \Rightarrow v_T \cdot v = c^2$$

$$\text{from (8) to (13)} \Rightarrow v_T u \approx 60 \times c^2 \Rightarrow$$

$$v_T \cdot \frac{u}{60} \approx c^2 \Leftrightarrow v_T \cdot v = c^2$$

$$v = \frac{u}{60} \quad (14)$$

Note that what Hill and Cox consider the speed less than light (v) equals, in our calculations, approximately the reciprocal of the number 60.

4. Direct Calculation of Tachyon Speed Using Data from the Holy Verses

In this section, the tachyon velocity will be calculated from equations (5) and (6) related to inverse relativistic time and length, utilizing the lunar and solar year data from Table 1, according to the following steps:

- **First, using the lunar year data:**

We apply the values from the Holy Verses to relations (5) and (6), yielding a value equal to fifty times the square of the speed of light (refer to the steps in the previous section). Given that the tachyon speed is proportional to the square of the speed of light, when measuring ordinary velocities, which represent a length-to-time ratio, the tachyon velocity must be divided by the speed of light, or the numerical side of the numerator must be multiplied by the speed of light. This renders the equation homogeneous on both sides and achieves what was previously derived

and calculated in the preceding section. Consequently, close attention must be paid to this note for every tachyon speed relationship in the subsequent sections.

$$\begin{aligned}
 \frac{\ell}{\ell_0} &= \gamma_T \Rightarrow 1 \Rightarrow \frac{\ell}{\ell_0} = \frac{c}{v_T} \Rightarrow v_T = \frac{\ell_0 c}{\ell} \\
 \ell &= \frac{\ell_0}{\gamma_T} = \frac{25831347.240 \times 50000}{5.6 \times 10^{-8}} = 2.583 \times 10^{19} \text{ km} \\
 t_0 &= \frac{t}{\gamma_T} = \frac{86164}{5.6 \times 10^{-8}} = 1.72328 \times 10^{12} \text{ s} \\
 v_T &= \frac{\ell}{t_0} = \frac{2.583 \times 10^{19} c}{1.72328 \times 10^{12}} = 5.8 \times 10^{-13} \times 2.583 \times 10^{19} c = 14971449.79 c \text{ km / s} \\
 v_T u &= 49.9 c^2 \Rightarrow v_T \cdot \frac{u}{49.9} = c^2 \Leftrightarrow v_T v = c^2
 \end{aligned} \tag{15}$$

It follows that the tachyon velocity is approximately equal to fifty times the square of the speed of light, which represents an improved result compared to what was previously calculated in the preceding section, and corresponds to the Hill and Cox theory.

• **Second, using the solar year data:**

In the case of the lunar year, we used the trajectory of the lunar year as the length, along with the duration of an Earth Day. Supposedly, if the solar year is used as the length, we must use the duration of a lunar day [9]. In this specific section only, the lunar day is defined in our calculations as follows: the distance traveled by the Earth during a single Earth Day, divided by the distance traveled by the moon during a day, and multiplied by a factor that satisfies the equality condition between the right-hand and left-hand sides. That is:

$$\frac{940,000,000 / 365.25}{25,831,347.24 / 354.37} \approx \frac{2,573,579.739}{72,893.719} \approx 36.39 \tag{16}$$

That is, one day on Earth corresponds to 36.39 Earth days on the moon. These calculations pertain to relativity rather than the astronomical lunar day, which is equivalent to 29.5 Earth days. Converting 36.39 days into seconds yields 3,144,096 seconds, after which relations (5) and (6) are applied.

$$\begin{aligned}
 \ell &= \frac{\ell_0}{\gamma_T} = \frac{940000000 \times 50000}{5.64 \times 10^{-8}} = 8.6 \times 10^{20} c \text{ km} \\
 t_0 &= \frac{t}{\gamma} = \frac{3144098}{5.64 \times 10^{-8}} = 5.6 \times 10^{13} \text{ s} \\
 v_T &= \frac{\ell}{t_0} = \frac{8.6 \times 10^{20} c}{5.6 \times 10^{13}} \approx 14948643.46 \times c \text{ km / s} \\
 v_T u &= 49.8 \times c^2 \Rightarrow v_T \frac{u}{49.8} = c^2 \Leftrightarrow v_T v = c^2
 \end{aligned} \tag{17}$$

5. The Unified Theory of Absolute Velocities Derived from Verse 5 of Surah As-Sajdah and Verse 4 of Surah Al-Ma'arij

It is now established, from a theoretical standpoint, that mass is a complex physical quantity (complex variable), wherein tachyons possess the imaginary component of mass, while real mass possesses the real component. Here, it will be assumed that the following equation holds for total mass:

$$m_{tot} = m_{Re}(\geq 0) \pm im_{Im}(< 0) \quad (18)$$

In equation (18), the real component of mass is related to the speed of light, while the imaginary component of mass is related to the tachyon speed. Fortunately, these two components do not coexist during the processing of either speed, because each mass possesses a different domain and location. Let us begin by applying this hypothesis to both Holy Verses simultaneously.

First, assuming that the mass is real, we operate within the domain of the standard theory of relativity, meaning that imaginary mass does not exist. **Second**, assuming that the mass is imaginary, real mass does not exist, placing us within the domain of the tachyonic theory of relativity. The results will manifest as follows:

5.1 First, if the mass is real, the imaginary mass equals zero, and the standard Lorentz factor (γ) is utilized. Applying this first to Verse 5 of Surah As-Sajdah, and second to Verse 4 of Surah Al-Ma'arij, yields the following:

$$\begin{aligned} m_{tot} &= m_{Re}(\geq 0) + im(< 0) = 0 + im_{Re}(\geq 0) \\ \frac{t}{t_0} &= \gamma = 1 / \sqrt{1 - \frac{v^2}{c^2}} \Leftrightarrow \frac{1000 \text{ year}}{(1/354.37) \text{ year}} = 354370 \approx 1 \\ \left(\frac{t}{t_0} = \gamma \right)^2 &= (354370)^2 = 125,578,096,900 = \gamma^2 = 1 / 1 - \frac{v^2}{c^2} \Rightarrow \\ 1 - \frac{v^2}{c^2} &= \frac{1}{\gamma^2} \Rightarrow \frac{v^2}{c^2} = 1 - \frac{1}{\gamma^2} = 1 - 7.96317 \times 10^{-12} = 0.9999 \\ \frac{v}{c} &= \sqrt{0.9999} = 0.9999 \\ v &\approx 0.99c \end{aligned} \quad (19)$$

The result indicates that the particle velocity is equal to the speed of light. Now, applying what was mentioned above to Verse 4 of Surah Al-Ma'arij yields the following:

$$\begin{aligned} \frac{t}{t_0} &= \gamma = 1 / \sqrt{1 - \frac{v^2}{c^2}} \Leftrightarrow \frac{50000 \text{ year}}{(1/354.37) \text{ year}} = 17718500 \approx 1 \\ \left(\frac{t}{t_0} = \gamma \right)^2 &= (17718500)^2 = 3.139 \times 10^{14} = \gamma^2 = 1 / 1 - \frac{v^2}{c^2} \Rightarrow \\ \left(1 - \frac{v^2}{c^2} \right) &= \frac{1}{\gamma^2} \Rightarrow \frac{v^2}{c^2} = \left(1 - \frac{1}{\gamma^2} \right) = (1 - 3.185 \times 10^{-15}) = 0.9999 \\ \frac{v}{c} &= 0.9999 \Rightarrow v \approx v = 0.9999c \end{aligned} \quad (20)$$

The result indicates that the particle velocity is equal to the speed of light. This implies that regardless of the temporal or spatial ratios of the real mass, its speed does not exceed the speed of light. This aligns perfectly with the essence of the theory of relativity.

5.2 Second, assuming that the mass is imaginary, placing us within the domain of the tachyonic theory of relativity. Applying this **first** to Verse 5 of Surah As-Sajdah, and **second** to Verse 4 of Surah Al-Ma'arij, yields the following:

$$\begin{aligned} \frac{t}{t_0} = \gamma_T &= 1 / \sqrt{\frac{v_T^2}{c^2} - 1} \Leftrightarrow \left(\frac{1000 \text{ year}}{(1/354.37) \text{ year}} \right)^{-1} = 1/354370 \\ \gamma_T &= \frac{1}{354370} = 2.8 \times 10^{-6} \\ \text{if } v_T &\square c \Rightarrow \gamma_T^2 \approx 1 / \frac{v_T^2}{c^2} = \frac{c^2}{v_T^2} \\ \frac{c}{v_T} &= \gamma_T = 2.8 \times 10^{-6} \square 1 \\ v_T &\approx c / 2.8 \times 10^{-6} = 354000.37 \times c. \quad km/s = 1.18c^2/u \quad km/s \\ v_T \cdot u &= 1.28c^2 \Leftrightarrow v_T \cdot v = c^2 \end{aligned} \quad (21)$$

This remarkable result implies that the minimum allowable tachyon velocity derived from the Holy Verse is of order slightly greater than the square of the speed of light, which is perfectly consistent with theoretical studies. **Second**, applying what was mentioned above to Verse 4 of Surah Al-Ma'arij yields the following.

$$\begin{aligned} \frac{t}{t_0} = \gamma_T &= \left(\frac{50000 \text{ year}}{(1/354.37) \text{ year}} \right)^{-1} = 5.643 \times 10^{-8} \\ \gamma_T &= 1 / \sqrt{\frac{v_T^2}{c^2} - 1} = 5.6438 \times 10^{-8} \\ v_T &\square c \Rightarrow 1 / \sqrt{\frac{v_T^2}{c^2} - 1} \approx 1 / \sqrt{\frac{v_T^2}{c^2}} = c/v \Rightarrow \\ \frac{c}{v_T} &= \gamma_T = 5.6438 \times 10^{-8} \square 1 \\ v_T &\approx c / 5.6438 \times 10^{-8} = 5.315556 \times 10^{12} km/s = 59.06c^2/u \quad km/s \\ v_T \cdot u &= 59.06c^2 \Leftrightarrow v_T \cdot v = c^2 \end{aligned} \quad (22)$$

This implies that the maximum tachyon speed will be of the order of fifty times the square of the speed of light, within the margins of error in data processing and theoretical calculations. The resulting conclusions are:

1. There is a single absolute speed for the speed of light regarding real mass, regardless of the variation in numerical ratios, provided that the Lorentz factor is vastly greater than one. This conforms with the special theory of relativity, which dictates that the speed of light is an absolute constant irrespective of changes in calculations.
2. There are two absolute speeds for tachyonic particles: the minimum is of the order of the square of the speed of light, and the maximum is of the order of fifty times the square of the speed of light. These outcomes are in full alignment with theoretical studies and

especially with reference [15]. Based on this synthesized framework, these findings shall be designated as the Unified Theory of absolute speeds.

5. Conclusion

1. In the previous study [9], the speed of light for a real particle mass was calculated in detail by applying the standard theory of relativity to Verse 5 of Surah As-Sajdah.
2. There is general agreement between the findings in this study and Hill and Cox's theory [15].
3. In this study, the velocity of particles traveling at superluminal speeds (faster than light) was calculated by applying the tachyonic theory of relativity to Verse 4 of Surah Al-Ma'arij and Verse 5 of Surah As-Sajdah.
4. A unified theory was proposed to utilize both Holy Verses within the standard and tachyonic relativistic frameworks to calculate the speed of light and the tachyon velocity. This assumed that total mass is the sum of real and imaginary masses, with one component vanishing in the presence of the other. The resulting outcome revealed that the tachyon possesses distinct minimum and maximum velocities, below or beyond which its speed cannot extend.
5. Proposing the title "The Unified Theory of Absolute Speeds" will broaden the horizons for experimental studies to operate within the framework of the findings obtained in this research.

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