Energy Pairs might turn to some sort of Dark Energy

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Abstract

The Energy Pairs Theory is related to the assumption presented in previous articles, that charge might also be considered as a form of energy, as mass turned to be. This assumption was based on important similarities between mass and charge, and on analyzing the energy density equations of electric and magnetic fields.

And, since charge comes in two forms, a positive charge and a negative charge, the energies embedded in charges, if this concept is found viable, and supported by additional findings, also must have two forms which the article grouped as one set of Energy Pair.

This Energy Pairs Theory was used to supply an explanation to the issue of charge disappearance in electron positron collisions, by assuming that energies belonging to energy pairs of equal intensities residing in the same space volume, can annihilate each other, in certain conditions.

In this article the Energy Pairs Theory is also used to explain Energy Conservation Issues related to Electric and Magnetic Fields.

Also, the mutual annihilation of energies belonging to energy pairs can be viewed not only as mutual annihilation but also as mutual disabling. 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 seen as complete emptiness. This idea also assumes that this state of complete emptiness, which actually contains energy pairs, is the eternal state of existence.

And since energy pairs might annihilate or disable each other, this concept can be further extrapolated to assume that energy pairs can evolve together from nothing, which discards the need for the concept of creation.

Then, by combining the last two assumptions, the energy pairs can be seen as being able to turn to some sort of the Dark Energy which is also the complete emptiness.
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.
Introduction

In two previous articles, named "Electric Charges as Energy Pairs" that can be found at [http://viXra.org/abs/1909.0098](http://viXra.org/abs/1909.0098) and "Charge – Another Form of Energy" that can be found at [http://viXra.org/abs/1807.0422](http://viXra.org/abs/1807.0422) the assumption that charge might be also considered as a form of Energy, as mass turned to be, was presented. This assumption was based on important similarities presented between charge and mass and on analyzing the energy density equations of electric and magnetic fields.

And, since charge comes in two forms, a positive charge and a negative charge, the Energies embedded in charges, if this concept is found viable, and supported by additional findings, also must have two forms which the article grouped as one set of Energy Pair.

This Energy Pairs Theory was used to supply an expansion to the issue of charge disappearance in electron positron collisions, by assuming that energies belonging to an Energy Pair set might annihilate each other, at certain conditions.

In this article the Energy Pairs Theory is also used to explain Energy Conservation Issues related to Electric and Magnetic Fields.

Also, the mutual annihilation of energies belonging to energy pairs can be viewed not only as mutual annihilation but also as mutual disabling. 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 seen as complete emptiness. This idea also assumes that this state of complete emptiness, which actually contains energy pairs, is the **eternal** state of existence.

Also, since energies belonging to Energy Pairs might annihilate or disable each other, another assumption is presented, that Energy Pairs might also emerge from nothing, which discards the need for the concept of creation..

Then, by combining the last two assumptions, the energy pairs can be seen as being able to turn to some sort of the Dark Energy which is also the complete emptiness.
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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.
Energy Pairs might resolve Energy Conservation Issues

The assumption that charge is another form of energy 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 specific 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:

$$u = \left| B^> \right|^2 / (2 \mu_0)$$

(Ref. 2)

Where $\mu_0$ 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:

$$B^> = (\mu_0/(4\pi))(q \cdot v \times r / r^2)$$

(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 its 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 a 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 Energy Pairs assumption is actually derived from the assumption that charge is another form of energy, because such energy must have two values, one for the energy attributed to positive charges, and one for the energy attributed to negative charges.

This naturally results in the energy attribution (or type) assigned to the energy embedded in a magnetic field created by a positive charge, being different from the energy attribution (or type) assigned to the energy embedded in a magnetic field created by a negative charge. And, thus, these two types of magnetic energies belong to one set of Energy Pairs.

Thus, the assumption that charge is another form of energy, also provide the support for assuming that certain energies exist as Energy Pairs.

This brings about another conclusion which implies that energy conservation exists only when the total amount of energy in a specific volume in space contains only one member of energies which belong to this Energy Pairs.

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)
\[ u_e = \varepsilon_0 \frac{|E^>|^2}{2}. \] Where \( E^> \) is the electric field magnitude in the unit volume, and \( \varepsilon_0 \) is the vacuum permittivity and is equal to: \( 8.854187817 \times 10^{-12} \) 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:

It can be assumed that the fact that energy pairs of equal intensities residing in the same space volume annihilate each other can be viewed not as mutual annihilation but 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 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 others, and might be related to the Dark Energy mystery, since it does contain energies that cannot be traced.

and since this concept also assumes that something can evolve from nothing, it disregards 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, (for example, negative and positive charges) are created out of nothing, or converted to nothing (for example, in electron positron collisions).
**Energy Pairs might be some sort of Dark Energy**

By combining the last two assumptions, the complete emptiness and the energy pairs can be actually seen as some sort of the 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.

A permeptible or concrete example that Energy Pairs might be some sort of Dark Energy can be seen through the following example:

An electromagnetic transmission is a combination of oscillating electric and magnetic fields, perpendicular to each other, travelling at the speed of light and having energy proportional to its frequency of oscillation.

Two very very focused electromagnetic transmissions, oscillating at exactly the same frequency, that are travelling at opposite directions such that at some instance will collide at exactly 180 degree angle, and at the instance of collision their magnetic and electric fields are exactly at opposite polarity, will annihilate each other, following that collision.

Because, following that collision, their electric and magnetic fields, being at exactly the opposite polarity and oscillating at exactly the same frequency, will cancel each other.

However, these two electromagnetic transmissions contained, each, energy proportional to its oscillating frequency prior to this collision.

Thus, following this collision, their energies also disappear.
The above described scenario is a concrete physical manifestation how electric and magnetic fields belong to Energy Pairs, as described previously in this article, and can be a sort of proof of this Energy Pairs theory.

The above described scenario can be also seen as a manifestation that Energy Pairs might turn to a sort of Dark Energy, since the state of the energies embedded in the two colliding electromagnetic transmissions after this collision can be seen as the energies being still existing but disabling each other, such that they might belong to some sort of existing 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.

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 provides also a connection between the Quantum Mechanics physics and rest of 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

If the assumption of charge being a form of energy, as presented in previous articles, and based on similarities between mass and charge, will be found viable and supported by additional findings, then, the Energy Pairs Theory can 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, since energies belonging to Energy Pairs might annihilate each other, another assumption is presented, that Energy Pairs might also emerge from nothing.

By combining the last two assumptions, the complete emptiness and the energy pairs can be actually seen as some sort of the Dark Energy, that the science of physics seeks.

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