

# **A PRELIMINARY TO A UNIFIED FIELD THEORY**

A simple field from which all forces emerge

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## **ABSTRACT**

All forces emerge from a simple field based on the analogy of waves rippling out from a source. New ideas are applied to this field such as plus and minus space and time, an absolute reference frame of nothingness, and origins of influence. This approach results in a basic unified field theory.

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# 1. INTRODUCTION

## 1.1 Introduction

In this paper, I present a unified field theory, although it is not a complete unified field theory. Instead, it is a first step and creates the basis of a unified field theory. In doing this, I have to introduce new concepts into physics such as an absolute reference frame of nothingness, a plus and minus distance-time manifold, and origins of influence.

Absolute reference frames failed as a concept in physics over a hundred years ago. However, the concept of an absolute reference frame of nothingness has not been discredited. The absolute frame of nothingness occurs in all directions at speed  $c$ , which is the speed of light in a vacuum.

In a universe where there are plus and minus fields as well as particles and antiparticles, it is very useful to use plus and minus space and time. Of course, this has to be achieved without creating a reverse of inertia, gravity, and energy.

I claim that origins of influence result in forces. Origins of influence are distance-time curvature and amplitude interference. I state that origins of influence can only be found in nature—not simply contrived to fit a theory like point particle contact, which was used for quantum field theories. I replace the idea of point particle contact found in quantum field theories with amplitude interference. Einstein properly created the force of gravity by first noticing the origin of influence in nature, and then he created a field to embody it, which resulted in general relativity. The origin of influence for gravity was space and time curvature found in accelerated reference frames.

The field I use for the unified field theory is quite simple. It is based on the idea of a physical analogy of waves being emitted outward from a wave source. Once the ideas presented in this paper are applied to this simple field, the known forces in the universe emerge. This type of field has two distinct areas, which are the core and the outer field. The core, or wave source, exists within elementary particles, and this core has waves overlapping each other while they are moving in opposite directions. Since the field in the core overlaps in opposing directions, gravity and electromagnetism cancel in the inner core. The outer field emerges at the surface of an elementary particle, and the waves move in only one direction without overlapping each other. The core of the field possesses particle structural forces, and the outer field possesses gravity and electromagnetism. Since the outer field emerges at the edge of the core or the surface of an elementary particle, gravity and electromagnetism also emerge at this region. I discuss gravity and how black holes cannot collapse to a singularity no matter how massive they become because the core of a field will not allow a collapse to a singularity. I also discuss briefly the electric field. I refer to my theory of quantum wave sources for nuclear forces.

The prerequisites for this paper are the two previous articles I have written. They are entitled “The Theory of Distance-Time” and “The Theory of Quantum Wave Sources” [1, 2]. Also, there is very little math that is

basic. This article is not about a unified force theory. Instead, this article is about a single field from which all known forces arise. Since this paper is only a preliminary, the objective is for one to understand a unified field from which all forces emerge. Further development is needed for a complete theory.

The concept of a unified field is a large idea because almost everything that happens in the universe should be derivable from it. I believe that when a complete and correct unified field theory is completed, it will have many names as its author. This article is a basis for that theory.

## 2. ORIGINS OF INFLUENCE

### 2.1 Origins of influence

I first ask this question: What allows an object to influence another object? The usual answer is the forces of nature. But this is not the answer I was looking for when I asked the question. Therefore, I should rephrase the question. At the most elemental level, I should ask, What is the origin of influence? The origin of influence is terminology that I created. Let me explain the origin of influence further with an example. I consider that the origin of influence in the QED field is that the virtual photon contacts a point particle (an electron) and transfers the virtual photon's momentum to a point particle (an electron). This is referred to as point particle contact. Thus, point particle contact is the origin of influence in QED. I do not know that there is an origin of influence in nature where there is a point particle contact because the latter has never directly been observed in nature.

It is important that I start in the right direction from the beginning because this universe is so very illusionary. If I get off by the slightest degree at the beginning of a long journey (like going from Earth to Mars) by the end of that journey, I would be far off from my original destination. Therefore, I believe that it is pertinent that the true origins of influence in nature are determined before any models are constructed about theories of nature's forces. In doing this, I will be starting off in the right direction. It is important that I do not first create a model for a force and then contrive an origin of influence that logically fits the model for that force. This was not done for quantum field theories like QED. In quantum field theories an origin of influence (point particle contact) was planted in the theory. Hence, the origin of influence was not discovered first, and afterwards, a model was constructed around it. However, the constructing of a theory of force was done in the right order for Einstein's general theory of relativity. In general relativity, the origin of influence was observed first, and, secondly, a model for a force was constructed around this origin of influence. This was not done with QED. In QED, a model for a force was constructed, and an origin of influence was contrived to logically fit in the model, which I have stated is an incorrect way to create a force model.

In nature, it is usually the case that an object is influenced when any of the four forces in the universe is present. Obviously when one or more of the forces

are influencing an object, I cannot determine what the origins of influence would be in the force(s). All that I can observe is the forces' influence on the object. Hence, it is important to find these origins of influence where there are no forces present. This can be done if I observe an object being influenced where there is no force present. Let me first examine how this was done in general relativity.

In general relativity, Einstein declared that inertial mass was equivalent to gravitational mass. I give an example of a rocket in space that is accelerating and gravitation fields that are negligible. The rocket is accelerating in a direction away from the floor of the rocket. Any person in this rocket should feel a pull towards the floor of the rocket. Furthermore, light traveling perpendicular to the direction of the acceleration would bend towards the floor of the rocket. This infers space-time curvature. The frame of reference is an accelerated reference frame. Objects in this frame would fall towards the floor of the rocket. In other words, objects are being influenced without any force present to influence them. Therefore, an accelerated frame of reference is an origin of influence. Space-time can be curved to create an origin of influence. Einstein's theory of gravity was created after or around the equivalency principle of inertial mass and gravitational mass. Consequently, the theory of Einstein's gravity was created after or around an origin of influence. This is the right order to create a theory for a force.

The next question should be as follows: Are there any other origins of influence besides an accelerated frame of reference? The answer is yes. When two identical fermion particles interfere, they repel, yet no force is present. When two identical bosons interfere, they attract, without any force being present. Both of these examples result from amplitude interference at the quantum level. As a result, amplitude interference can be considered an origin of influence.

### 3. The Absolute Reference Frame of Nothingness

#### 3.1 The Absolute Reference Frame of Nothingness

The first thing that should come to any physicist's mind is that the concept of an absolute reference frame has been discredited for over a hundred years. This is true. However, to be more precise, I should state that an absolute reference frame of somethingness was discredited—not an absolute reference of nothingness.

An absolute reference frame is a concept which warrants a clear definition. I need to give a definition that is concise and yet gives insight. An absolute reference frame is superior to all other reference frames. It is the frame where all the laws of physics should first be determined and all other frames need to be referenced or compared to it. Another way of describing the absolute reference frame is that it is the frame from which originate time, space, momentum, force, energy, etc.

An absolute reference frame of somethingness should meet all the previous descriptions. If someone were to reside in such a frame, that person would still be able to measure time and space and the rest of the laws of physics in a similar manner as in any other reference frame. An absolute reference frame

of somethingness does not exist in the universe. An absolute reference frame of nothingness should also meet all of the previous description of an absolute reference frame. What is an absolute reference frame of nothingness? The absolute reference frame of nothingness is a frame within which time, space, momentum, force, and energy are always equal to zero.

Before going further into the concept of nothingness, I should define somethingness. Something is represented by differences. For example, Mars is in a different location than Earth. Without this difference there would be no distance between them. In fact, all mathematical metric equations simply give a quantity for a difference in coordinate location, which results in a distance. There is no distance without a difference. The same can be said for time. How about energy? If there is no difference between different levels of energy, there can be no energy. For example, there are two reference frames with one at rest and the other with speed  $v$ . Objects at rest in the frame at rest have no kinetic energy. On the other hand, objects moving with the difference between the frames have a kinetic energy relative to the frame at rest. The keyword is "relative." Kinetic energy only exists as a relative concept. Relative infers that there is a difference between two reference frames, or the kinetic energy does not exist. There must always be a difference of some kind, or there is no something. This is true for all forms of energy, force, and momentum. As a consequence, I define difference as a something, and no difference as a nothing. The concept of nothingness can be represented as an infinitesimal point where there is zero quantity of difference. One perspective of this absolute reference frame is the cosmological/global here-now I mentioned in my theory of distance-time. The absolute frame expands on this idea. The following excerpt is from my article on distance-time theory [1]:

*The eventon is only like a photon in that it shares the photonic perspective of space and time. After all, the eventon does travel at speed  $c$ . Also, every eventon in the ocean of eventons makes up all events in a distance-time manifold. Moreover, all distance throughout all space and all periods of time throughout all time are represented by this ocean of eventons. Every eventon, like a photon, experiences all future, past, and present together in the present, and possesses only a single here-now. The idea of a global here-now is the total sum of all eventons' perspectives of space and time. Since every eventon experiences all of its events in a single here-now, the sum or total rules of space and time of all eventons would be that all events throughout all space and time exist here-now. This global sum of all the eventons' distance-time is what I call the global here-now. One might ask whether this global here-now has any relation to the primordial point universe that existed before the Big Bang that started the known universe. I can only guess. It is possible that that primordial point universe still exists, and it is best understood as this global here-now in which our universe currently resides. However, I really have not extended this theory too much in the direction of cosmology. Since an observer is matter, an observer does not have this perspective. Instead, all time and distance are extended out relative to any observer.*

Any reference frame is designated with a motion relative to an observer who is at rest. This motion could be velocity, acceleration, or a changing acceleration. The absolute reference frame of nothingness must have two characteristics. It must have a motion associated with it because it is a reference frame. The second characteristic is that no differences can be measured relative to it. This means that no motion of any kind can occur relative to it. Therefore, its motion must be constant relative to any reference frame, and the absolute frame has a constant speed  $c$ , which is the speed of light in a vacuum.

Am I identifying nothingness with a vacuum, or is it still a different idea? A vacuum still has distance and time; thus, it is a something. The absolute reference frame of nothingness is identified with nothingness—not somethingness. How could matter exist relative to it? That question eventually leads to a field. Summing, I state that somethingness has differences as previously mentioned. Nothingness, therefore, has no differences. There can be no differences allowed relative to the absolute reference frame of nothingness. There can be no energy, distance, time, force, movement, etc. The absolute reference frame of nothingness is the frame given by the speed  $c$  (speed of light in a vacuum) in all directions in a three-dimensional manifold. An absolute reference frame of nothingness can be perceived as a three-dimensional infinitesimal point reference frame relative to which all physical measurements equate to zero.

### 3.2 Galilean and Einsteinian relativity and ARF

I usually refer to the absolute frame of nothingness as simply ARF, which is different from other reference frames. Traditional frames have a difference between them that is a motion in a single direction. ARF has a speed of  $c$  in all directions relative to any observer reference frames.

Galileo's idea of different reference frames with each frame possessing its own time and space did work. Einstein used this idea for relativity. The first question should be, Why did it work? Answering this, I state that Galileo and Newton said that the laws of physics were the same in each inertial reference frame. How can this be the case? The reason that the idea works is because every time there is movement relative to ARF, that movement disappears and there is no different inertial frame relative to ARF. Because all the laws of physics must be referenced to and derived from ARF, within any inertial reference frame, the laws of physics do not change.

The second question is as follows: How does the universe give each frame of reference its own time and space? Transformation equations have been created to go from one reference frame to another. Nonetheless, it seems like a complex way for the universe to conduct its business. It is as if there were a myriad of time and space structures for all the different reference frames. Another possibility is that the universe has but one reference frame with its time and space structure and from this all the other reference frames with their time and space structures are derived. In this paper, this one single reference frame is the absolute reference frame of nothingness (ARF). Since ARF is represented by

eventons, all time and space for all reference frames should be derived from eventons. This I have already done in my theory of distance-time. [1]

### 3.3 Newton's Three Laws of Motion and ARF

I introduce the discussion of Newton's three laws of motion by discussing Newton's third law, which states that for every force there is an opposite but equal force. Why is this so? This is true because relative to ARF all forces must cancel. Hence, there cannot be a force without its cancelling opposing force relative to ARF. Nonetheless, there is still an issue. The way Newton's third law is stated implies that this law occurs instantaneously. Yet, ARF occurs at the speed of light in a vacuum. Therefore, it is necessary to modify Newton's third law. I now restate a modified version of Newton's third law: at the speed of light in a vacuum, for every force, there is an opposite but equal force.

What about Newton's first two laws of motion? What happens when a mass accelerates? If a mass accelerates, its energy will change relative to other reference frames and relative to ARF too. However, there can be no changes relative to ARF. Also, all time and space originate from ARF. ARF will cause the time and space to warp in the opposite direction to the mass acceleration so that the change in the energy and velocity of the mass will be canceled relative to ARF. This means in a region in space where gravity is negligible, a gravitational field will be created for a mass that is accelerating because space and time will bend in the opposite direction of its direction. Therefore, relative to ARF, the accelerating mass has no change of velocity or energy. This means that the mass will have a constant velocity or be at rest, or a gravitational field will occur in an opposite direction to its acceleration. This is Newton's first law of motion that a mass remains at rest or constant velocity unless a force influences the mass. Since an accelerating mass causes a gravitational field in the opposite direction of the acceleration, a force needs to be exerted on the mass in order to accelerate it. This results in the following equation:

$$f = ma. \tag{1}$$

This is Newton's second law of motion.

It is important to understand what causes space and time to bend. A change in energy relative to ARF will cause space and time to bend so that there is no change with respect to ARF. This is crucial for understanding the cause of gravity around bodies, which I discuss later.

## 4. THE DIAMETRIC DISTANCE-TIME MANIFOLD

### 4.1 Advantages to eventons

A fundamental question should be asked: What do rulers and clocks actually measure? In traditional space and time, rulers were assumed to measure distance, and clocks were assumed to measure time. Furthermore, a metric was the mathematical representation of a ruler and clock measurement. Hence, the assumption that a ruler measured distance and a clock measured time was represented mathematically with the metric that placed distance and

time on a manifold. However, what if the universe gave me something else to measure other than what has been traditionally assumed? In my theory of distance-time, rulers and clocks are assumed to measure distance-time. I now rephrase the question I asked at the beginning of this paragraph: What does the universe give me to measure with a ruler and a clock? The answer to this question is that I can only hypothesize about what the universe gives me to measure.

Hypothesizing about what the universe gives me to measure with rulers and clocks requires that I look at the fundamentals of nature's behavior. In nature, there are found both plus and minus particles, or matter and antimatter. Also, there exist plus and minus force fields that are found in the nucleus of an atom (nuclear weak force) and in the electromagnetic field. The easiest way of creating a paradigm to give these outcomes in nature is by designing a manifold where both plus and minus space and time exist. In designing this manifold, the first obvious and primary problem is that superimposing plus and minus space in a manifold should cancel or subtract out the two spaces. The same would be true for time. The placing of a positive distance on top of a negative distance should add up to zero. In other words, the placing of a negative distance between two distinct coordinates totally reverses the consequence of placing a positive distance between the same two distinct coordinates. Even if I were to surmount this problem and create a plus and minus manifold, there are other potentially bad consequences for physics in a plus and minus manifold. I discuss and solve these other problems later. First I must deal with the problem of a superimposed plus and minus distance and time canceling each other.

If I were to take the traditional approach of installing distance and time on a manifold by using only a metric, I would fail in the creation of a plus and minus manifold. The reason is that the metric defines a difference between two coordinates as a quantity of something and nothing else. Hence, it essentially imposes this quantity of something on a coordinate system. This quantity of something is usually distance or time. A metric does not give me any way to allow a plus and minus of that quantity of something to be superimposed without them canceling each other. In order to create a plus and minus space and time manifold, I will need something more. To design a plus and minus manifold, I will need to advance my concept of an eventon, which I introduced in my theory of distance-time.

The concept of the eventon gives advantages over the traditional approach of only using a metric to place distance and time on a manifold. A metric tells me the quantity of the difference between two coordinate locations, but it does not tell me what the difference is or how that difference between coordinates is derived by nature. I can only assume what that difference between two coordinates represents. Hence, I can assume that difference between two coordinates represents a distance, or a time, or a distance-time, or a neutral distance-time. A neutral distance-time is where a plus and minus distance-time has been successfully placed on a manifold. Finally, I do not know what nature does that allows me to extract from it the abstract concepts of distance and time. I can, however, hypothesize some rules about nature that will allow me to extract

from it an abstract concept of a neutral distance-time. I hypothesize these rules based on the concept of eventons. The eventon allows me to give a theoretical representation of how and what the universe gives to me for rulers and clocks to measure. Consequently, I will no longer simply assume that the rulers and clocks measure distance and time, respectively. First, I will hypothesize the rules that govern eventons and from this determine what the cosmos gives me to measure. Second, I concoct a metric for what I am measuring with rulers and clocks. In my first paper on distance-time theory, I used eventons and created rules for them, which allowed me to create a distance-time manifold. I am doing something similar again, but this time I am creating a neutral distance-time manifold.

In distance-time theory, the eventon was given as a fictitious point particle that helps make it easier to visualize in the mind's eye the concept of distance-time. I quote here from one of my earlier papers [1]:

*The most basic definition of a particle is not that it has a spin, momentum, energy, or field. The most basic theoretical view of a particle is that it occupies a small region. This is only theoretical. In practice, one cannot detect the presence of a particle in a location unless it does more than occupy a small location. Using this most basic theoretical view, we see that eventons are fictitious point particles.*

In this new paper, I change the definition of an eventon to that of a wave. Hence, eventons can now possess spin, energy, and momentum, and they can experience amplitude interference with known particles like electrons, light, quarks, etc. Nonetheless, eventons still represent distance-time as was the case in my theory of distance-time. The eventon now is not a fictitious particle, but instead I call it a hypothetical particle. Whether there is an eventon particle or not, I do not know. Nevertheless, nature acts as if something like an eventon exists.

Since eventons are waves, can they be detected and even measured? For now, the eventon is only hypothetical. First I wish to create new rules governing eventons for what I call a *diametric distance-time manifold*.

In summation, I am changing the eventon from a fictitious particle to that of a hypothetical particle, and I am explaining that an advantage of an eventon is that it allows me to derive what the cosmos gives me to measure before applying a metric. After applying a metric to a coordinate system, then I can use math in that manifold on whatever the universe gives me to measure.

## 4.2 Space-time mimics distance-time

If relativity is correct, what is its weak point? It is the four-dimensional space-time continuum. That is why I challenge the four-dimensional space-time continuum with distance-time. Nonetheless, the four-dimensional space-time continuum metric essentially mimics the distance-time metric mathematically. If I were to curve the distance-time metric as Einstein curved the space-time metric, I believe that again the curved space-time metric would mimic the curved distance-time metric. That is the reason I was never very excited about developing a gravitational theory using distance-time. This mathematical closeness between the distance-time metric and the four-dimensional space-time continuum metric is both a weakness and strength. It is a strength because relativity is definitely moving in the right direction, which means that this is also the case for distance-time theory. The mathematical closeness between the two metrics is a weakness because a critic can say they are essentially the same theory, even though theoretically distance-time theory is very different. Since it is a different theory, how can I now develop distance-time theory in a direction where relativity cannot traverse? There is more than one possibility. I still believe that the distance-time theory has the potential to become more of a quantum theory than does relativity. Furthermore, the plus and minus space and time manifold concept cannot be derived from a traditional metric like the four-dimensional space-time continuum in relativity. On the other hand, a plus and minus space and time manifold can be created using eventons.

## 4.3 The diametric distance-time manifold

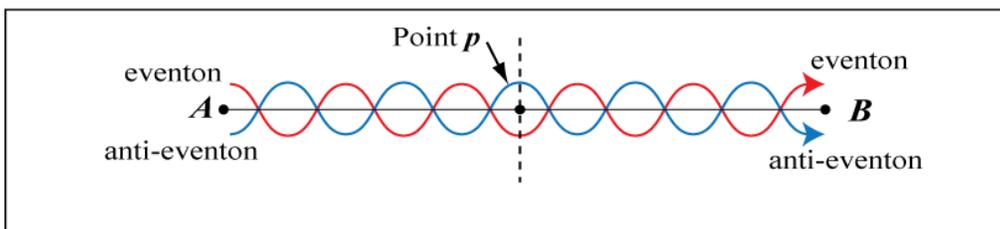
First I need to describe the concept of plus and minus distance-time. In my theory of distance-time, I superimposed a quantity of distance over a period of time so that the ratio of distance to time was always speed  $c$  (speed of light in a vacuum). The eventon's velocity represented the distance-time occurring along a path in a manifold. I describe an anti-eventon to travel distance-time in the reverse direction that an eventon transverses. Therefore, an anti-eventon traverses negative distance-time. The difference between a diametric distance-time manifold and my original distance-time manifold is that I change the nature of an eventon from a fictitious to a hypothetical one, and I implant plus and minus eventons into the manifold in a successful manner. The result is that a diametric distance-time manifold also agrees with special relativistic results like in my original distance-time theory. A difference between distance-time theory and the diametric distance-time theory is that rulers and clocks now measure neutral distance-time—not positive distance-time only.

I have previously stated that eventons (and anti-eventons) were waves. Therefore, they should obey the rules for waves that I discussed in my theory of quantum wave sources. In my paper on quantum wave sources, the second rule for waves states [2]:

*Waves that are traveling in opposite directions to each other interfere with a reverse amplitude relative to each other. Consequently, if two waves are moving in opposite directions to each other, they will interfere constructively if their amplitudes are the opposite (one a crest and the other a trough). If both amplitudes are the same, they would cancel each other.*

As previously described, the anti-eventon is an eventon that moves across distance-time in the reverse direction. A positive event line is the path of distance-time traveled by an eventon, and a negative event line is a path of negative distance-time traveled by an anti-eventon. If I were to superimpose a positive event line on a negative event line with both moving in the same direction, they would cancel. This would be true except for the fact that plus and minus event lines are generated by an eventon and an anti-eventon, and the rules governing eventons and anti-eventons take precedence. (See Figure 1.) If I were to superimpose an eventon over an anti-eventon so that they perfectly coincided with both moving in the same direction from point **A** to point **B**, the eventon should continually interfere with the anti-eventon at each point as if the anti-eventon were moving in a reverse direction across positive distance-time. For example, at point **p** in Figure 1, both the eventon's and anti-eventon's amplitude would interfere so that the eventon would be moving in the reverse direction relative to the anti-eventon or vice versa. Therefore, they would interfere with reverse amplitudes. This is true at each point of coincidence, like point **p**, between point **A** and **B**. The eventon and anti-eventon interfere as if the anti-eventon were an eventon moving in the reverse direction from **B** to **A**, or I could say the anti-eventon and eventon interfere as if the eventon were an anti-eventon moving in the reverse direction from **B** to **A**. As a result, the second rule for quantum waves mentioned previously must be enacted so that the eventon and anti-eventon can interfere without canceling their amplitudes. Even though the anti-eventon constructively interferes with the eventon in a reverse direction, they are both moving in the same direction from point **A** to **B** in Figure 1 relative to an observer. Their amplitude interference holds them together.

**Figure 1**



**Figure 1.** Moving from point **A** to point **B**, an eventon and anti-eventon interfere, constructively creating a neutral eventon. At each point along their paths, the eventon and anti-eventon interfere with reverse amplitude and in a reverse direction compared to each other relative to an observer.

A question still may arise. Even though the eventon and anti-eventon may interfere constructively, would not the distance-time of the eventon and negative distance-time of the anti-eventon traversed from points **A** to **B** still cancel each other? They would still cancel if eventons/anti-eventons and the rules that govern them did not take precedence. If it were only how distance-time and anti-distance-time added when they were superimposed, then distance-time and anti-distance-time would indeed cancel. However, distance and time can only be added or subtracted after a metric is applied to a manifold, because the metric gives the rules for the adding and subtracting in a manifold. The rule that governs eventons/anti-eventons must first be applied before the metric because these rules determine what the cosmos gives an observer to measure with rulers and clocks. Once the universe gives an observer something to measure, then the observer can extract the abstract concepts from nature. These abstracted concepts are mathematized by means of a metric. Since a metric can only apply what the universe gives one to measure, the rule governing eventons/anti-eventons interference should take precedence. Instead of distance-time and anti-distance-time canceling when placed on a manifold, they coincide according to how an eventon and anti-eventon interfere. All measurements by a ruler and clock are neutral distance-time, and the metric on a diametric manifold gives the rules for the adding and subtracting of neutral distance-time.

A clock moving forward measures neutral distance-time. A clock's forward movement is actually measuring coinciding plus and minus periods of time. In traditional space and time, a clock did not run backwards because this would mean time reversal. Hence, the traditional view for time was that it always moved in the positive direction. This gave an erroneous perspective that time was asymmetric. On the other hand, a diametric distance-time manifold gives the result of a universe with symmetric time. The same is true for distance. Distance-time is symmetric in the cosmos according to a diametric distance-time manifold.

Since a clock does not run backwards in a diametric distance-time manifold, there are no causality paradoxes. Also, any other problems caused by a clock running backwards are avoided, such as breaking the second law of thermodynamics.

I should further point out that in Figure 1, the distance-time and negative distance-time would coincide and lie along the straight line between points **A** and **B**. The waves in Figure 1 only represent the wave characteristics of the eventon and the anti-eventon. I refer to an eventon and anti-eventon compound particle as a neutral eventon.

How can a clock run backwards within a diametric distance-time manifold? This could only occur if an eventon ran in a reverse direction along its event line. The same is true for the anti-eventon. This means that eventons would act like anti-eventons and vice versa. Hence, from the beginning of time and space, eventons and anti-eventons were created and have had to maintain their nature. It may be possible that they can annihilate; then when they are re-created, they must still maintain their nature as either eventons or anti-eventons. The big bang occurred only with the emergence of equal amounts of plus and minus time and space from zero time and space. It is as if the zero nature of time and space in

the primordial point universe must always be conserved in the expanse after the big bang. As a consequence, there are always equal quantities of eventons and anti-eventons. If all of the plus and minus space and time in the cosmos were added together, they would sum to zero.

Rulers and clocks measure either plus, minus, or both distance-times. Also, their measurements still determine a reference frame in a diametric distance-time manifold. Therefore, it doesn't matter how many eventons and anti-eventons are in a region; the reference frame measurements are still determined by the clock and ruler measurements. Hence, it is possible that there may be more anti-eventons than eventons in a location and the reference frame measurements given by clocks and rulers are still the same.

#### 4.4 Particles and motion

Clock and ruler measurements are still the same in space-time, distance-time, and neutral distance-time manifolds. If clock and ruler measurements were still the same in a diametric distance-time manifold, then what difference would occur in this neutral manifold as opposed to traditional manifolds with only positive metrics? Particle behavior would be different because I have the advantage of constructing plus and minus particles and fields. I delineate plus and minus particles and their fields later. Now I need to discuss particles at rest and in motion within a diametric distance-time manifold.

In my article entitled "The Theory of Distance-Time," I delineated a distance-time manifold which mimicked Einstein's space-time [1]. One theoretical difference between the two different time and space structures is that an object at rest in space-time has a rest movement only across a time axis, whereas in distance-time an object at rest has an actual rest speed  $c$  across distance-time. Relative to an observer, an object's velocity  $v$  would be a fraction of its rest speed  $c$ . Furthermore, I have discussed that a wave would have a rest speed  $c$  relative to itself. It would experience a Doppler effect if it had a motion relative to an observer. A fraction of that wave would be in its velocity and a fraction would remain in its rest velocity. The wave in the object's velocity gives the momentum and kinetic energy of the object. (See my article entitled "The Theory of Distance-Time," Section 4.6, on the Doppler effect of matter.) The same is true for a diametric distance-time manifold. (It would be easier to say only a "diametric manifold" instead of a "diametric distance-time manifold.") The difference would be that an object in a diametric manifold has the possibility of a rest velocity that is neutral, or positive, or negative, or some combination that results in a net plus or minus. The same is true about an object's velocity. It would speed across neutral, positive, or negative, or some combination of distance-time that results in a net of plus or minus velocity magnitude.

In a diametric manifold I assume that the manifold is covered at each point with neutral eventons. Hence, there is an ocean of neutral eventons moving at speed  $c$  throughout the manifold. At each coordinate in this three-dimensional manifold, there are neutral eventons moving through each point in all directions. In this model, I place a three-dimensional wave source representing a particle of matter. In my theory of quantum wave sources, I stated that these wave sources

were made of impulses. The structure of these quantum wave sources is important if we are to understand any unified field theory; I will get back to their structure later. For now I treat these waves like a group of standing waves. (In my theory of quantum wave sources, the pulses in the three-dimensional transversal wave source have a direction, and now I am treating these pulses as standing waves. Nonetheless, I can still give a direction to each wave pulse.)

Since there is a possibility of plus or minus distance-time, there is a possibility that a quantum wave source has a rest speed across positive, negative, or neutral distance-time. A negative particle would have a negative rest speed, and a positive particle would have a positive rest speed, and a neutral particle would have a neutral rest speed. If a negative particle's wave amplitude interfered with a positive particle's wave amplitude, it would interfere in a reverse direction and with reverse amplitude interference. This would affect any origin of influence dependent on amplitude interference.

Do negative particles that traverse negative distance-time possess negative energy and scalar momentum? They would possess negative energy and scalar momentum unless the universe did something that would make this not happen. The idea of a wave traversing reverse distance-time must be taken into consideration as being a reversed wave. Hence, when dealing with waves traveling across negative distance-time, these waves should be treated as waving in reverse. Therefore, they cycle through radians in a negative direction as opposed to regular waves. The negative change of radians divided by negative time results in a positive frequency. The same is true for a negative change of radians which when being divided into negative distance results in a positive wavelength. For a negative particle's frequency ( $f$ ) and wavelength ( $l$ ), see the following equations 2 and 3:

$$f = \frac{(-\Delta\theta)}{2\pi(-T)}, \quad (2)$$

$$l = \frac{(-D)2\pi}{(-\Delta\theta)}. \quad (3)$$

Positive frequencies and wavelengths for particles crossing negative distance-time give positive energies and scalar momentums for negative particles. Because the origin of influence for inertia and gravity is based on energy-momentum, there is no negative inertia or gravity for negative particles. Negative and positive particles are all yet to be decided. Negative particles could be anti-eventons, electrons, and any negatively charged particles. Eventons, and positrons, and any positively charged particles are positive particles. This is an arbitrary assignment.

A diametric manifold is an ocean of neutral eventons. If one moves in this ocean of neutral eventons relative to an observer, the observer would see special relativistic results as described in my theory of distance-time. The only difference would be that the rulers and clock would measure neutral distance-time or a net positive or negative distance-time. Is it possible that a neutral eventon can be split into eventons and anti-eventons? The absolute reference frame of

nothingness (ARF) wants there to be no difference at any point and in every direction at speed  $c$ . Eventons and anti-eventons represent ARF relative to an observer. Even if there are more plus or minus eventons present in a region, ARF will still be satisfied. Thus, under certain conditions (e.g., particle fields), neutral eventons can split into eventons and anti-eventons and ARF could still be satisfied.

Relative to an observer, positive or negative particles with a motion would possess a wave in that direction of motion, making it a one-directional wave and a boson. According to the theory of quantum wave sources, a fermion wave can only happen with a wave source that has waves in all directions. However, all particles have a boson wave in their respective motions relative to an observer in a different reference frame at rest.

In summation, any elementary particle could have a rest speed across negative, positive, or neutral distance-time. If a negative particle moves relative to an observer, it has a velocity across negative distance-time and waves in reverse compared to a positive particle. If a positive particle moves in the same direction as the negative particle relative to an observer, it has a velocity across positive distance-time and waves in reverse compared to the negative. Both particles would be moving in the same direction relative to a single observer, and both particles would possess an absolute value of plus energy-momentum. Since the origin of influence for inertia and gravity originates from momentum-energy, there is no anti-inertia or antigravity. Furthermore, all particles have a boson wave in their motions relative to an observer.

## 5. THE FIELD

### 5.1 Waves in a pond

I am walking along a path in the woods and I come to a pond untouched by wind or falling leaves. Its surface is so motionless it has the appearance of smooth glass. I pick up a pebble and toss it. It lands in the center of this pond. Waves are emitted from the center of the pond where the pebble struck. Now imagine that I am able to disturb the middle of the pond in the same manner continuously. Then imagine further that the waves are emitted from the center of the pond without the pebble dropping into it. Therefore, I can focus solely on the continuous waves being emitted from the center of the pond. This is the physical analogy for the unified field theory. It is simple. It may be a bit difficult to see how all the forces can be derived from such a simple field. Nonetheless, all known forces can be derived from this field, including Einstein's general theory of relativity.

I further analyze this physical analogy of waves being emitted from the center of a pond. The source of the waves is the field's core at the center of the pond. The core's diameter is one-half a wavelength. These waves in the core overlap each other and interfere constructively as they are moving directly away from the center. As these waves leave the core, they no longer overlap and form a wave front. This wave front is in the shape of a ring that is moving away from

the core. Since I am still discussing waves on a pond's surface, this is all happening in a two-dimensional medium.

How can all the forces come from this simple physical analogy for the field that I have previously discussed? First I take away the medium of a pond's surface and replace it with eventons waving out away from a center in a three-dimensional medium called ARF, and second, I apply the concept of origins of influence to the field. Of course, ARF is represented by eventons/anti-eventons. The results from doing these two things are that all the known forces that govern the universe emerge from this simple field.

## 5.2 ARF and the field

How can a particle at rest with rest energy-momentum and rest wave amplitude exist relative to a normal observer and ARF simultaneously? The answer is fields. However, it cannot be any field. Relative to ARF, it must be a field that cancels out the differences created by a particle's existence at a location and regions around that particle where that particle does not reside. Since a particle is a wave, there would be a difference of energy-momentum and wave amplitude between the two different locations. Relative to ARF, this cannot happen. Therefore, ARF will create a field to cancel out the differences between two locations because of the differences between a spot with a particle and the regions around the particle that are without that particle. Of course, relative to an observer, there are still differences, but not relative to ARF.

I treat a particle like a finger being dipped repeatedly in and out of a surface of water. This action causes ripples on the surface of water to ripple outward from the finger. What do the waves accomplish in this scenario? How the surface of water was disturbed propagates outward two-dimensionally from the original disturbance. This disturbance is a difference created in the surface of the water. This difference possesses all of the energy and amplitude of the disturbance's source created in the water's surface. As a result, going outward two-dimensionally from the source, there should be no difference between an outer ring (wave front) and the wave at the wave source, or core of the field. Indeed, ignoring anything like a frictional force, I should be able to add up all of the amplitude in an outer ring and it should equal the amplitude at the core.

A particle's presence relative to ARF creates waves (eventons/anti-eventons) that are emitted outward from the source of the disturbance in ARF, which is similar to the physical analogy of waves on the surface of water previously given. The waves in a three-dimensional transversal wave source (elementary particle) are not the same as eventons. The waves in the elementary particle disturb ARF, causing eventons to be emitted. The emitted eventons cause the energy-momentum and wave amplitude of the elementary particle to be transmitted outward three-dimensionally at speed  $c$  in all directions away from the particle. Therefore, the difference of energy-momentum and wave amplitude from where the particle is located and where it is not located is cancelled out relative to ARF. The eventon waves move out three-dimensionally from their wave source. Adding up the amplitude and momentum-energy in the wave front of the field should equal the amplitude and momentum-energy at the field's core.

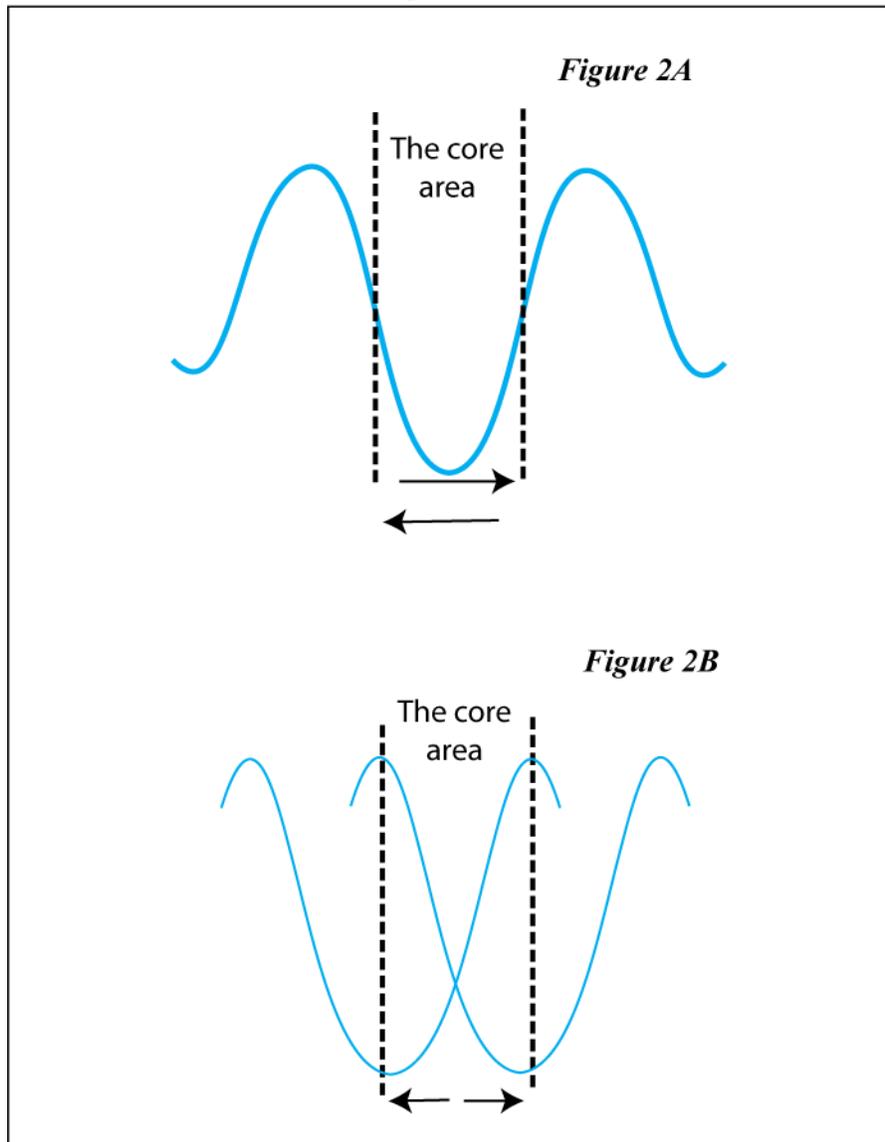
Since the wave front is spherical, the amplitude and momentum-energy should decrease inversely proportional to the square of the distance.

ARF exists at speed  $c$  in all directions relative to an observer. Thus, a wave front moving in all directions away from the particle at speed  $c$  will put the particle's momentum-energy and wave amplitude at different locations throughout ARF as fast as ARF occurs. Radially outward from where the particle resides, ARF's perspective would be that the energy momentum and wave amplitude exist along with ARF. And there would be no difference between the spot of the particle's location and the regions around the particle relative to ARF.

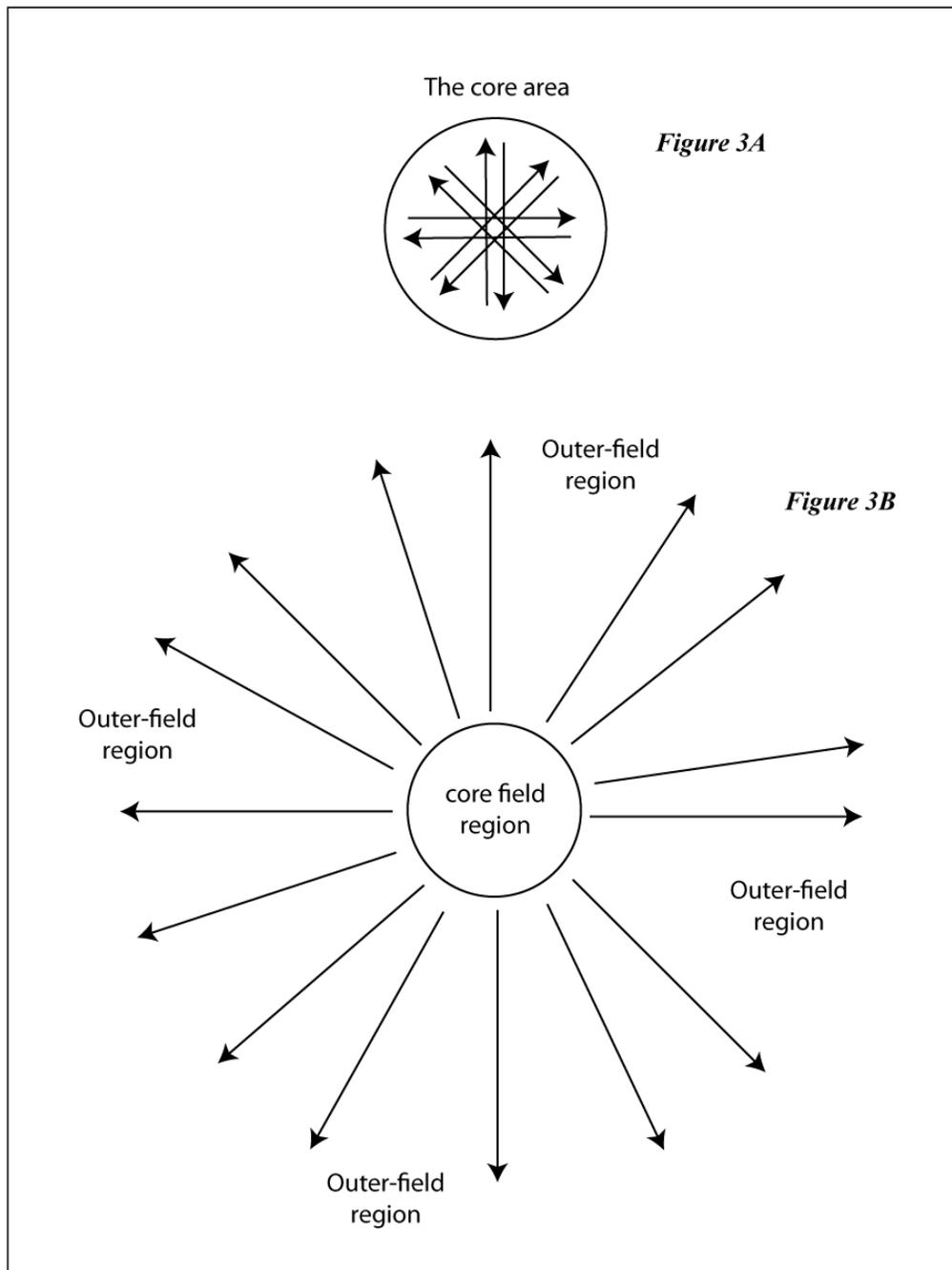
In sum, a particle emits a field of eventons that spreads that particle's disturbance or differences to other locations so that relative to ARF the disturbance or difference cancels. However, these differences are not cancelled relative to an observer. Since ARF exists three-dimensionally at speed  $c$ , the wave moves out three-dimensionally at speed  $c$ , which would cause the wave to attenuate inversely proportionally to the square of the distance as the waves move away from a particle. If a wave front is propagated back to its source, its energy and amplitude should equal the wave source's energy and amplitude. Consequently, relative to ARF, there would be no differences between the spot of the wave's origin and the location of the outer wave fronts. As long as there is no difference, relative to ARF, between a particle's location and a location that does not possess that particle, then ARF is satisfied. Lastly, the idea of ARF creating a field to insure that there is no variance is reminiscent of other invariant theories like Gauge theories. Since Newton's laws of motion are a manifestation of ARF, could Gauge theories be another manifestation of ARF?

### 5.3 The field's two regions

There are two main regions to the field. The first region is the core region and the second is the outer region. The core region is represented by Figures 2A, 2B, and 3A. In Figures 2A and 2B, the core region is inside the dashed lines. Notice that the difference between the dashed lines is one-half a wavelength of the wave in the figure. As a result, the core area resides inside an individual elementary particle. The wave in Figure 2A is splitting in two and is turning into Figure 2B. Of course, this represents what is actually occurring three-dimensionally. In the core the waves are moving out away from the center while all these waves are superimposed. I assume these waves are moving at speed  $c$  and are eventons, anti-eventons, or neutral eventons. In Figure 3A, I show a two-dimensional representation of waves overlapping each other and moving outward, and the arrows that are side by side and moving in opposite directions are actually superimposed in the core of the field. I only put them side by side so they can be easily visualized.

**Figure 2**

**Figure 2.** In Figures 2A and 2B, the core region is inside the dashed lines. Notice that the difference between the dashed lines is one-half a wavelength of the wave in the figure. As a result, the core area resides inside an individual elementary particle. The wave in Figure 2A is splitting in two and turning into Figure 2B. Of course, this represents what is actually occurring three-dimensionally. In the core the waves are moving out away from the center while all these waves are superimposed. I assume these waves are moving at speed  $c$  and are eventons, anti-eventons, or neutral eventons.

**Figure 3**

**Figure 3.** In Figure 3A, waves are overlapping each other and moving outward. The side by side arrows that are moving in opposite directions are actually superimposed in the core of the field. I only put them side by side for easy visualization. Because the field overlaps in opposing directions, gravity and electromagnetism cancel within the core region. Both gravity and electromagnetism only exist in the outer-field region represented in Figure 3B. I refer to the field in the outer region as the gem (gravitational-electromagnetic) field.

Notice that a force dependent on waves moving only in one direction would be cancelled out within the core region because for every arrow moving in one direction, there is another arrow moving in the opposite direction. According to this article, both the electromagnetic and gravitational forces are exactly this type of force that depends on the arrows moving in only one direction. The direction is based on the outer field, and it is an outward direction away from the core of the field. Therefore, the electromagnetic and gravitational forces both cancel out within the core region. This means that there is zero gravity and electromagnetism within the core and that these forces both emerge at the surface of the core, or the surface of an elementary particle. The core exists inside an elementary particle. The nucleus of an atom may be larger than the core of the field and is not the core of the field. Both gravity and electromagnetism only exist in the outer-field region represented in Figure 3B. I refer to the field in the outer region as the gem (gravitational-electromagnetic) field.

Since the forces that are dependent on the one-directional nature of the arrows cancel in the core, the only forces that can exist in the core are forces that depend on the arrows moving in all directions. The forces that depend on the arrows moving in the all directions are particle structural forces (e.g., forces that hold together the structural integrity of a compound particle like the nuclear strong force). Also, the force involved in the creation of particles out of other particles is dependent on the structure of particles like the nuclear weak force. The forces that exist within the core could not exist outside the core because the arrows are only moving in one direction outward away from the core. Furthermore, outside the core, the field resides outside the perimeter of one-half of the wavelength diameter of an elementary particle's diameter, and structural forces only exist inside elementary particles.

The force type that depends on eventons moving in one direction will always occur at speed  $c$ , similar to forces derived from the gem field. However, the force type that depends on eventons moving in all directions occurs at speed  $c$  or slower.

## 6. DERIVING THE FORCES

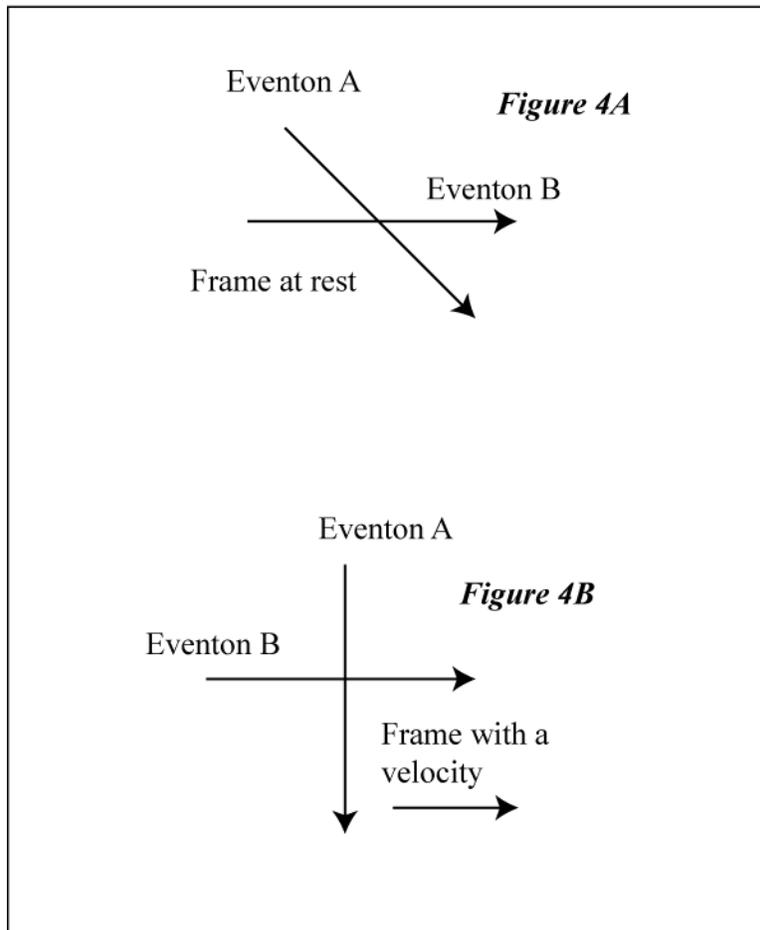
### 6.1 The cause of the curving of space and time

Relative to an observer, the ocean of eventons moving in all directions three-dimensionally represents ARF. I stated earlier that ARF does not like any differences between different locations in the manifold, and I created a field of eventons that nullified the differences (relative to ARF) between a particle's location and other locations. Moreover, there can be no changes at a single location relative to ARF. This is true in any reference frame for an observer. Therefore, to prevent any changes, eventons must react in a way that prevents ARF from experiencing any changes at a location.

Each inertial reference frame of matter has an ocean of eventons. These eventons move in different paths in different reference frames. They also have different energies because of Doppler effects. However these eventons behave,

there are no changes relative to ARF. The first example I would like to give is two different inertial reference frames. See Figures 4A and 4B. Since they are both inertial reference frames, I assume gravity is negligible in both frames and that Figure 4A is at rest and Figure 4B has a constant speed relative to Figure 4A. Notice that eventon A is shifted in Figure 4B compared to Figure 4A. This occurs so that the velocity of Figure 4B is canceled out relative to ARF, and the speed of Figure 4B is zero relative to itself. In other words, a reference frame can have a velocity  $v$  relative to another reference frame, but it cannot have that

**Figure 4**



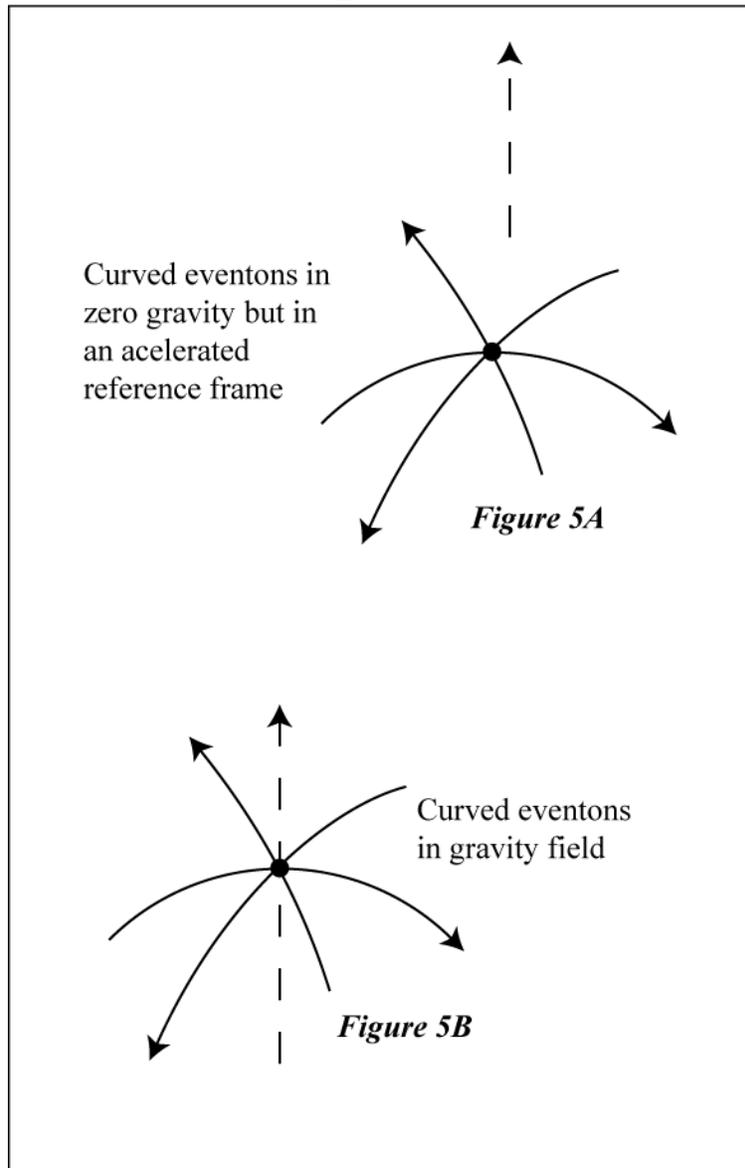
**Figure 4.** Notice that eventon A is shifted in Figure 4B compared to Figure 4A. This occurs so that the velocity of Figure 4B is canceled out relative to ARF, and the speed of Figure 4B is zero relative to itself. In other words, a reference frame can have a velocity  $v$  relative to another reference frame, but it cannot have that velocity relative to ARF, which measures zero distance-time. What has happened is that the velocity of Figure 4B has been taken out of the eventons in Figure 4A, which is represented with the two different diagrams in Figure 4 by the shifting of eventon A. If I were to add the velocity of Figure 4B to the eventons of Figure 4B, I would get the eventons of Figure 4A.

velocity relative to ARF, which measures zero distance-time. What has happened is that the velocity of Figure 4B has been taken out of the eventons in Figure 4A, which is represented with the two different diagrams in Figure 4 by the shifting of eventon A. If I were to add the velocity of Figure 4B to the eventons of Figure 4B, I would get the eventons of Figure 4A.

In the next example, Figure 4 is now seen as an inertial frame that is not accelerated and gravity is negligible. Hence, the eventons are straight. In Figure 5A, gravity is negligible but the frame is accelerating relative to the eventons and ARF, which is not allowed. Consequently, the eventons curve in the opposite direction to cancel out the acceleration relative to ARF. The curvature of the eventons creates acceleration in the frame that is opposite to the frame's acceleration. Relative to ARF, the two opposing accelerations cancel each other. On the other hand, the frame is still accelerating relative to an observer at rest. In Figure 5A, the dashed arrow represents the direction of reference frame's acceleration. This frame of reference could be found in a rocket accelerating in outer space far from any large body of matter.

In Figure 5B, the dashed arrow represents an eventon from a gravitational field. Eventons always interfere with other eventons. I am currently assuming all eventons involved are neutral eventons for simplicity. Therefore, the plus and minus aspects of amplitude interferences are canceled. Nonetheless, eventons still possess energy-momentum, and they still interfere with each other. Consequently, the eventon from the gravity field passes through and temporarily coincides with the other eventons. As a result, there is a temporary change of energy-momentum in the direction of the gravitational eventon for all the other eventons at that spot that coincides with the gravitational eventon. In order to prevent this change from happening, the other eventons will curve in the opposite direction of the gravitational eventon's direction. Hence, ARF now is satisfied because it experiences no changes at that spot where they coincide. The end result is that where the gravitational field of eventons passes through the other eventons of the manifold, these other eventons curve. Thus, the manifold curves too. Curved eventons cause an acceleration of any mass, and a gravitational acceleration occurs for any body of matter.

Einstein's theory of general relativity stated that gravity is caused by the curvature of space-time. In this article, a field of eventons is the cause of this curvature of time and space. Furthermore, the gravity is caused by the energy-momentum of the gravitational eventons—not by their amplitude interference. Even if this field were strictly made up of only negative eventons, the energy-momentum of the field would still be positive. Hence, there is no reverse gravity. The gem field is to be calculated in flat or curved distance-time. It is the gem field being placed in flat or already curved distance-time that causes the distance-time geometry to curve or be curved further.

**Figure 5**

**Figure 5.** In Figure 5A, gravity is zero, and the frame is accelerating relative to the eventons and ARF. This is not allowed. Consequently, the eventons curve in the opposite direction to cancel out the acceleration relative to ARF. The dashed arrow is the direction of acceleration. Figure 5A could be found in a rocket accelerating in outer space far from any large body of matter. In Figure 5B, the dashed arrow represents a gravitational eventon. The gravitational eventon passes through the other eventons, while they interfere with each other. This causes energy-momentum to flow in the direction of dashed arrow relative to ARF. In order to prevent this change from happening, the other eventons will curve in the opposite direction of the gravitational eventon's direction. This creates two opposing accelerations that cancel relative to ARF, which is satisfied.

One last note on gravity is that gravitational eventons moving in the opposite direction to each other will cancel out the gravitational effect. This is the reason that within the core of the unified field there would be no gravity, and the gravitational field emerges at the surface of a particle. This means that within any elementary particle, gravity is zero. It may be possible that an elementary particle cannot exist as a three-dimensional wave source and be infinitesimally small. In other words, an elementary particle cannot exist as a singularity. This means that no matter how strong gravity becomes, a black hole cannot collapse to the infinitesimal smallness of a singularity. I can only guess that the bigger the black hole, the more the particles are squeezed together in the black hole. Nonetheless, it still does not collapse to a singularity.

What happens if a three-dimensional wave source could exist in a singularity? There would still be a problem in regard to the field. The core resides within the inner structure of an elementary particle. If the core of the field were infinitesimally small, the gravity force would be infinitely large because the frequencies of the gravitational eventons would be infinitely large. Hence, as described within this article, the nature of the field needs a core that exists with some diameter to generate the outer field where gravity exists at a finite strength. The end result again is that if a black hole collapsed to a singularity, the field generating gravity would go to infinity. The logical conclusion is that black holes are extremely dense structures with nonzero volumes.

One last possibility is that the core of the field divorces itself from an elementary particle's inner structure when a black hole collapses to a singularity. Therefore, the field's core does not go to zero diameter even though the diameter of the elementary particle does exist in a singularity. The new problem for this scenario is that gravity cancels within the core of the field. Thus, there would be no gravity to pull the black hole's body into a singularity within the diameter of the core of the field. This is the case for each elementary particle in the black hole. Even with this scenario, there is no collapse to a singularity for the largest of the black holes. From the limited information in this article, I cannot guess as to the volume size of black holes except that they have some nonzero volume.

## 6.2 The electric field

In the previous section, I discussed the gravitation effects found in the gem field. The gravitational effects come from the momentum-energy within the field. However, there are still the amplitudes of the eventons that exist within the outer or gem field. Does amplitude interference by the gem field with particles of matter affect the behavior of matter? The answer is yes if the gem field and particle are not neutral. I stated previously that a particle possesses a boson wave in its velocity. Also, eventons in the gem field are boson waves. Consequently, I expect matter to be attracted by the potential of having a bosonic amplitude interference with eventons or anti-eventons in the field. This attraction to the potential of having a bosonic interference occurs when an eventon or anti-eventon passes through a particle of matter. As the non-neutral field passes through a non-neutral particle of matter, the particle of matter will gain a velocity in the direction where there is a similar boson wave in the field. In other words, in

a field of negative eventons flowing outward from the core, I expect a negative particle (like an electron) to accelerate in the same direction of the field away from the core. This happens because the boson wave in the particle of matter's velocity is attracted through amplitude interference to the boson waves in the gem field. Hence, matter will gain a velocity because it wants to constructively interfere with the wave amplitudes in the field. This is repulsion of an electron away from a negative field source. On the other hand, I would expect a positive particle (like a positron) to interfere in the reverse direction to the flow of the gem field according to the rule I gave earlier. This rule stated that positive waves interfere with negative waves in the reverse direction and with reverse amplitude. As a result, the positron would accelerate towards the core of the negative field. I have just demonstrated that there is an electric attraction of opposite particles and repulsion of same particles, which is the same for the electric field. The strength of the force of the field would depend on the strength of the amplitude interference of the bosonic attraction between the field and a non-neutral particle of matter. This bosonic attraction is different from gravity's origin of influence. Gravity depends on the curvature of the geometry of the distance-time manifold, which I have already discussed.

Magnetism is described in other physics texts as the electric field in different reference frames [3]. These texts derive magnetism by applying a special relativistic reference frame to the electric field. I will not discuss too much more on the subject of magnetism.

### 6.3 Nuclear forces

I have already written about the relationship of the nuclear forces in my theory of quantum wave sources in the section on interference forces. (See "The Theory of Quantum Wave Sources [2].) Of course, some modifications and a lot of development will need to occur before a true and complete theory for nuclear forces can be derived from the approach I use in the theory of quantum wave sources. What needs to be discussed here is that I use eventons as a means for particles to influence each other. Eventons represent time and space in a manifold. Also, an eventon field is emitted by a particle of matter disturbing ARF. Hence, time and space give more than a location to particles relative to each other. Time and space are now the means by which particles can contact or influence each other. Therefore, eventons in the core of the field can interfere with each other, resulting in nuclear forces. If a field changes, so would that particle emitting the field or vice versa. Furthermore, the force must occur at short ranges because the entire field—not a portion of the field—communicates. In other words, the force must occur at the source(s) of the field(s) so that the fields can merge to a single or compound field.

The nuclear strong force results when the fields of elementary particles combine in a way that results in a permissible compound particle based on a construct dealing with three-dimensional transversal wave sources. Therefore, the fields and the particles emitting the fields result in a permissible compound structure. The communication for the force happens via a field, which occurs at speed  $c$ .

The nuclear weak force is based on permissible elementary particle structures. Once again, both the field and particle emitting the field are involved. If the core fields from different elementary particles communicate that allowable particles with lower energy can be constructed, they should mesh together and create these lower-energy particles. Also, if a single particle can break down to lower-energy permissible elementary particles, it will do it. And this happens via communication through the field, which occurs at speed  $c$ . However, an entire field moves with the particle at speeds slower than  $c$ . If the communication for the creation of new elementary particles requires the movement of entire fields, then the speed of the communication via eventons would be slower than speed  $c$ . Hence, a weak force could occur at speeds slower than  $c$ .

## 7. Discussion

### 7.1 Discussion

In my quantum wave sources theory, I took an approach to elementary quantum theory that eliminated the particle wave idea of quantum theory and replaced it with a pure wave concept for quantum theory. In order to do that, I had to derive a hypothetical quantum medium that had unusual characteristics compared to traditional mediums for waves. I even gave a set of rules for this quantum medium. Taking this approach, I was able to derive basic elementary concepts. For example, I derived the wave source interpretation of quantum theory as opposed to the traditional Copenhagen interpretation for quantum theory. Also, by going down this path, I was able to eventually derive a structure for elementary particles, which is the three-dimensional transversal wave source. The next step would have been to do something similar to quantum field theories. This paper does take a step in that direction. I first eliminated point particle contact and replaced it with the amplitude interference. I then changed the quantum medium by adding concepts of plus and minus eventon waves. This allowed me to create a plus and minus time and space, which means that particles of matter can exist as either plus or minus three-dimensional transversal wave sources. Furthermore, it allowed me to create the possibility of plus and minus fields. Of course, there are some concepts, such as energy, gravity, and inertia, that are always positive. Hence, I created another rule for waves in the quantum medium, which stated that negative waves wave in the reverse direction compared to positive waves; this means that there are never any negative frequencies or wavelengths. This resulted in no anti-inertia, antigravity, or anti-energy.

It is obvious that this paper presents no completely developed unified field theory, but it does claim to be a step in the direction of a complete unified field theory. This step offers the simplest of fields as the unified field theory as illustrated by a wave in the pond example. The goal is to find the rules that allow all the known characteristics for quantum fields and the general relativity field to emerge from this simple field. I started that process by introducing concepts like ARF and origins of influence and a diametric manifold. After all these concepts

are applied to the simple field in this article, all the known forces can be seen to emerge from the field.

It is clear that although all the forces can emerge from a single field, the field does not represent a unified force theory. A force is not only determined by its origin of influence, but it is also determined by the condition within which the origin of influence occurs. For instance, if amplitude interference results in a compound particle's existence, then the force holding that compound particle together would be different from the force of the electric field, which comes from the simple boson interference that I discussed earlier. Therefore, the forces would be different in their characteristics by the condition in which an origin of influence occurs. Moreover, a different origin of influence would cause a different force. For example, gravity is caused by the origin of influence of distance-time curvature—not by amplitude interference. Since all the other forces originate from amplitude interference under various conditions, gravity would be different from all the other forces. Although a unified force theory is not presented here, a preliminary unified field theory from which all forces emerge is presented here.

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