Energy Pairs might turn to Dark Energy

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Abstract

After the presentation of the Special Relativity Theory by Einstein, the concept of *Mass* was discovered to be a special form of *Energy*. Thus, the concept of *Electric Charge* remained the only distinct entity in Physics that is not equated with *Energy*.

Actually, the fact that charge exists in two types, positive and negative, might be one of the crucial reasons why it was difficult to analyze the concept of charge and consider it as another form of energy.

In an article named "Electric Charges as Energy Pairs" that can be found at http://viXra.org/abs/1909.0098 the assumption that Charge might also be considered as a form of Energy was presented and discussed, from several points of view. This article argues that the claim that Electric Charge might be a form of Energy, might be valid.

However, if electric charges are a form of energy, they must belong to a set of "Energy Pairs". As charge might be positive or negative, the energy embedded in charge should also be of two energy types, which are assigned to one set of "Energy Pairs".

The article presents the "Energy Pairs" Theory that states that electric fields energies or magnetic fields energies, which are dependent on the existence of a force field (electric or magnetic) in order to exist, can annihilate each other, in certain situations, an annihilation that seems to violate the Energy Conservation Principle.

The theory of "Energy Pairs" is actually proved by the following scenario:

A scenario of very focused two source electromagnetic traveling waves, focused such that they can be considered as traveling only in one dimension, which are colliding, and following this collision, the waves consolidate, and continue to travel in the same direction.

Analysis of this scenario reveals that there might be a loss of the energy that these waves

carried before that consolidation, which might be a clear violation of the Energy Conservation Principle, which is also what the "energy Pairs" theory states. And if, following this consolidation, the waves have same energy and opposite amplitudes in their electric fields and also in their magnetic fields the waves actually seem to disappear.

The theory of "Energy Pairs" might be very helpful in explaining and understanding some crucial unresolved problems in the science of Physics today, like *dark energy*, the *charge disappearance* in collisions between electron and positron and others.

The article examines the energy embedded in electric and magnetic fields, and then, the "Energy Pairs" theory is used to explain and better understand the observations and results.

This analysis provides a deep and surprising view, not only on the specific process examined, but also in better understanding of the biggest unresolved problems of the science of Physics today, like the expansion of the universe and the dark energy issue.

Introduction

Mass is recognized as a special form of energy. It is not constant and mass increases by velocity according to: (Ref 6)

$$m = m_0/(1 - v^2/c^2)^{1/2}$$ where c is the speed of light.

And it can be converted to energy according to: (Ref. 5)

$$E = m c^2$$ where E is energy, m is mass and c is the speed of light.

Thus, before the presentation of the special theory of relativity, the science of physics recognized actually three distinct entities: Energy, Mass and Charge, (apart from Time and Space).

After the presentation of the special theory of relativity, the Mass ceased to be a distinct entity, and it is recognized as a special form of Energy. So, now there are only two distinct entities (apart from Time and Space): Energy and Charge.

In a separate article, named "Electric Charges as Energy Pairs" that can be found at http://viXra.org/abs/1909.0098 the argument that Charge might be also considered as a form of Energy, as Mass turned to be, was presented and discussed from several angles.

This argument is based on another claim, that if electric charges are a form of energy they must belong to a set of Energy Pairs, and the reason for that is as follows:
Because charge comes in two types, a positive charge and a negative charge, then, the energy embedded in charge must also come in two energy types, which are assigned to one set of Energy Pairs.

Actually, the fact that charge comes in two types might be one of the crucial reasons why it was difficult to recognize charge as another form of energy.

This article starts by analyzing the energy embedded in electric and magnetic fields, and shows that such energies, which are dependent on the existence of a force field (electric or magnetic) in order to exist, can annihilate each other, in certain situations, an annihilation that seems to violate the Energy Conservation Principle.

Actually, this article describes a specific physical scenario which shows a situation in which during a collision, followed by a consolidation, of two one dimensional electromagnetic traveling waves that occur in a specific constellation, the two waves, which each contain energy, disappear, which is a clear violation of the Energy Conservation Principle.

In light of the above described scenario, this article assigns the energy embedded in electric fields generated by positive charges, and energy embedded in electric fields generated by negative charges to one set of Energy Pairs. And, this article also assigns the energy embedded in magnetic fields generated by moving positive charges, and energy embedded in magnetic fields generated by moving negative charges to another set of Energy Pairs. Then, this article presents the Energy Pairs Theory, that states that energies belonging to Energy Pairs of equal intensities residing in the same space volume, might annihilate each other, in certain conditions.

Since the above mentioned physical scenario does show that electric and magnetic energy can be annihilated, or disappear in certain conditions, this provides a proof to the validity of the Energy Pairs Theory.

Then, because energies in electric and magnetic fields are generated initially from electric charges, the Energy Pairs Theory is also used to explain the issue of charge disappearance in electron positron collisions, which, as will be shown in a following section of this article, provides extra support to the assumption that charge is energy.

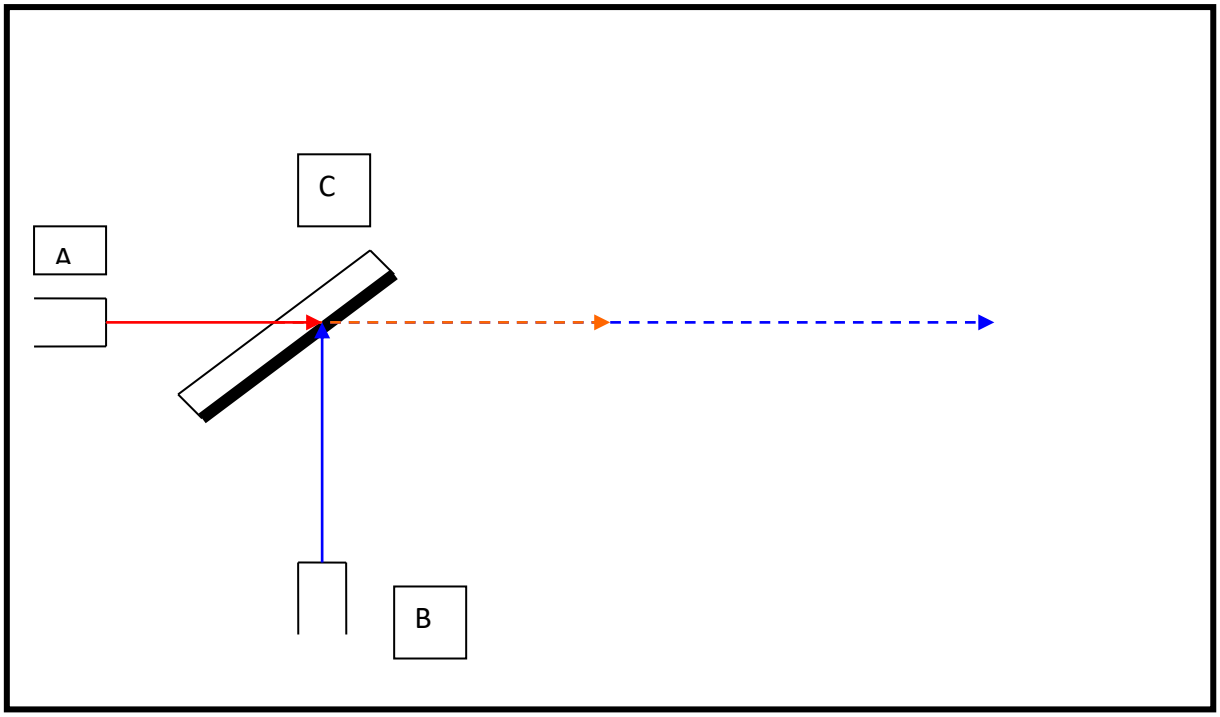
The above described scenario can be converted to a physical experiment which might provide an additional validity to the Energy Pairs Theory. This article also describes how such an experiment can be arranged.

The above mentioned scenario might also show that Energy Pairs might turn into Dark Energy, which is a mystery that the science of Physics seeks a solution to it. This will be elaborated in more details, in a following sections of this article.

Description of an experiment demonstrating the described scenario

The above described scenario of two one dimensional electromagnetic waves which consolidate and become unified, and continue to travel together in the same direction can be converted to a physical experiment which can be arranged as shown by Fig. 1 below:

Fig 1



An electromagnetic wave source A generates the very focused first (red) one dimensional electromagnetic traveling wave, which passes through the half transparent mirror C, and is supposed to continue, after it passes the half transparent mirror C (as the dotted red line indicates).

A second electromagnetic wave source B generates the very focused second (blue) one dimensional electromagnetic traveling wave, that is deflected by the mirror C, such that it is supposed to continue on exactly the same line as the first wave (as the dotted blue line indicates).

It might be difficult, technologically, to arrange such an experiment, because the

requirement is that the blue wave will arrive at the half transparent mirror C such that it will be deflected in exactly the right angle, in order to consolidate completely with the red light wave. And, because the waves are supposed to be very focused and, actually, almost one dimensional, this might be a difficult task to achieve. But, in principle, such a constellation will create the above described scenario of two one dimensional electromagnetic waves which consolidate and become unified, and continue to travel together in the same direction. And, the issue if energy is indeed lost in this experiment, can be examined.

Another issue might be the question of what happens with the photons, which are the particle manifestation of these electromagnetic traveling wave. Do they also disappear when the electric and magnetic fields annihilate each other continuously? If an experiment will be conducted, this might answer this issue. This issue is also further examined in a following section of this article.

Actually, this experiment might provide, in any case, significant insights regarding or related to electric charges and electric and magnetic fields and energies. This will be discussed in more details in a following section of this article.

Analysis of Energy loss in consolidating waves

An analysis of two one dimensional electromagnetic waves which consolidate and become unified, and continue to travel together in the same direction, will now be presented.

How to arrange an experiment that implements the above scenario was already described in the previous section of this article.

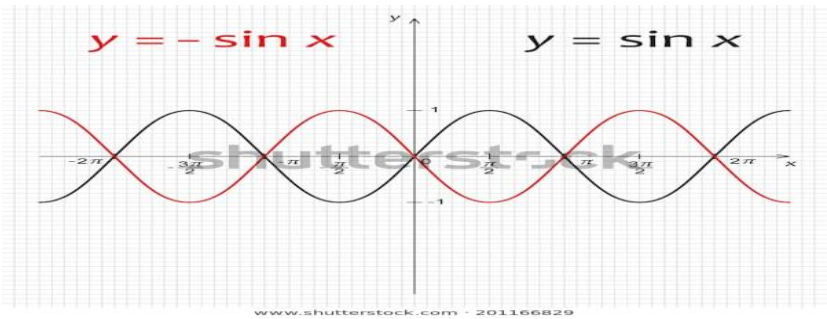
Fig. 2 below shows, for example, the electric fields intensities of two **consolidated** oscillating waves at a specific instance of time, say t=0. The y-axis represents the amplitude of each of the electric fields at this moment of t=0, at any location of the wave traveling line, which is represented by the x-axis. If both waves travel along the line represented by the x-axis at the same speed, then, at any following moment t in their wave journey, a picture representing these electric fields relative to one another will be the same as Fig. 2, only shifted along the x axis by a displacement equal to the velocity of the waves multiplied by the new time instance t.

If the oscillation of the electric fields and the magnetic fields of the two waves, after the consolidation, will look like the waves presented in Fig. 2 below, they will clearly annihilate each other.

Because, if the red wave in Fig. 2 represents, for instance, the electric field oscillation of one wave, and the black wave in Fig. 2 represents, the electric field oscillation of the second wave, the electric fields of both waves will annihilate each other, continuously.

And, if the oscillating magnetic fields of both waves are also represented by Fig. 2, (but y-axis replaced by z-axis, because the electric and magnetic fields are perpendicular to each other) also the magnetic fields of both waves will annihilate each other, continuously.

Fig. 2



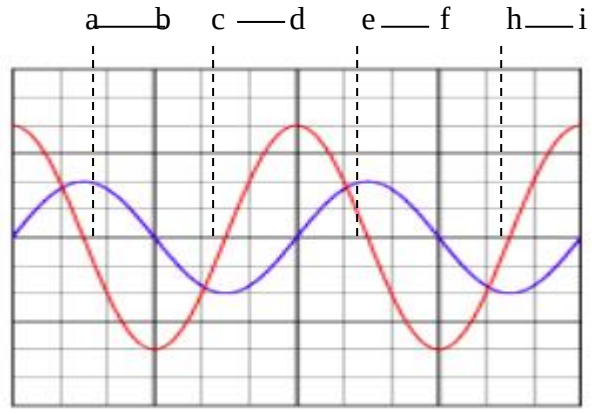
So, both waves will disappear after their consolidation. And because the energies of both waves exist only when their electric and magnetic fields exit, their energy will also disappear after this consolidation. A clear violation of the Energy Conservation Principle.

However, in a scenario were two waves **consolidate and become unified, and continue to travel together in the same direction**, even if they have **any phase shift relative to one another**, or have **different frequency of oscillation**, some of the energy they initially contained will usually seem to disappear.

Because, if Fig. 3, for example, represents the oscillation of the electric fields of the two waves at an instant of time, say t=0, because these oscillations have a phase shift relative to one another, there are portions, such as a-b, c-d, e-f and h-i, in each oscillating cycle, where one wave have opposite polarity relative to the other wave.

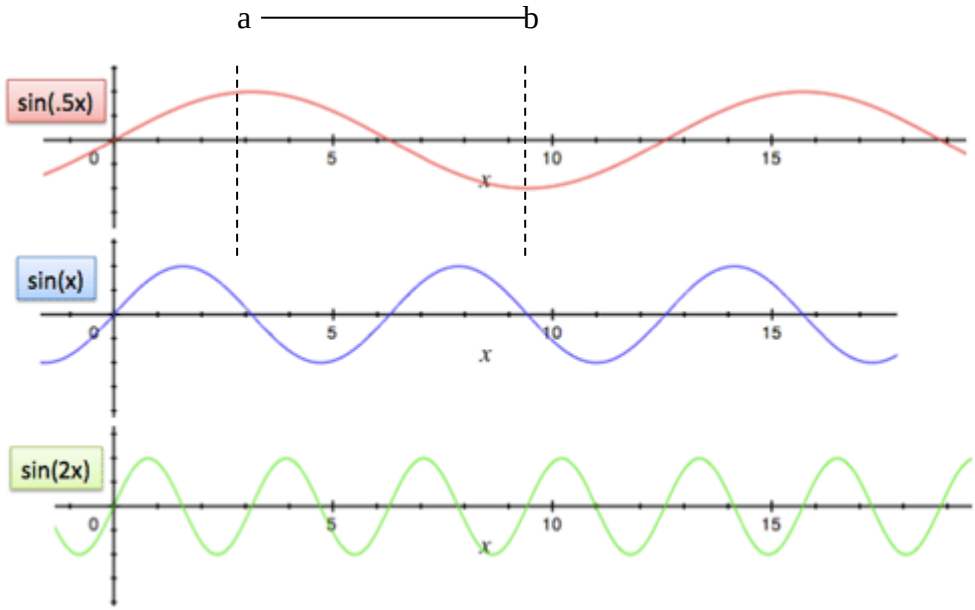
And, in these portions of the oscillating cycle, portions of one wave will annihilate these portions in the other wave, which will result in reducing the electric field intensity in these portions in the oscillation cycle. Which results in an energy loss. And this energy loss will occur continuously, because Fig. 3 represents the waves along **all** their journey, following their consolidation, because they travel at the same speed along the one dimensional x-axis.

Fig. 3



A similar argument apply to the case of waves which oscillate with different frequencies.

Fig. 4 below shows 3 such waves:



If the first two waves in Fig. 4 (sin(.5x) and sin(x)), for example, represents the oscillation of the electric fields of the two waves at an instant of time, say t=0, because these oscillations oscillate at different frequencies, there are portions, such as a-b, in each oscillating cycle, of sins(.5x) where one wave have opposite polarity relative to the other wave, which results in an energy loss. And this energy loss will occur continuously, because Fig. 4 represents the waves along **all** their journey, following their consolidation, because they travel at the same speed along the one dimensional x-axis.

So, for waves that **consolidate and become unified, and continue to travel together in the same direction** the Energy Conservation Principle seems to be violated **almost always, and almost in any constellation**.

This violation of the Energy Conservation Principle, is actually a proof of the Energy Pairs Theory. Because, also the Energy Pairs Theory claims that electric or magnetic fields energies can annihilate each other in certain cases, which actually is what happens in the above described scenario, which seems as a violation of the Energy Conservation Principle.

Energy Pairs might explain Charge disappearance in electron positron collisions

When an electron and a positron collide they annihilate each other and gamma ray photons are emitted, with energy equal to the sum of the energies embedded in the masses of the electron and the positron. However, the charges of the electron and the positron are not converted to any new substance (such as energy) and they simply disappear without leaving any trace of their previous existence. This charge disappearance seem to be an unusual, strange and unexpected mystery, although this charge disappearance obey the charge conservation principle. This charge disappearance is strange, because charge seem to be a basic element in physics, and such basic elements should not disappear.

The Energy Pairs mentioned above provides a reasonable and logic explanation also to this charge disappearance mystery. This is done by assuming that charge is energy and energy embedded in positive charge and energy embedded in negative charge belong to one set of Energy Pairs that might annihilate each other.

Actually, this charge disappearance can also be described **the other way around**, as providing **extra support** to the **assumption that charge is energy**. Because, as electric and magnetic fields energies are shown to annihilate each other and disappear, in certain situations, as the two waves scenario described before indicates, positive and negative charge might also annihilate each other in certain situations, such as, in electron positron collisions, which strengthen the claim that electric charges are also a form of energy.

Energy Pairs might resolve Energy Conservation Issues

The Energy Pairs Theory can be used to provide an explanation to a magnetic field potential energy conservation paradox.

This magnetic field potential energy conservation paradox is described as follows:

When a body is charged with electric charges of a certain polarity (such as positive electric charges) and a certain amount of charge, and the body is moved at a spcific constant speed in a certain direction, it creates a magnetic field $B^{->}$ around it whose embedded energy per unit volume u is provided by the following formula:

$u = |B^{->}|^2/(2\ \mu_0)$ (Ref. 2)

Where μ_0 is the vacuum magnetic permeability and is equal to:
$4\pi 10^{-7}$ H/m (Henry per meter).

While the magnetic field $B^{->}$ is described by:

$B^{->} = (\mu_0/(4\pi))(q(\ v^{->} \text{ X } r^{->}\ )/r^2)$ (Ref. 1)

When a second body is charged with electric charges of the opposite polarity (negative electric charges) but with the same amount of charge, and that body is also moved at the same constant speed in the same direction, it creates a magnetic field in the same space volume, whose magnitude is still expressed by the same formula that describes the magnetic field $B^{->}$ created by the first body when it was moved, but its direction (or polarity) is inverse to the polarity of the magnetic field $B^{->}$ that the first body created when it was moved. But, the embedded energy per unit volume of the magnetic field created by that second body is still expressed by the formula presented before for energy per unit volume in a magnetic field. (Ref. 2).

When both bodies are tied to an apparatus that keeps them very close to each other, (but inhibits them from being attracted completely to each other), and both bodies are moved together, at the same speed, in the same direction, no magnetic field is created around them (or a negligible magnetic field, because the bodies are not exactly at the same point in space).

The reason why in that third case scenario basically no magnetic field was created is well understood.

Magnetic fields obey the superposition rule. Since the first body creates a magnetic field which has the same intensity, but inverse polarity compared to the magnetic field the second body creates, and both magnetic fields occupy the same volume in space, they cancel each other, and basically no magnetic field is created in that volume in space. However, there is still a paradox, concerning the conservation of the energy embedded in these two magnetic fields.

The first body does not "know" that a second, inverse magnetic field is created, and it still creates is own magnetic field. This magnetic field embeds an energy per unit volume described by the formula above (Ref. 2). The same is true for the second body. So, the fact that each field cancels the other, contradicts the energy conservation principle, since the energies of both fields also disappear.

A logical explanation to that paradox might be the assumption, that certain energies, such as magnetic fields embedded energies, come in an Energy Pairs form.

And, energies belonging to energy pairs might annihilate each other in certain conditions.

Actually, since the energy density in a magnetic field depends on the magnitude of the magnetic field $B^{->}$ in space at each point, and $B^{->}$ is a vector which can be cancelled by another vector of similar size but opposite direction, it is obvious that the energy density of a magnetic field is not a complete scalar.

Thus, in case of magnetic fields energy, the condition of annihilation is clear, and it happens when another magnetic field exists at the same space volume, with equal magnitude and opposite direction.

From the above, it is obvious that the Energy Pair for magnetic fields contains the following two energy types: one type is the energy embedded in magnetic fields created by positive charges, the other type is the energy embedded in magnetic fields created by negative charges.

The mutual annihilation of energies belonging to Energy Pairs can be viewed not as mutual annihilation but as mutual disabling, assuming that the energies **exist** as Energy Pairs and their mutual disabling is only seen as annihilation.

An analogy to the above might be the description of what happens to the energy in a rope in a rope pulling game. When two people pull a rope, each in a direction opposite to the other, if their pulling force is exactly equal, the rope does not move. However, this does not mean that the pulling energies that are exerted on the rope really annihilate each other or disappear. These energies are accumulated or amassed in the rope tension.

The same should occur when two electric fields forces (or magnetic fields forces) of exactly the same intensity and opposite polarity annihilate each other. The energies of these electric (or magnetic) fields are not annihilated or disappear, they are accumulated or amassed in the location in space where they reside, but they cannot express themselves. They only disable each other.

Similarly, to the explanation of the magnetic field energy conservation paradox, the Energy Pairs Theory provides a similar explanation to a similar electric field energy conservation paradox.

This electric field energy conservation paradox is very similar to the magnetic field energy conservation paradox. Thus, it will be described here more briefly, since its description is very similar to the description of the magnetic field energy conservation paradox.

When a body is charged with electric positive charges it creates an electric field around it whose embedded energy per unit volume u is provided by the following

formula: (Ref. 3).

$u_e = \varepsilon_0 |\vec{E}|^2/(2)$. Where $\vec{E}$ is the electric field magnitude in the unit volume, and ε_0 is the vacuum permittivity and is equal to: 8.854187817…x 10^{-12} F/m (Farad per meter)

When a second body is charged with same amount of negative charges, it creates an electric field whose polarity is inverse to the polarity of the electric field that the first body created.

But, the embedded energy per unit volume of the electric field created by that second body is still expressed by the formula presented before for energy per unit volume in an electric field. (Ref. 3)

When both bodies are tied to an apparatus that keeps them very close to each other, (but inhibits them from being attracted completely to each other), no electric field is created around them (or a negligible electric field, because the bodies are not exactly at the same point in space).

As before, the paradox is, again, the fact that the energies also disappear, although, each charge is not "aware" of the other charge, and, thus, is supposed to create still its own electric field with its own embedded energy.

Equating Emptiness to Substance

Since Energy Pairs of equal intensities residing in the same space volume annihilates to nothing, then, the Energy Pairs concept can be extrapolated to predict that Energy Pairs can be also generated out of nothing.

Actually, the extrapolation just mentioned can be extended as follows:

The mutual annihilation of energies belonging to energy pairs can be viewed not only as mutual annihilation but also as mutual disabling. In other words, these energy pairs can be assumed to continue to exist, but their mutual existence in the same space volume causes each of them to disable the other, such that the net result is only seen as annihilation.

This idea equates the complete emptiness with substance, assuming that complete emptiness is a state in which energies of energy pairs **exist** and their mutual disabling is actually seen as complete emptiness. This idea also can be extended to assume that this state of complete emptiness, which actually contains energy pairs, is the **eternal** state of existence. And since complete emptiness is a state that **do contain** energies which disable each other, this concept can be further extrapolated to assume that energy pairs can evolve together from this complete emptiness, which discards the need for the concept of creation.

This is, actually, what happens, for example, with electric and magnetic fields of opposite signs, that exist in the same space volume, which cause mutual canceling also of the energies associated with these fields.

This view attributes to the nothing (or complete emptiness) concept the same validity as the validity attributed to the existence (or substance) concept, assuming that the complete emptiness might be a combination of energy pairs that disable each other, and might be related to the Dark Energy mystery, since it does contain energies that cannot be traced. This will be elaborated more in a following section of this article.

and since this concept also assumes that something can evolve from nothing, it discards the need for the concept of creation.

Actually, this concept might view the state of complete emptiness (or combinations of energy pairs that disable each other) as the steady state of the existence that was, is and will be eternal, and, might transform into a different state of existence, in which energy pairs are created out of nothing, or converted to nothing (for example, in electron positron collisions).

Energy Pairs might turn to Dark Energy

The energy loss in the scenario of electromagnetic waves which **consolidate and become unified, and continue to travel together in the same direction**, that was described above can be explained in several ways.

the first possible explanation might be that the energy is indeed lost and the Energy Conservation Principle is indeed violated in this scenario. Because, if the electric and magnetic fields of the waves are annihilated, or reduced in their intensities, then, since the energy embedded in the waves is known to be manifested in these fields, then, the energy is indeed lost. **If this will really be the conclusion it will be a very significant finding**.

Actually, the question if the fields are indeed annihilated can be verified by the experiment which was proposed for implementing this scenario. Since these fields must affect charges that exist in these fields, the experiment can be conducted such that charges will exist on the traveling line of the consolidated waves.

If the experiment will be conducted such that these charges will exist when the waves are supposed to be annihilated, then, if the charges will not be affected, it will be a proof that the fields are indeed annihilated.

If the charges will be affected, then the conclusion that the Energy Conservation Principle is violated must be dropped. But, there will still be an unresolved issue, how the charges are affected when the fields are supposed to be annihilated. One explanation to that might be, that the photons still exist.

If the experiment will show that the charges are not affected, and thus, the fields are indeed annihilated, then, another explanation can be provided, to what might still seem, as indeed, a violation of the Energy Conservation Principle:

The mutual annihilation of energies belonging to theses waves can be viewed not as mutual annihilation but as mutual disabling, assuming that the energies **exist** as Energy Pairs and their mutual disabling is only seen as annihilation.

An analogy to the above was already presented in a previous section, and it will be repeated here. This analogy might be the description of what happens to the energy in a rope in a rope pulling game. When two people pull a rope, each in a direction opposite to the other, if their pulling force is exactly equal, the rope does not move. However, this does not mean that the pulling energies that are exerted on the rope really annihilate each other or disappear. These energies are accumulated or amassed in the rope tension.

The same should occur when two electric fields forces (or magnetic fields forces) of exactly the same intensity and opposite polarity annihilate each other. The energies of these electric (or magnetic) fields are not annihilated or disappear, they are accumulated or amassed in the location in space where they reside, but they cannot express themselves. They only disable each other.

Thus, if the energies do exist, an extrapolation of this assumption can state, that Energy Pairs, or the annihilated waves, can evolve together again, from, what is viewed as nothing, or complete emptiness.

Now, some aspects of the question of how the annihilated waves can appear again, can also be examined, by the above proposed experiment.

Even if the fields are found to be annihilated when the waves are supposed to be consolidated, if a detector (of any sort), that will be devised for that purpose, will be inserted on the waves traveling line, and this detector will detect something, then, again, the explanation that the Energy Conservation Principle was violated, must be dropped. However, in this case, again, there will still remain the issue, how that happened, when the fields were indeed annihilated, because the waves did not affected the charges that existed on the waves traveling line. Again, an explanation to that might be, that the photons still exist.

However, in all the cases which will prove that although the fields seem to be annihilated, but the Energy Conservation Principle will found to still be not violated, the experiment will provide a new understanding, that the energy embedded in electromagnetic waves is not manifested in their electric and magnetic fields, but in something else, maybe in the photons they carry, **and this by itself might be a very significant finding**.

However, if such a devised detector, inserted in the waves travel line will not detect anything, still the assumption that the energies **exit** but **disable** each other might be considered a viable explanation to this whole scenario. But, then, the issue how they might be created again together, will remain an open question, because then, the waves seem to be untraceable.

By combining the two assumptions presented in the previous paragraphs, the assumption (that was already proved in this article) that energies belonging to energy pairs residing in the same space volume might disable each other in certain conditions, and the assumption that energy pairs might evolve together from nothing in certain conditions, the **complete emptiness can be actually seen as the Dark Energy**, that the science of physics seeks. And, **Energy Pairs might be the origin of the Dark Energy**.

Because, the assumption that the complete emptiness actually contains energy pairs that disable each other makes it containing energies that are untraceable, as the Dark Energy is.

And, the assumption that energy pairs can emerge together from nothing (or complete emptiness) might explain how this Dark Energy is able to enter into activity, in certain conditions.

The two consolidating waves scenario described before can be also seen as a manifestation that Energy Pairs might turn to Dark Energy, since the state of the energies embedded in the two colliding and consolidating electromagnetic transmissions, after this collision and consolidation, can be seen as the energies being still existing but disabling each other, such that they might belong to Dark Energy, that can't be traced.

And, the assumption that energy pairs can emerge together from nothing (or complete emptiness) might explain how this Dark Energy is able to enter into activity, at certain conditions.

As already discussed before, if the above scenario occurs in outer space, such that the two waves **consolidate and become unified, and continue to travel together in the same direction**, for a very long journey together, and possibly even a very long time (although they travel at the speed of light), throughout this all long journey, and this all long time, the waves, and their energy cannot be traced. And, even if we assume that after this long journey the

waves, for some reason, become separated again, and they, and their energies become traceable, it will seem as waves and energy are generated out of complete emptiness. Actually, as already discussed before, in the above scenario, the waves does not have to be only as Fig. 2 suggests in order to violate the Energy Conservation Principle. In a scenario were two waves **consolidate and become unified, and continue to travel together in the same direction**, even if they have **any phase shift relative to one another**, or have **different frequency of oscillation**, some of the energy they initially contained will usually seem to disappear. And, if their constellation is as Fig. 2 suggests, all their energy will seem to disappear, as already explained.

So, for waves that **consolidate and become unified, and continue to travel together in the same direction** the Energy Conservation Principle seems to be violated **almost always**, and **almost in any constellation**.

Thus, the probability that such scenarios occur in outer space is **big**, increasing significantly the possibility that this might **provide an explanation to the issue of Dark Energy**, which is a mystery that the science of physics seeks an explanation to it.

Actually, the above described scenario can be also seen as equating the Complete Emptiness with this Dark Energy state.

The prediction that Energy Pairs can be generated out of nothing agrees also with Quantum Mechanics physics, because also Quantum Mechanics physics predicts that there is no such thing as complete emptiness (or absolute nothing), and it always contains random quantum fluctuations in which negative energy annihilates same amounts of positive energy.

Summary, Results and Conclusions

This article presents a scenario, of a collision, followed by a consolidation, between two one dimensional electromagnetic traveling waves, that annihilate each other, that can be conducted as an experiment.

This presented scenario, and this experiment, can be seen as demonstrated proofs of the Energy Pairs theory, which states that certain energies such as electric or margnetic fields energies, which are dependent on the existence of a force field (electric or magnetic) in order to exist, can annihilate each other, in certain situations, an annihilation that seems to violate the Energy Conservation Principle.

Then, the Energy Pairs Theory assigns such energies to pairs of Energy Pairs and states that energies belonging to Energy Pairs might annihilate each other in certain conditions.

The article argues that the Energy Pairs Theory might also strengthen the validity of the claim that charge itself is some sort of energy.

Also, a possible conclusion, out of the two waves experiment that was described in this article, might be, that energies belonging to Energy Pairs might be the origin of the Dark Energy. And, that Dark Energy is actually the state of Complete Emptiness.

The Energy Pairs Theory (which, as stated above, is proved in this article) can also provide explanations to energy conservation issues in electric and magnetic fields, in addition to supplying explanation to the issue of charge disappearance in electron positron collisions.

Also, from the assumption that the complete emptiness actually contains energy pairs that disable each other, another assumption is presented, that Energy Pairs might also emerge from this complete emptiness.

By combining the last two assumptions, the assumption (that is already proved in this article) that energies belonging to energy pairs residing in the same space volume might disable each other in certain conditions, and the assumption that energy pairs might evolve together from nothing in certain conditions, the complete emptiness can be actually seen as being able to turn to Dark Energy, that the science of physics seeks.

Because, the assumption that the complete emptiness actually contains energy pairs that disable each other makes it containing energies that are untraceable, as the Dark Energy is.

And, the assumption that energy pairs can emerge together from nothing (or complete emptiness) might explain how this Dark Energy is able to enter into activity, at certain conditions.

This also agrees with Quantum Mechanics physics prediction that there is no such thing as complete emptiness (or absolute nothing), and it always contains random quantum fluctuations in which negative energy annihilates same amounts of positive energy.

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