

# A tentative connection between Energy and Light speed

Author: Moshe Segal

[moshe\\_segal@yahoo.com](mailto:moshe_segal@yahoo.com)

## Abstract

This article presents the hypothesis that the only independent entity is Energy. This is based on conclusions derived from several published articles, by the author of this article, which conclude the following:

1. Electric Charges are forms of Energy, analogous to Mass being recognized as a form of Energy.
2. Space is also a form of Energy.
3. Space and Time are always interweaved into one interwoven Space/Time entity, which is also a form of Energy.

This hypothesis might also provide an explanation to why Light speed must be a constant value and the maximum speed.

Based on the conclusions of these published articles, mentioned above, this article suggests a tentative connection between Energy and Light speed which might provide an explanation to why Light speed is a constant value, causing Light speed measurements by any spectator which monitors that Light speed, to result always to be that constant value, and this is not dependent on the spectator velocity relative to the velocity of that measured Light speed.

This also might explain why the maximum attainable velocity is that constant value attributed to the speed of Light. These statements, about Light speed being the maximum attainable velocity and being a constant value were presented as axioms by Einstein's Special Relativity Theory, without providing any proof why these statements are correct. Now, this article might provide explanations to why these statements are correct.

## 1. Introduction

From the dawn of civilization, humans are struggling to understand Nature. Many theories were developed in attempts to narrow down the elements in understanding Nature. Such ideas started early. Examples are Ariso's four elements theory [1], [2], and the ancient Greeks idea that Matter is composed of Atoms [3], [4]. However, Physics today still uses many elements to explain Nature, such as *Energy, Mass, Electric Charge, Forces, Fields, Space, Time* etc.

Energy and the Energy Conservation Principle might be the most important building blocks of the Physical Sciences. Until the discovery, in the 20<sup>th</sup> century, that the Universe expands much faster than the expansion that can be justified by the amount of the calculated Energy in the whole Universe, the Energy was believed to be composed of only Traceable Energy components. After the above-mentioned discovery, the notion of Untraceable Energy (or Dark Energy) was introduced in the science of Physics. However, the exact origin of this Dark Energy is still a mystery. The acceptable notions are that Dark Energy must be looked for in Gravitation using Einstein's General

Relativity Theory. Several articles published by the author of this article argue that the origin of most of the Dark Energy might be in Electromagnetism. These articles also provide other new insights into the Energy entity, which might also explain additional issues and paradoxes that were yet ignored.

This article presents the hypothesis that the only independent entity is Energy, based on these published articles mentioned above, by the author of this article, as will be further explained in the following sections of this article.

This hypothesis might also provide an explanation to why light speed must be a constant value and the maximum speed.

## **2. All the tangible, perceptible Matter in the universe might be forms of Energy**

The basic Building Blocks of all the tangible, perceptible Matter in the universe is Elementary Particles. Each Elementary Particle contains *Mass* or *Mass plus Electric Charge*. Thus, all the tangible, perceptible Matter in the universe contains three distinct entities: Mass, Positive Electric Charge and Negative Electric Charge.

Mass is already recognized as being a form of Energy via the equation:  $E=m \cdot c^2$  [5].

In addition, an article published by the author of this article, titled: "Energy Analysis of a Null Electromagnetic Wave" [6] presents an astonishing, surprising scenario, relating to the Consolidation of Electromagnetic (EM) Waves from Separate Sources, contrary to the acceptable notion [9], that such consolidation cannot occur. That scenario was not analyzed yet, and it seems to violate the Energy Conservation Principle.

In an extreme case of such EM consolidations, a Null EM wave is composed, without any Electric or Magnetic fields. In another extreme case of such EM consolidations, Energy seems to be created out of nothing. And in almost all cases of such EM consolidations, the Energy embedded in the resultant consolidated EM wave embeds either more or either less Traceable Energy, as compared to the Traceable Energies embedded in the original consolidating waves.

Thus, in all these EM consolidation cases, the Energy Conservation Principle Seems to be violated.

That article introduced the novel Energy Pairs Theory which resolves these paradoxes by arguing that the Energy which seems to be missing in the Null EM wave, is conserved as Untraceable Energy in the photons of the resultant consolidated EM wave.

An additional published article, by the author of this article, titled: "Consolidating Electromagnetic waves might embed more traceable Energy than the sum of the traceable Energies embedded in the waves before consolidation" [10], explains that the seemingly Energy that was generated out of nothing, is Untraceable Energy embedded in photons, that converted back to Traceable Energy.

Article [6] also explains other paradoxes in the famous Electron-Positron Annihilation process [11], and in the famous Pair Production [12] process. This also provides a new insight into the nature of the Electric Charge, which might be a form of Energy, as Mass is recognized as a form of Energy, following the introduction of Einstein's Special Relativity Theory.

Thus, article [6] concludes that *Electric Charges* are also forms of *Energy*.

Thus, all the tangible, perceptible Matter in the universe are just forms of *Energy*.

The science of Physics recognizes also detectable **Energy Fields**. Energy Fields that are closely related and interact continuously with Matter are the Gravitational Fields and the Electric and Magnetic Fields. However, as the names of these Energy Fields indicate, all these Fields are recognized as forms of *Energy*.

Other Energy Fields are not closely related to Matter. Such Energy fields are Electromagnetic Waves or Gravitational Waves, which move independently from **Matter**. Such Fields, again, as their name indicates, are recognized as forms of *Energy*.

Thus, all the tangible, perceptible **Matter**, and all forms of **Energy Fields**, in the Universe are just forms of **Energy**.

### 3. Space might also be a form of Energy

Following the publication of article [6], the author of this article published an additional article, titled: "The Nature of Space and Dark Energy, Based on Electric and Magnetic Fields' Behavior in Space in the Energy Pairs Theory Framework" [7], which presents that what the Science of Physics recognizes as Space, manifests a phenomenon like what was presented in article [6], in which Electric fields in Space always annihilate each other, and the same applies to Magnetic fields, which seem like a violation of the Energy Conservation Principle. Based on the above, article [7], uses the novel Energy Pairs Theory introduced in article [6], to explain this paradox, and the article concludes that Space itself is also a form of Energy, that contain continuously, and at each point of it, Traceable and Untraceable Energies, and the relative intensities of these two Energies changing everywhere at each instant of time, which implies that most of the Untraceable (Dark) Energy, is of Electromagnetic nature. That article [7], also calculates the total amount of the Dark Energy and concludes that the Energy embedded in the Dark Energy is about two thirds of the total Energy, which complies with the acceptable agreement about the amount of Energy embedded in the Dark Energy in the Universe.

### 4. Is Time entity also a form of Energy?

Einstein's General Relativity Theories explained why Mass objects attract each other, by introducing the Interwoven Space/Time notion, which replaced the Gravitational Field (which was introduced by Newton), to explain Mass objects attraction. Since the Gravitational Field is a form of Energy, then, the Interwoven Space/Time Entity should also be a form of Energy. In a speech, in the University of Leiden on May 5th, 1920, [13], Einstein claimed that the Ether

should exist to provide physical properties to his Space/Time entity, which implies, that Einstein also agreed that his Space/Time Entity is a form of Energy.

Although the origin of Mass bodies attraction was resolved by Einstein's General Relativity Theory, the origins of Electric Charges attractions or repulsions remained a mystery. The author of this article published an article [8], which explains the origin of Electric Charges attractions or repulsions by arguing that Electric (or Magnetic) Fields are forms of Acceleration, as Newton's Gravitational Field (and Einstein's Space/Time Entity) are forms of Accelerations, which also implied that the Electric (or Magnetic) Fields are also Space/Time Entities and are also just forms of Energies.

This article [8] predicts that there are two **additional** four-dimensional Interwoven Space/Time Entities, in addition to Einstein's Gravitational Interwoven Space/Time entity, one related to the Positive Electric Charges in Nature, and the other related to the Negative Electric Charges in Nature. In this model these **additional** four-dimensional Interwoven Space/Time entities and Einstein's interwoven Space/Time entity are also **all** forms of Energy, and thus, Space and Time are not independent notions. They can be considered as components of each of these three interwoven Space/Time entities. This article also predicts that Newton's second law of motion should be updated, an update which relates to the acceleration between Electrically Charged bodies, and it proposes an experiment how to check this prediction, which might provide validity to the prediction of the **additional** four-dimensional Interwoven Space/Time Entities proposed in this article.

The science of Physics uses now just **one** *Space* and just **one** *Time* Entity. However, as already mentioned, that article [8], introduces **three independent** and **separate** interwoven Space/Time Entities, which implies that if each of these Interwoven Space/Time Entities really contain each a *Space* and a *Time* Entity, these Space and Time Entities must be **three independent** and **separate** Space and Time Entities, and, thus, this article concludes that the Space and Time entities don't really exist as independent entities, as the nowadays science of Physics presents.

This article concludes that although the notions of Space and Time don't exist as independent entities, by attributing to each of these three forms of Energy, the three Interwoven Space/Time entities, a separate Space and a separate Time component, these components can be useful for understanding and calculating the motions in the universe.

Thus, if Mass is a form of Energy (derived from Einstein's Special Relativity Theory), and Electric Charges are forms of Energy (suggested by article [6], by the author of this article), and the notions of Space and Time are not independent notions because there are three separate Space entities and three separate Time entities, and each such entity is just an element in one of the three separate Space/Time Entities, which are also forms of Energy, then, Energy is not only the most basic building block of the Physical Sciences, it might be the only independent Entity.

## 5. A Preliminary Discussion relating to Motions in the Universe

Since humans perceive movements (or motions) only via the notions of Space and Time, the above statement, that the universe might embed just one independent entity, the Energy entity, might require additional clarification, in what relates to motions in the universe.

This article claims, that in a discussion relating to motions, unless there are other intelligent cultures, or creatures or aliens in the universe, planet Earth might be unique, and must be addressed separately, because of the following reasons:

Apart from Planet Earth, the motions in the universe are the following motions:

- The motions of Planets, which can be identified mainly as Mass bodies, are subjected to the laws of Gravitation as presented by Einstein's General Relativity Theory through its Gravitational Interwoven Space/Time.
- The motions of Electric Charges embedded in Mass bodies (for example Planets or other Mass bodies moving in outer Space), in the universe, are subjected to the laws that governs the operations of Electric and Magnetic Fields, and as already presented, can be explained by proposing the two additional Interwoven Space/Time entities, as proposed by article [8].
- Apart from Mass bodies or Mass plus Electric Charges, two pure Energy entities travel in the universe, Electromagnetic and Gravitational Waves, both at the speed of Light, and as will be mentioned in the following section of this articles, these waves are also affected by the Interwoven Space/Time entities.

Also as stated above, this article concluded that the only distinct entity in the universe might be the entity of Energy, because Mass and Electric Charges are shown by this article to be forms of Energies, and Space and Time might not really exist, if there must be three **separate** Space and Time elements attributed to the three Interwoven Space/Time entities proposed by article[8], which are also just forms of Energies.

Thus, from the above follows that the three Interwoven Space/Time entities are the Energies that govern the motions of all the above-mentioned Energy entities: Mass, Electric Charges and Electromagnetic or Gravitational Waves.

However, the motions of Planets do not occur in a fixed pattern, which lasts forever. Any now and then explosions occur in the universe, which release accumulated Energies, and Mass bodies also collide, and all that initiate changes in the patterns that bodies in the universe move.

However, apart from the initiation of these changes in the patterns of motions in the universe, and because after these pattern changes the motions in the universe return to the state in which what governs these motions are the above-described causes for motions in the universe, then, it can still be established, that the three Interwoven Space/Time entities presented in article [8], are the Energies that usually governs the motions of all the Energy entities in the universe.

However, Planet Earth is unique in this sense because Planet Earth contains living creatures which have consciousness and will, which initiate motions other than random explosions or collisions. In addition, humans, who also populate Planet Earth, build machines, which can also initiate motions other than random explosions or collisions.

However, because such motions are limited to Planet Earth, as far as is known today, and because such motions are local and limited, in what humans perceive as Space and Time, such motions might not be taken into consideration, when trying to explain the motion and velocity of Light. Because such motions don't seem to affect at all how light is moving throughout the universe.

Thus, the following section, which proposes a possible connection between Energy and Light speed, will take into consideration the conclusion stated above, that the three Interwoven Space/Time entities, are the Energy entities which should be considered, when trying to explain Light motion and velocity.

## 6. A possible connection between Energy and Light speed

Einstein's Special Relativity Theory presented the postulate, that the velocity of Light is the maximum attainable velocity, that any tangible material can achieve, and the measured velocity of a Light beam, measured by any spectator, always results in a constant value, regardless of the velocity and the direction of the movement of that spectator, relative to that measured Light beam.

The question: why this postulate was presented by Einstein as a postulate (or axiom) without any explanation? was already presented in this book, as an unanswered question that needs an explanation.

Why only the velocity of Light is so special and unique?

It was already stated in this book, that this postulate must be a viable postulate, because it is a crucial base on which Einstein's Special Relativity Theory is based.

And because Einstein's Special Relativity Theory is already recognized, and accepted, as a viable Theory, based on many observations, this postulate should be also accepted as a viable postulate.

Still, the following question should be addressed: why Einstein presented this postulate as a postulate (or an axiom), without providing any proof or explanation as related to its validity?

This chapter might provide a possible explanation to the question presented above.

As presented already in this book, this book presented the hypothesis, that the Universe is composed of only one entity, Energy.

If the Universe is composed of only one entity, Energy, then, all the movements in the Universe must be just a result of **interactions** between Energies, whose outcomes is perceived by humans as an Energy (or Energies) which is moving.

The explanation provided, in this chapter, to the question: why the velocity of Light is such special and unique? is based on several elements.

The first element is the recognition, that Space and Time as humans perceive, do not really exist.

As already presented in this book, this book concluded that the Universe is composed of only one entity, Energy, also, because it concluded, that Space and Time are not independent entities, they are just facets, attributed by humans, to three Energies, the three separate Interwoven Space/Time entities, presented in the paper [8], which also imply, that Space and Time **does not really exist**, they are only notions, invented by humans, to perceive movements and changes in the Universe.

It should be emphasized that this book presents that each of the three **separate** Interwoven Space/Time entities, presented in this book, should embed **its own** Space and **its own** Time entities, which implies that **if** such Space and Time entities **are really** embedded in the three Interwoven Space/Time entities, presented in this book, then, the Space and the Time entities, as humans perceive these entities, **cannot really exist**, because humans assume that there should be only **one** (and not three) Space entity and only **one** (and not three) Time entity.

From the above it can be concluded that the separate Space and the separate Time attributes (or facets) attributed to each of the three Interwoven Space/Time entities, presented in this book, is based on how humans **interpret** the **interactions** between each of the three Interwoven Space/Time Energy entities with other Energy entities, and this might also imply that Space and Time attributes might **not be really** embedded in any of the three Interwoven Space/Time entities, presented in this book.

What was just presented, also implies that the way that a **specific** Interwoven Space/Time entity **interacts** with **another specific** Energy entity, might **enable** humans to **assign** to that **specific** Interwoven Space/Time entity attributes of Space **or** Time, or even attributes of Space **and** Time, to **explain** the **interaction** that this **specific** Interwoven Space/time entity conducts with this **other specific** Energy entity, even though such Space and Time entities are not really embedded in that specific Interwoven Space/Time entity.

For example, the Einstein's Interwoven Space/Time Energy entity (which replaced Newton's Gravitational Field, which is also an Energy entity) **interacts** with Masses (which are also forms of Energy) in a way, which enabled Einstein's **interpretation** regarding the nature of that Interwoven Space/Time entity, which resulted in assigning to that Interwoven Space/Time entity, an attribute of a Space entity **and** an attribute of a Time entity (which are interweaved), because such an **interpretation** enabled Einstein to explain the origin of the attraction between Mass bodies.

But it might be that **interactions** of the Einstein's Interwoven Space/Time entity with Energy entities which **are not** Masses, **might indicate** that Einstein's Interwoven Space/Time entity **does not need** to embed any Space or Time attributes at all.

From the above it can be stated that the three Interwoven Space/Time entities, presented in this book, **might not embed** any Space or Time entities, and all that it can be established is that each of the three Interwoven Space/time entities is a form of an Energy entity, which **interacts** with other forms of Energy entities. But humans might **interpret some** of the **interactions** that a specific Interwoven Space/Time entity conducts with some other specific forms of Energies, as if that Interwoven Space/Time entity does embed Space **or** Time attributes, or even Space **and** Time attributes.

A second element on which the explanation provided, in this chapter, to the question: why the velocity of Light is such special and unique? is the observation that the measured velocity value of a Light beam, by humans, also presents a severe peculiarity, which is presented as follows:

When a human spectator measures the velocity value of any tangible substance, for example, the velocity of a moving Mass body, the velocity, and the direction of motion of this spectator **does affect** the measured velocity value of this Mass body, by this human spectator,

But, as already stated above, when a human spectator, measures the velocity value of a Light beam, the velocity, and the direction of motion of this spectator **does not affect at all**, the measured velocity value of this Light beam, by this human spectator.

This should be regarded as a severe peculiarity, in any velocity value measurements of Light beams, by humans, which must be also explained.

This peculiarity might imply that humans **cannot** execute at all, a reliable measurement of the velocity value of a Light beam, because of the following:

Humans can perceive any motion only by using the terms Time and Space, because velocity is perceived (and calculated) by humans as the first derivative of Space as related to Time (for example  $v_x=dx/dt$ ).

Thus, two velocities can be measured by humans, and compared reliably to each other, only if each of these velocities is **affected** by what humans perceive as a Space element, **and** a Time element.

If, as stated above, the three Interwoven Space/Time entities **do not really** embed any Space or Time attributes, then, there might be **interactions** between a specific Interwoven Space/Time entity and a specific other form of Energy, which will **not enable** humans to assign Space and Time attributes to that Interwoven Space/time entity, as related to that **interaction**.

Thus, in such an **interaction** between that specific Interwoven Space/Time entity and a specific other form of Energy, the measured velocity value of this Energy movement, **cannot be measured by humans**, because the first derivative of Space as related to Time (for example  $v_x=dx/dt$ ), cannot be established, which also implies, that humans cannot reliably compare the measured velocity of this Energy movement to any other velocity of any other Energy movement.

The only **interactions** that humans **can and need** to attribute to them Time **and** Space facets, to perceive, or explain, these **interactions**, are the **interaction** between Einstein's Interwoven Space/Time Energy entity with the Mass Energy entity, and the **interactions** between the two additional Electrical Interwoven Space/Time Energy entities, presented in the paper [8], and the Electric Charge Energy entities, because these three Interwoven Space/Time entities are the **only** Energy entities, which cause **non-instantaneous** movements in the Universe, movements of either Mass bodies, or Electrically Charged bodies.

The statement presented above, that the three Interwoven Space/Time entities are the **only** Energy entities, which cause **non-instantaneous** movements in the Universe, requires some additional explanation:

In addition to movements, caused by the three Interwoven Space/Time entities, as presented in this book, Energies might start moving, or change their movement, because of other causes.

For example, when a moving Particle bumps into a non-moving Particle, the non-moving Particle starts moving, and the movement of the Particle that bumped into the non-moving Particle, acquires a change in its movement.

However, what was just described above, is just an **instantaneous** transfer of Energies between these two Particles, and after this instantaneous transfer of Energies occurs, the **non-instantaneous** movements of these Particles are continued to be controlled only by the three Interwoven Space/Time entities, until some of these Particles undergo another **instantaneous** transfer of Energy.

As related to all other forms of Energies, for example, Mass or Electric Charges, humans don't need to attribute, to these forms of Energies, any facets of Space or Time, because Mass or Electric Charge do not move, unless they interact with each other **instantaneously** which causes just an instantaneous Energy transfer, (as presented above), or interact with either one or more of the three Interwoven Space/Time Energy entities, mentioned above, to undergo **non-instantaneous** movements.

Then, the ability to measure the velocity value of a specific Energy movement by humans, and the ability to compare reliably this measured velocity value, of this specific Energy movement, by humans, to the value measured of any other velocity, is dependent on how this Energy **interacts** with the three Interwoven Space/Time entities (or any one of them).

Thus, if this Energy movement is affected by the three Interwoven Space/Time entities (or any one of them) such that **both**, the facet of Time **and** the facet of Space, which humans attribute to this specific **interaction** of this specific Interwoven Space/Time entity, participate in that **interaction** of this specific Interwoven Space/time entity with that specific Energy movement, then, the measured velocity value of that Energy movement can be reliably compared to the measured velocity value of any other velocity, because the first derivative of Space as related to Time (for example  $v_x=dx/dt$ ), in this movement, can be calculated.

But, if only one of these facets seem to **interact** with that Energy movement, for example, only the Space facet seem to interact with that Energy movement, and the other facet, the Time facet does not participate in the interaction with that Energy movement, then, it will be impossible to establish a reliable measured value of the velocity of that Energy movement, by humans, which can be reliably compared to the measured value of any other velocity, because it will be impossible to establish the first derivative of Space in relation to Time (for example  $v_x=dx/dt$ ) in relation to that Energy movement.

However, in such a case, humans might still perceive that Energy movement as an active movement, because, as stated above, the Space facet does seem to affect this movement, even though the Time facet, did not seem to affect this movement.

In all movements of entities in the Universe that are movements of Particles, what are moving are either Mass or Mass plus Electric Charges, because all Particles are composed, of Elementary Particles, which are composed of either Mass or Mass plus Electric Charges.

As presented in the paper [8], all movements in the Universe which are movements of Particles, are controlled by one or more of the three Interwoven Space/Time entities, and such Energy movements (which are movements of Particles) also continue to interact with these Interwoven Space/Time entities, such that both, the facet of Space *and* the facet of Time, attributed to these Interwoven Space/Time entities, by humans, participate in these interactions.

This implies that the measured velocities embedded in these Energy movements, which are movements of Particles, which are the movements of all the tangible materials in the Universe, can be compared to any other measured velocity.

For example, the velocity in the movement of a Mass body movement caused by Einstein's Interwoven Space/Time, can be compared to the velocity of an additional Mass body, caused also by Einstein's Interwoven Space/Time entity, because the Space and the Time facets, attributed to Einstein's Interwoven Space/Time entity, are both involved and participate in the interactions of all these Energy movements.

However, in addition to Particles, two additional entities are moving in the Universe.

These two additional movements, which are not movements in which Particles are moving, are the movements of entities which are pure Energies, and still move in the Universe, mainly, the movements of Electromagnetic or Gravitational Waves, which both move at the velocity of Light.

These movements, of these entities, (the Electromagnetic or Gravitational Waves), also interact with these three Interwoven Space/Time entities.

Einstein's General Relativity Theory predicted, and that prediction was supported later by observations, that Light which passes near a star is bended according to the Space bending, that this star Mass induces into Einstein's Interwoven Space/Time entity.

However, the measured velocity of this Light remains the same constant velocity attributed to the velocity of Light.

This should imply that the movement of Light is also affected by the Interaction between the Energy embedded in the Light beams with the Energy embedded in Einstein's Interwoven Space/Time entity, and the attribute of Space, that Humans attribute to the Energy embedded in Einstein's Interwoven Space/Time entity does explain the above-described Light bending when Light passes near a star.

However, because the measurement of the velocity of a Light beam, always result in the severe peculiarity described above, in which that measurement, is *not affected at all*, by the velocity or the direction of the movement, of the spectator which measures that velocity, this should imply, that the attribute of Time that Humans attribute to the Energy embedded in Einstein's Interwoven Space/Time entity *does not* participate in affecting the movements of Electromagnetic or Gravitational Waves in the Universe, which means that the attribute of Time, that Humans

attribute to the Energy embedded in Einstein's Interwoven Space/Time entity, *is not sufficient* to achieve a reliable measure of the velocity of Light, by Humans.

Thus, because, on one hand, the Time attribute, attributed by Humans to the Energy embedded in Einstein's Interwoven Space/Time entity, *does result* in reliable measurements of the velocities and accelerations embedded in the attraction movements between Mass bodies, and, on the other hand, the same Time attribute, attributed by Humans to the Energy embedded in Einstein's Interwoven Space/Time entity, *is not sufficient*, to enable Humans, to achieve a reliable measurement of the velocity of Light, this should further support the prediction, presented in this paper, that the Time entity does not exist, and should be viewed only as an attribute, that Humans might append to certain forms of Energies, to assist Humans in perceiving, understanding and calculating certain motions in the Universe.

Because the Time attribute, attributed by Humans to the Energy embedded in Einstein's Interwoven Space/Time entity, *is not sufficient*, to enable Humans, to achieve a reliable measurement of the velocity of Light, this should imply that the Interaction between the Energy embedded in a Light beam and the Energy embedded in Newton's Gravitation Field (or the Einstein's Interwoven Space/Time entity), is significantly different than the Interaction between the Energies embedded in Mass bodies and the Energy embedded in Einstein's Interwoven Space/Time entity, which might imply that what Humans perceive as the Time entity does not affect at all the Interaction between the Energy embedded in a Light beam and the Energy embedded in Newton's Gravitation Field (or the Einstein's Interwoven Space/Time entity).

The above might also imply that Humans *are not able* to achieve a reliable measure of Light, because the first derivate of what Humans perceive as Space in relation to Time cannot be established, in measurements of Light velocity executed by Humans.

Thus, if what Humans perceive as the first derivate of Space in relation to Time might be impossible to be established in measurements of Light velocity executed by Humans, this might also provide a tentative explanation to why the measurements of Light velocity by Humans, always result in a *constant value*.

And this might also tentatively explain why this constant value is the maximum velocity that Humans can measure, as presented below:

The severe peculiarity in measurements of Light velocity by Humans is manifested in the fact that Humans cannot detect an increase in the Light velocity when the direction of travel of the measured Light beam and the direction of travel of the Human spectator, are opposite to one another, as compared to the measured Light velocity when both, the measured Light and the Human spectator, travel on the same direction.

If measurements of Light velocity by Humans always result in the maximum velocity that Humans can achieve, this explains what was just presented, relating to the severe peculiarity in measurements of Light velocity by Humans.

But this might occur because the expected increase, in the measured Light velocity, presented in the scenario described above, cannot occur, if the measured Light velocity must always end up in a constant value.

## 7. Summary and Conclusions

This article summarizes a broad theoretical research work done by the author of this article. The conclusions derived from the first two research works [6], [7], are that all the Tangible, Perceptible Matter in the *Universe* are forms of *Energy*, and *Space* **might** be also a form of *Energy*. The third research work [8] also attributes to Space the Energies embedded in **three separate** Interwoven Space/Time Entities which are all forms of Energies. Thus, the Space and the Time Notions are **redundant**, or can be presented only as elements, **embedded** in each of these three Interwoven Space/Time Entities, to assist in understanding and calculating the motions in the universe.

Space and Time (and all the other Notions used by Physics, such as *Fields or Forces*) may still be **very useful** in analyzing the details involved in how the **interactions** between forms of Energies occur, but, still, all these Notions are **not independent Notions**.

Thus, the Existence might be composed of only one independent Entity: *Energy*. And this Entity, the Energy, is always **conserved**, *nothing* of it can be annihilated or destroyed, it appears in various forms, which continuously interact with each other, and each form of Energy can be converted to another form of *Energy*, and these conversions and interactions between Energies create all the Activities in the Existence.

Also, **parts** of this Entity, the Energy, can be Traceable, and **parts** of it might be Untraceable and Untraceable forms of Energies can convert back to Traceable forms of Energies, and vice versa.

Also, the hypothesis that the universe contains only one independent entity, the Energy, also provides a possible explanation to why the light speed is a constant value and the maximum possible speed.

## References

[1] Diagram of Aristotle's Four-Element Theory

[https://www.researchgate.net/figure/Diagram-of-Aristotles-four-element-theory-According-to-Aristotle-the-prime-matter-was\\_fig4\\_32894309](https://www.researchgate.net/figure/Diagram-of-Aristotles-four-element-theory-According-to-Aristotle-the-prime-matter-was_fig4_32894309)

[2] Aristotelian Physics. Wikipedia.

[https://en.wikipedia.org/wiki/Aristotelian\\_physics](https://en.wikipedia.org/wiki/Aristotelian_physics)

[3] Atomic Theory.

<https://www.infoplease.com/math-science/physics/atomic-theory>

[4] Atomism. Wikipedia.

<https://en.wikipedia.org/wiki/Atomism>

[5] Mass-energy equivalence. Wikipedia.

[https://en.wikipedia.org/wiki/Mass%E2%80%93energy\\_equivalence](https://en.wikipedia.org/wiki/Mass%E2%80%93energy_equivalence)

[6] Energy Analysis of a Null Electromagnetic Wave. Moshe Segal. Theoretical Physics Journal by Physics Tomorrow Letters (PTL).

[https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b\\_f8d75fc7c61d455d8bda102055d6b92d.pdf](https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b_f8d75fc7c61d455d8bda102055d6b92d.pdf)

[7] The Nature of Space and Dark Energy, Based on Electric and Magnetic Fields' Behavior in Space in the Energy Pairs Theory Framework. Moshe Segal. Theoretical Physics Journal by Physics Tomorrow Letters (PTL).

[https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b\\_5e77c3b53281421290d97119d0b90052.pdf](https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b_5e77c3b53281421290d97119d0b90052.pdf)

[8] A New Theory Expands Einstein's General Relativity Theory to Include Both Electric Charge and Mass Entities. Moshe Segal. Theoretical Physics Journal by Physics Tomorrow Letters (PTL).

[https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b\\_99d3fce252fa49c88b94da38d508dbc2.pdf](https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b_99d3fce252fa49c88b94da38d508dbc2.pdf)

[9] Does Destructive Interference Destroy Energy? Kirk T. McDonald Joseph Henry Laboratories, Princeton University. <http://kirkmcd.princeton.edu/examples/destructive.pdf>

[10] Consolidating Electromagnetic waves might embed more traceable Energy than the sum of the traceable Energies embedded in the waves before consolidation. Moshe Segal. Academia Letters, Article 3768.

<https://doi.org/10.20935/AL3768>

[11] Electron-Positron annihilation. Wikipedia.

[https://en.wikipedia.org/wiki/Electron%E2%80%93positron\\_annihilation](https://en.wikipedia.org/wiki/Electron%E2%80%93positron_annihilation)

[12] Pair Production. Physics. <https://www.britannica.com/science/pair-production>

[13] Einstein: Ether and Relativity. [http://mathshistory.st-andrews.ac.uk/Extras/Einstein\\_ether.html](http://mathshistory.st-andrews.ac.uk/Extras/Einstein_ether.html)

Please also note that that articles in references [6], [7], [8] are under PTL copyright and consent form, signed by the author Moshe Segal with PTL. Versions of these articles were also inserted in the open e-Print archive viXra.org.

## About the author

This article was written by Moshe Segal.

This article was inserted in the open e-Print archive viXra.org

Moshe has a B.Sc Graduated with distinction (Cum Laude) and a M.Sc in Electronics and Electrical Engineering from the Technion, Haifa, Israel.

Moshe Segal's address is: Ravutzky st. #78 Ra'anana ISRAEL 4322141

Email addresses: [moshe\\_segal@yahoo.com](mailto:moshe_segal@yahoo.com), [leasegalster@gmail.com](mailto:leasegalster@gmail.com), [mirch0@walla.com](mailto:mirch0@walla.com)

Please also note that the article referenced in reference [6] whose title is: "Energy Analysis of a Null Electromagnetic Wave" was also written by Moshe Segal and was also inserted in the open e-Print archive viXra.org.

That article was also published by Physics Tomorrow Letters (PTL) in the Theoretical Physics Journal.  
The link to that publication is:

[https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b\\_f8d75fc7c61d455d8bda102055d6b92d.pdf](https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b_f8d75fc7c61d455d8bda102055d6b92d.pdf)

Please also note that that article is under PTL copyright and consent form, signed by the author Moshe Segal with PTL.

Please also note that the article referenced in reference [7] whose title is: "The Nature of Space and Dark Energy, Based on Electric and Magnetic Fields' Behavior in Space in the Energy Pairs Theory Framework" was also written by Moshe Segal and was also inserted in the open e-Print archive viXra.org.

That article was also published by Physics Tomorrow Letters (PTL) in the Theoretical Physics Journal.  
The link to that publication is:

[https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b\\_5e77c3b53281421290d97119d0b90052.pdf](https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b_5e77c3b53281421290d97119d0b90052.pdf)

Please also note that that article is under PTL copyright and consent form, signed by the author Moshe Segal with PTL.

Please also note that the article referenced in reference [8] whose title is: " A New Theory Expands Einstein's General Relativity Theory to Include Both Electric Charge and Mass Entities. " was also written by Moshe Segal and was also inserted in the open e-Print archive viXra.org.

That article was also published by Physics Tomorrow Letters (PTL) in the Theoretical Physics Journal.  
The link to that publication is:

[https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b\\_5399eb07c7334d9d965cc3685558dea1.pdf](https://2edd239a-21aa-41cc-a45e-84832f36b982.filesusr.com/ugd/04176b_5399eb07c7334d9d965cc3685558dea1.pdf)

Please also note that that article is under PTL copyright and consent form, signed by the author Moshe Segal with PTL.