



## New Gravity

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This is the third paper in the New Electromagnetism series. Other Papers in the New Electromagnetism Series: New Induction (ni.pdf), New Electromagnetism (ne.pdf), and Rules of Nature (ron.pdf). This material on file with U.S. Patent office. Applications of this technology are patent pending. This material is copyright 2000-2003 and is solely the work/discovery of Robert J. Distinti.

### ABSTRACT

This paper derives a model for gravity based on the laws of New Electromagnetism. With this electromagnetic model for gravity the following are derived:

- 1) Einstein's time dilation factor  $\sqrt{1 - v^2 / c^2}$  (page 15).
- 2) The New Electromagnetic representation of matter (BMP) collapses when it travels faster than the speed of light (page 19).
- 3) The Schwarzschild radius  $r = \frac{2K_G M}{C^2}$  is derived from New Electromagnetism (page 20).
- 4) The effect of gravity on time dilation (page 17).
- 5) That the total energy of mass ( $E = MC^2$ ) is constant to all observers in all reference frames (page 17).

The derivations in this paper are based on a new mathematical abstraction for free space. This abstraction satisfies both the results of the Michelson-Morley experiment and the postulates of Relativity. This abstraction is essentially a new model for the old concept of the ether. This abstraction provides a simple link between gravity and New Electromagnetism.

In this paper, New Electromagnetism is employed to confirm many of Einstein's predictions of relativity. The difference being that where Einstein's only predicts what will happen; New Electromagnetism shows a mechanism that causes it to be true.

This is the third paper in the New Electromagnetism series. This paper was condensed from its original scope so as not to delay the release of this content. The free space wave equations and the models for free space (to include the actual field mechanisms) are retained for future papers.

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# 1 Please Read.

The contents of this paper are protected by a number of schemes to include pending patents, trademarks, copyrights, and trade secrets. There is considerable research, publications and products based on the New Electromagnetism models which as yet have not been released. These items are to be released in phases over the next few years.

We publish a small portion of our research for free to allow those who are interested to judge the quality and value of our work. Our freely published papers may be duplicated and distributed without license as long as they are duplicated and distributed intact (all pages without changes).

## Document History:

Rev 1.0: initial Release.

Rev1.5: converted to PDF format.

Rev1.6: Better lead-in for chapter-3, Improved readability of chapter 5, Typographical/Grammar Fixes.

Rev1.6A: Fixed chapter numbering error.

Rev1.7: Added lead-in to New Magnetism.

Rev 1.8: Added more text to help those who did not follow certain points of logic; added cross references for first page; grammar fixes – [Changes in Blue](#).

## 2 INTRODUCTION

This paper shows that there may exist a model for the “Luminiferous Ether” that satisfies both the results of the Michelson-Morley experiment and Relativity. The ether becomes the simplest method for unifying the laws of electromagnetism with gravity.

The new model for ether shows that the force known as gravity may in fact be electromagnetic induction.

This is the third paper in the New Electromagnetism series. The first (“New Induction” –ni.pdf) and second (“New Electromagnetism”--ne.pdf) state that the third paper would contain the free space model and free space wave equations; however, without considering gravity, any model for free space would be incomplete. A following paper in this series contains the free space models as previously promised.

The derivations in this paper make use of the Binary Mass Particles (BMP) described in the paper titled “New Electromagnetism”. Whether or not the BMP represents an actual physical system is unknown at this writing; however, the binary models are mathematically sound and yield interesting results when applied to different situations. Some of these interesting results are contained in the paper titled “New Electromagnetism” and are listed as follows:

- 1) Inertia is represented as an electromagnetic phenomenon of mass.
- 2) Einstein’s energy equation  $E = MC^2$  is derived from New Electromagnetism.
- 3) The mass (or inertia) of an electron is derived from New Electromagnetism.

In this paper (“New Gravity”) the binary models are used to derive the following:

- 1) That gravity is electromagnetic induction.
- 2) Einstein’s time dilation equation  $\sqrt{1 - \frac{v^2}{c^2}}$ .
- 3) The Schwarzschild radius  $r = \frac{2K_G M}{C^2}$  that describes the radius at which a star collapses into a black hole.
- 4) That matter collapses when its speed surpasses the speed of light, and the reason why.
- 5) That the total energy of mass ( $E = MC^2$ ) is constant to all observers in all reference frames.

# 3 A logical derivation of gravity

The model of gravity is derived in this section using simple logical deduction. Later sections of this paper will satisfy the math-hungry masses.

This derivation begins by revisiting the Michelson-Morley experiment. By re-examining the logic of the assumptions, along with the intent of the experiment, we find that the results of the experiment are actually inconclusive. If the ether exists, then what is its nature? Can a model for ether be developed that satisfies both the Michelson-Morley experiment and Relativity? In fact Relativity itself supplies the answer to this question. By extending the logic of Einstein's Principle of Equivalence to the next threshold, a model for ether that satisfies the results of the Michelson-Morley experiment is realized.

The final step before explaining gravity is to develop an ether-based reference frame for electromagnetism. This reference frame allows us to explain that gravity is electromagnetic induction; as well as many other things.

## *3.1 Michelson-Morley experiment*

It was postulated in the 1800s that light, like other forms of wave phenomena, must also propagate over some sort of medium. This medium was given the fanciful name "luminiferous ether". It was assumed (assumption #1) that this "stuff" exists in the space between electrons and protons like water between islands. It was also assumed (assumption #2) that this stuff was stationary with respect to the universe; therefore, as the Earth moves through the universe it passes through the ether. If this were so, then it is reasonable to conclude that an interferometer would enable us to measure the velocity of the Earth relative to the ether/universe.

After many experiments, at different times of day/year, the interferometer showed no indication that the velocity of light was different in any given direction. Because the interferometer did not show any difference in the velocity of light, it was correctly proven that the Earth does not move through ether. This incorrectly translated to the final conclusion that there is no ether.

The final conclusion to this experiment can only be true if assumption #2 is correct (that the ether is stationary). Suppose the ether in the universe flows and behaves like a fluid such as an ocean. Further suppose that the Earth travels with the ether like a piece of driftwood at sea. Would it be possible for ants on a piece of driftwood to measure their velocity relative to the sea by dipping their antennas into the water and measuring the velocity of the surface waves? **Since the driftwood moves with the surface currents, there is no relative motion between the driftwood and the sea for the ants to measure. Therefore the ants will always obtain the same wave velocity no matter what they do. Will the ants then assume that there is no water?**

Further suppose there were another relationship between the Earth and the ether that would also give a negative result to the Michelson-Morley Experiment. By extending the logic of Einstein's Principle of Equivalence such a relationship is revealed.

## *3.2 Einstein's Principle of Equivalence*

Einstein postulated that the effects felt by a person standing on the Earth were identical to the effects felt by a person accelerating through space at one times the acceleration of gravity. He called this the Principle of Equivalence.

Logically, the next step suggests that standing on the Earth is equivalent to accelerating through space. Could we not then reason that space is accelerating toward the Earth symmetrically in all direction? Might this accelerating space, relative to physical objects (not physical impact), cause the force of gravity that holds us to the Earth? Suppose that space were filled with some kind of “stuff”. Further suppose that this “stuff” is made of particles so small that they occupy the space between all of the known sub-atomic particles. This “stuff”, when accelerating through matter, imparts force.

What might this “stuff” be? Perhaps it is the “luminiferous ether” which was discussed in the previous section. If the ether is accelerating symmetrically in all direction toward the Earth, then the velocity of the ether should be substantially perpendicular to the surface of the Earth. This would mean then that the acceleration of the ether tangential to the surface of the Earth is zero because we feel gravity only in the vertical direction. If the acceleration of the ether tangent to the surface is zero, then logically the velocity of the ether tangent to the surface of the Earth should also be zero. Since the Michelson-Morley experiment was conducted tangent to the surface of the Earth, then the interferometer should read no ethereal movement. This suggests that the ether is spiraling toward the Earth ([since the Earth is rotating](#)).

If this ether does exist and it is accelerating toward the Earth symmetrically in all directions, then where does it go? One possible answer is that it annihilates with the matter of the Earth, releasing energy. This release of energy may be the cause of radioactive decay and/or the explanation of why the core of the Earth is still molten. A following paper will discuss the behavior of the ether in more detail. This paper will treat the ether as a mathematical abstraction for the purpose of exploring the force known as gravity.

It is not necessary to run the Michelson-Morley experiment again, the manner in which ether affects light can be detected from the behavior of light near massive bodies such as black holes. Near black holes, light is bent in the direction toward the black hole. If ether does exist, then this would suggest that it accelerates toward massive objects.

The force of gravity is transmitted by ether particles accelerating relative to matter, not by ethereal particles actually colliding with and making contact with matter. [According to the New Electromagnetic models, the relative motion \(specifically acceleration\) between ether and matter is the mechanism of both inertia and gravity. Einstein’s Principle of Equivalence teaches that gravity and inertia are equivalent; New Electromagnetism shows that they are one and the same.](#)

### *3.3A hole in electromagnetism: Relativity*

Although New Electromagnetism fixes some problems in electromagnetic theory, there are still some problems that need attention. This section addresses a problem in electromagnetic theory with regards to the proper reference frame.

As you may already know, electromagnetism does not always obey Galilean relativity. In Galilean relativity, if a scientist performs a non-electromagnetic experiment while traveling in a space ship, he will obtain the same results regardless of the velocity of the space ship. As such, the scientist does not need to know the velocity of the spaceship. This is not true for certain experiments involving electromagnetism. This means that if a scientist performs certain electromagnetic experiments while traveling in a spaceship, he will obtain different results to those obtained while the spaceship is stationary.

Nineteenth century scientist reasoned that there must be a stationary reference frame for electromagnetism. This was what the Michelson-Morley experiment was to confirm. As you recall, the Michelson-Morley

experiment correctly demonstrated that a stationary reference frame does not exist. This result was then misinterpreted to dismiss any reference frame.

Because no stationary reference frame exists and scientists are quite fond of the independence of Galilean relativity, much effort was expended by scientist in the 20<sup>th</sup> century to reconcile electromagnetism with Galilean relativity. The result of these efforts brings us such things as the Lorentz-Poincare transformations and Einstein's Theory of Relativity.

These theories provide experimentally accurate results but do not show any underlying mechanism that causes them to be true.

This paper shows that an ethereal reference frame can exist that satisfies the results of the Michelson-Morley experiment. This reference frame enables us to show that many (if not all) the concepts of the Theory of Relativity can be derived from electromagnetism – including gravity. This is a departure from other organizations that propose ether as an opposing or competing concept to Einstein's relativity.

The remainder of this section explains that ether accelerates toward the Earth in spiral fashion such that the tangential component of ethereal velocity and acceleration, relative to the surface of the Earth, is zero. For those who don't care about trolling through these details, you can skip to section 4.

To properly reconcile the Michelson-Morley experiment, Relativity, gravity and electromagnetism, the correct nature of the ether must be determined.

This exploration begins by examining the laws of electromagnetism.

From New Electromagnetism:

- 1) Positional electric law:  $\mathbf{F} = \frac{K_E Q_S Q_T \mathbf{r}}{|\mathbf{r}|^3}$
- 2) Motional Electric law:  $\mathbf{F} = \frac{-K_M Q_S Q_T (\mathbf{v}_S \times \mathbf{r} \times \mathbf{v}_T)}{|\mathbf{r}|^3}$ .
- 3) Inertial Electric Law:  $\mathbf{F} = \frac{-K_M Q_S Q_T \mathbf{a}_S}{|\mathbf{r}|}$

The Positional Electric Law (Coulomb's Law) depends only upon the relative position between charges. It is not affected by velocity or acceleration and thus satisfies Galilean transformation by default.

The Inertial Electric Law satisfies Galilean relativity simply because acceleration is the same to all observers in all reference frames.

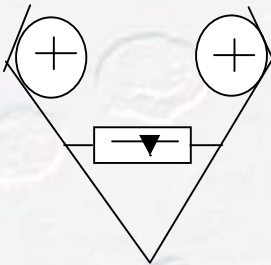
The Motional Electric Law depends upon two velocities, the velocity of a source and a target charge. Since velocity is a quantity that appears differently to observers from different reference frames, the Motional Electric Law is the focal point of the problem with regard to Galilean relativity.

Both the Time Dilation of Einstein's Relativity and the Lorentz-Poincare transformation attempt to reconcile this problem by using equations that consider the velocity of the reference frame of an event. Einstein normalizes the problem by saying that time dilates in the reference frame. The Lorentz-Poincare transformation normalizes the problem by saying that the moving reference frame experiences a contraction along its length in the direction of motion. Both require you to know the velocity of the reference frame. This becomes really interesting because if you think about it long enough, you begin to realize that the problem with Galilean transformation has not been solved, it has only been abstracted a level. If the purpose of the above theories is to make the effects of the motional electric law independent of the reference frame

then why do you need to know the velocity of the reference frame? What do you measure the velocity of the reference frame relative to? How do the charges know how fast they are going? Since the Positional Electric Law and the Inertial Electric Law are not affected by the problem, does time dilation only affect the Motional Electric Law?

This paper will show that time dilation does exist for material processes but it does not affect electromagnetism. This is because material time is a function of electromagnetism. This will be covered in more detail later.

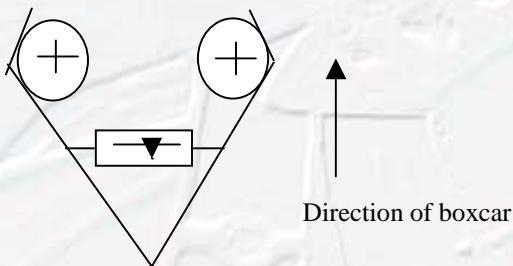
To explore the nature of the proper reference frame for electromagnetism, let us consider a device that will enable us to explore the reference frame. As you recall, the Motional Electric Law is need of a proper frame of reference; therefore, the following theoretical device enables us to measure the effects of the Motional Electric Law in different situations:



**Figure 3-1: Charge calipers stationary.**

Suppose you have two point charges (of the same charge) permanently “glued” one to each end of a pair of calipers (see Figure 3-1). The calipers have a scale that enables you to measure the repulsive force between the two charges.

While the contraption is Earth-stationary, the only force acting in the system (other than gravity) is the Coulomb (PEL) force, which repels the two charges, thus forcing the caliper arms apart. Suppose this system were placed in a moving boxcar such that the motion of the boxcar is perpendicular to the radius between the charges (see Figure 3-2), what then? According to the Motional Electric Law, the charges should experience an attractive force that offsets the repulsive Coulomb force.



**Figure 3-2: Charge calipers in motion**

According to New Electromagnetism, if this system were traveling at the speed of light, the Motional Electric Law (MEL) would completely cancel the Coulomb (PEL) forces and the scale would read zero. How do the charges know how fast they are going?

**NOTE: Do not try to use parallel current carrying wires for this thought experiment. Two parallel current carrying wires will obey Galilean Relativity. The paper titled “New Magnetism” will explain why.**

It would be incorrect to measure the velocity of the charges relative to the boxcar because that would always be zero and the motional electric law would then predict a zero effect. The correct answer is obtained by measuring the speed of the charges relative to the surface of the Earth.

Considering that you can view the Earth as a very large boxcar moving through space, why then is the Earthly reference frame correct and the boxcar reference frame not correct? Even with the Lorentz-Poincare transformation and Einstein’s Theory of Relativity you need to know the velocity of a system in order to compute the effects that these relationships predict -- velocity relative to what?

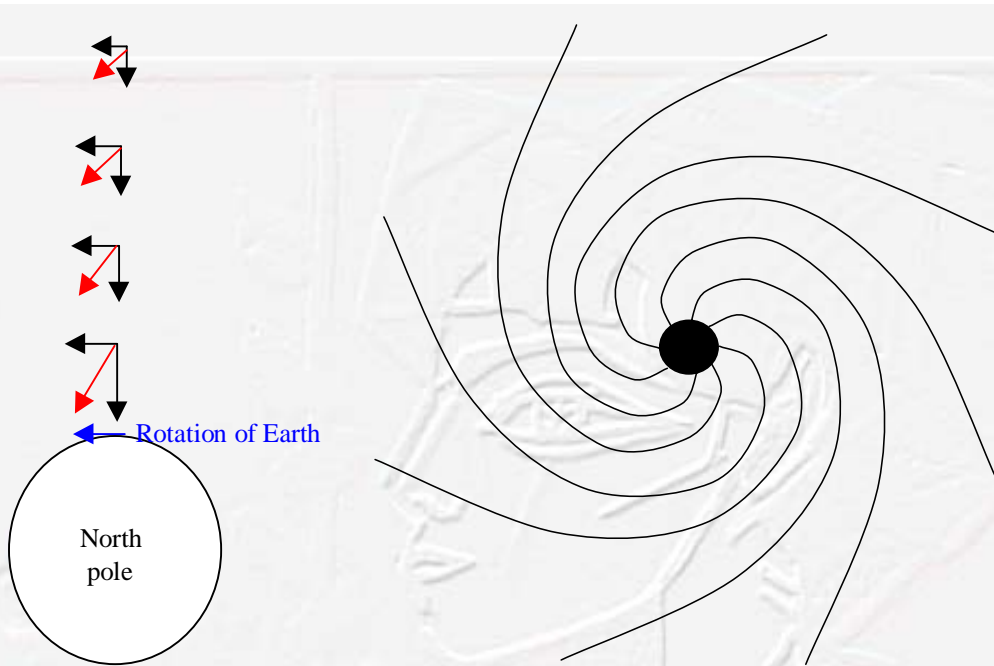
It is quite ironic that the mathematical solutions to make electromagnetism conform to Galilean relativity themselves require a velocity measured relative to some other reference frame.

There must be some reference frame that satisfies the above dilemma. According to the paper “Rules of Nature” (to be published shortly) the charges can not be “self aware” of their velocity relative to anything. The effect of exchanging their motion into some sort of field phenomenon must happen within the limits of the differential (see “Rules of Nature”—ron.pdf); therefore, the charges must react with space itself. This means that the velocity of charges must be measured relative to space itself. Therefore space MUST contain something that interacts with charges in motion. If a moving charge generates a magnetic field, then the space that the charge moves through can not be empty.

The question is: what sort of reference frame satisfies the boxcar example and, for that matter, the Michelson-Morley experiment? The answer is any reference frame that has a zero component tangential to the surface of the Earth. Because the reference frame can have no tangential component relative to the surface of the Earth, then the reference frame must be rotating with the Earth.

Because the tangential component of the reference frame is substantially zero, does not mean that the vertical component is substantially zero. Since we know that light bends toward the Earth, then the component of the reference frame normal to the surface of the Earth must be moving Earthward.

This reference frame is consistent with the ethereal model proposed in the previous sections and is shown by the following diagram.



**Figure 3-3: Path of ether particles**

In the above diagram the red arrows show the path of an ether particle at different distances from the Earth. The black arrows show the component vectors of the path. As shown, the particle accelerates in both the tangential and downward directions as it gets closer to the Earth.

As the particle reaches the surface of the Earth, its tangential velocity is substantially equal to that of the Earth. This means that the ether falls toward the Earth in a spiral path.

In the paper titled “Ethereal Mechanics” (to be published later) it is shown that the curl of ether is a magnetic field. The paper also shows that the spiral in the ether about the Earth has sufficient curl to explain the magnetic field of the Earth. The actual magnetic poles do not align with the true poles of the Earth because of the non-uniform distribution of ferromagnetic materials within the Earth.

# 4 The Simple Unification Theory

If you have read the preceding sections then you already may know what the simple unification theory is. The simple unification theory is outlined by the following bullets:

- 1) Space is filled with some sort of fluid-like material called ether.
- 2) The ether flows and eddies about the universe.
- 3) Massive objects consume (annihilate) ether causing a depletion of ether.
- 4) This depletion causes ether to accelerate toward the center of depletion.
- 5) This accelerating ether causes gravity (it isn't gravity-- sounds cryptic but is explained later).
- 6) The actual mechanism of gravity is electromagnetic induction; specifically the IEL(see next section).

To clarify, the mechanism of gravity is NOT the collision of ether particles against matter. Matter and ether that come into physical contact will annihilate (in some manner to be discussed in a later paper). The probability of contact between matter and ether is very small and releases a certain amount of energy. The actual mechanism of gravity is explained in the next section.

## 5 The mechanism of gravity

If gravity is caused by the earthward acceleration of ether, then how does accelerating ether interact with mass to generate the force? The answer is electromagnetic induction. Electromagnetic induction is responsible for Inertia (as shown in the paper titled “New Electromagnetism”) and is shown here that it is also the mechanism of gravity.

Referring to the New Electromagnetic representations of matter called the “Binary Mass Particle” (BMP -- section 4.4.1 of “New Electromagnetism”); the model shows that the inertial force is generated by the acceleration of the model through space. The direction of the inertial force is opposite to the direction of acceleration.

To show how gravity works, we place the model on the surface of the Earth. From a previous section we have reasoned that the ether is accelerating toward the center of the Earth. Using Einstein’s Principle of Equivalence we conclude that the acceleration of ether at the surface of the Earth is 9.8 meters/sec/sec downward. Since charge acceleration for New Electromagnetism is measured relative to the ether and this model is effectively accelerating upward at 9.8 meters/sec/sec. Since the acceleration of the model (see Figure 5-1 below) is upward with respect to the ether; then the resultant inertial force is Earthward.

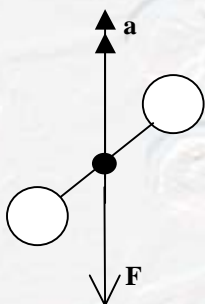


Figure 5-1

It makes no difference whether the binary model is accelerating through the ether OR the ether is accelerating through the model, inertia and gravity are electromagnetic induction. The mechanism is the new law of induction outlined in the paper titled “New Induction.”

# 6 Ethereal Mechanics: A beginning.

New Gravity gives us the starting point for the ultimate goal of New Electromagnetism, which is to develop useful models of free space. This leads to the free space wave equations and so on. Because the models of electromagnetism and gravity seem to converge on the “luminiferous ether”, then the new science of modeling field phenomenon should be called “Ethereal Mechanics.”

The following sections will mathematically derive the properties of the ether concerned with a static gravitational field.

This paper uses the same standards of notation used throughout New Electromagnetism with the following additions:

$p$	A particle of ether.
$P$	Ether in general,
$K_G$	Gravitational Constant.
$\mathbf{F} = -\frac{K_G M_S M_T \mathbf{r}}{ \mathbf{r} ^3}$	Vector form of Newton’s Law of gravity. Modified from the standard version: $F = \frac{K_G M_1 M_2}{r^2}$ .

An assumption used as a beginning is that ether is composed of particles. This enables us to develop an initial set of properties to perform experiments against. The actual composition of ether is discussed in more detail in the paper titled “Ethereal Mechanics”.

## 6.1 Ethereal Acceleration toward mass

Since it is proposed that ether accelerates toward massive bodies, the first and most simple equation we can develop is the acceleration of ether relative to massive bodies.

We start with Newton’s law of gravity (written using the notations of New Electromagnetism):

$$1) \text{ Newton’s Law of gravity: } \mathbf{F} = -\frac{K_G M_S M_T \mathbf{r}}{|\mathbf{r}|^3}$$

Divide both sides by the mass of the target:

$$2) \mathbf{a}_T = -\frac{K_G M_S \mathbf{r}}{|\mathbf{r}|^3}$$

Because of Einstein’s Principle of Equivalence, the acceleration of the ether toward the source is the same as the acceleration of the target to the source; therefore, the acceleration of ether  $\mathbf{a}_p$  is identical to the acceleration of the target  $\mathbf{a}_T$ . Thus:

### Equation 1 : Ethereal Acceleration

$$\mathbf{a}_p = -\frac{K_G M_s \hat{\mathbf{r}}}{|\mathbf{r}|^2}$$

where  $\mathbf{r}$  is the vector distance from the source to a point in space where we would like to know the acceleration of a given ether particle.

The above component is the radial component. The tangential component of acceleration is disclosed in the paper titled "Ethereal Mechanics"

## 6.2 Ethereal Velocity toward Mass

The derivation of the particle velocity toward a massive object is identical to the escape velocity derivation of classical mechanics except for the sign. The equation is:

$$\mathbf{v}_p = -\sqrt{\frac{2K_G M_s}{r}} \hat{\mathbf{r}} .$$
 This is approximately 11,200 m/s at surface of Earth.

The above component is the radial component. The tangential component of velocity is disclosed in the paper titled "Ethereal Mechanics."

## 6.3 Ethereal density

A classical assumption about ether is that it should follow the properties of an ideal gas. If this is correct then the ether should be compressible. This means that the density of ether though out the universe is not constant.

Another way to show that the ether must be compressible is to derive the acceleration of ether about a massive body assuming it were incompressible. If you assume that a massive body consumes ether at some constant rate  $Z$ , measured in cubic meters of ether per second, what would the acceleration or velocity of ether be at a given distance  $R$ ? The velocity and acceleration would be related by the following two equations.

$$v = -\frac{Z}{4\pi R^2}$$

$$a = -\frac{Z^2}{8\pi^2 R^5}$$

The above relationship for velocity and acceleration of ether are not consistent with those derived in the previous sections; therefore, ether must be compressible.

If the ether is compressible then ether can not be of uniform density throughout the universe. This means that there may be regions where the ether is denser than here on Earth. These regions would necessarily conduct light faster than it does here on Earth.

A logical guess would propose that the density of ether increases toward the edges of the universe. Another logical guess would be that a black hole is a body so massive that it depletes ether faster than it can be replaced thereby causing a region so devoid of ether that light can not propagate at all.

Logically then, the ether about the Earth is less dense near sea level than it is at the top of a mountain. This suggests that light travels faster at the top of a mountain than at sea level. This is consistent with Einstein's theories.

In the paper titled "Ethereal Mechanics", it is shown that the electromagnetic constants, slightly modified, describe the properties of the ether as a compressible gas. The actual density of the ether is also derived along with longitudinal and transverse wave equations.

## 6.4 The binary particle in motion

The "Binary Mass Particle" (BMP) model is used here to derive Einstein's time dilation equation  $\sqrt{1 - v^2 / c^2}$ . In a later section it is used again to show that the speed of light (relative to the ether) is the fastest velocity that this system can achieve before it becomes unstable and collapses.

Consider the BMP shown in the following diagram. Assume that this system is traveling up out of the page along the axis of rotation with axial velocity  $V$ . How does this affect the model?

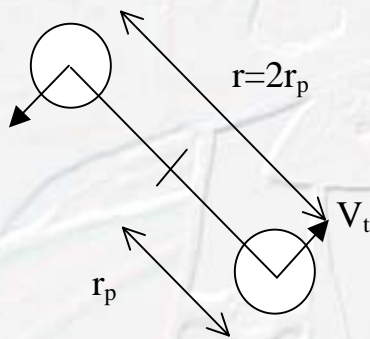


Figure 6-1

Again, we sum together all of the electromagnetic point charge equations and find the tangential velocity  $V_t$  required to keep the sum of the forces equal to zero.

$$1) \quad 0 = \frac{K_E Q_S Q_T \mathbf{r}}{|\mathbf{r}|^3} - \frac{K_M Q_S Q_T (\mathbf{v}_S \times \mathbf{r} \times \mathbf{v}_T)}{|\mathbf{r}|^3} - \frac{K_M Q_S Q_T \mathbf{a}_S}{|\mathbf{r}|}$$

In the derivation of the stationary system (See “New Electromagnetism”) the positional component and the motional component are repulsive forces while the inertial component is an attractive force. With the addition of the axial velocity, there is now an additional attractive force due to the Motional Electric Law.

From observation, we substitute the variables of step 1) with the following:

- The distance between the two particles (r) is twice the radius of the system ( $r_p$ ). Therefore  $2r_p$  replaces the distance between the particles (r).
- The source acceleration in the inertial component is replaced by the centripetal acceleration equation:

$$a = \frac{V_t^2}{r_p}$$

- Working through the dual cross product to account for the tangential velocity ( $V_t$ ) and the axial velocity ( $V$ ), the result is  $(\mathbf{v}_s \times \mathbf{r} \times \mathbf{v}_T) \equiv ((\mathbf{v}_s \times \mathbf{r}) \times \mathbf{v}_T) = (V^2 - V_t^2)\mathbf{r}$ .

Substituting and reducing yields:

$$2) \quad 0 = \frac{K_E}{2r_p} + \frac{K_M V_t^2}{2r_p} - \frac{K_M V_t^2}{r_p} - \frac{K_M V^2}{2r_p}. \text{ Further reduction yields:}$$

$$3) \quad 0 = \frac{K_E}{2} - \frac{K_M V_t^2}{2} - \frac{K_M V^2}{2}. \text{ Realizing that } C^2 = \frac{K_E}{K_M}:$$

$$4) \quad V_t^2 = C^2 - V^2 \text{ and finally:}$$

$$5) \quad V_t = \sqrt{C^2 - V^2}$$

From the equation we see that the tangential velocity of the system is slower when it is in motion. If we were to take the ratio of the tangential velocity of the system in motion  $V_t' = \sqrt{C^2 - V^2}$  to the tangential velocity of the system that is stationary  $V_t = C$  we get:

$$\frac{V_t'}{V_t} = \sqrt{1 - \frac{V^2}{C^2}}$$

The above equation is Einstein’s relationship for time dilation.

In the next section the above equation is used to derive some other interesting things.

Note: the solution for the above only works when the velocity of the system is transverse to the radius between the particles. This is due to the transverse nature of the currently accepted models for magnetism (MEL). The paper titled “New Magnetism” –(nm.pdf soon to be available at [www.newmagnetism.com](http://www.newmagnetism.com)) describes a completely spherical magnetic field phenomenon. This new model for magnetism allows the above model to experience time dilation without regard to direction of travel. Furthermore, the new model solves what is known as Faraday’s Final Riddle.

## 6.5 Time dilation in a gravity field

In the previous section we derived Einstein's time dilation relationship. In this section we explore how this same equation predicts the effects of time dilation within a gravity field.

As you recall, the velocity in the above equation is that of the system relative to the ether. In this paper we have derived the velocity of the ether about a massive body to be  $\mathbf{v}_p = -\sqrt{\frac{2K_G M_S}{r}} \hat{\mathbf{r}}$ . Substituting the scalar version of this equation into the time dilation equation allows us to derive the time dilation that we experience at a given distance from a massive body.

$$\text{Dilation} = \sqrt{1 - \frac{2K_G M}{rC^2}}$$

According to the above equation, there are two factors that affect the amount of time dilation experienced at a given distance  $r$  from the massive body. The first occurs from the fact that the velocity of ether increases as the distance  $r$  decreases. Because ethereal velocity is in the numerator, then the flow of time decreases as  $r$  decreases. Secondly, since the density of ether decreases as  $r$  decreases, then the velocity of light ( $C$ ) also decreases. Since  $C$  is in the denominator, then an additional decrease in the flow of time is realized. This shows that there are two components to time. These are discussed in a later section after other definitions are introduced.

## 6.6 The energy of the system

If we take a look at the tangential velocity of the system as a function of axial velocity we have:

$$1) \quad V_t = \sqrt{C^2 - V^2}$$

If we then substitute this into the equation used to derive the energy of the system (see "New Electromagnetism") we obtain the following for the energy of the system:

$$2) \quad E = KE + PE = \frac{K_M Q^2}{2r_p} (\sqrt{C^2 - V^2})^2 + \frac{K_E Q^2}{2r_p}$$

$$3) \quad E = MC^2 - \frac{1}{2} MV^2$$

The equation in step 3 above is only the energy of the system due to the coulomb forces and the rotational kinetic energy. Since the system is in motion we have an additional component of kinetic energy due to the linear velocity of the system  $= E = \frac{1}{2} MV^2$ . Adding this component to the system yields:

$$E = MC^2$$

This means that the energy of the system is constant regardless of its motion. It also means that the velocity of the charges (relative to the ether) will always be the speed of light regardless of the motion of

the system (other sections of this paper will show that this system would cease to exist if this rule is violated). This is demonstrated by first observing the velocity of the charges in a stationary system. In a stationary system, the tangential velocities of the charges are C, the speed of light. When the system is in motion, the tangential velocities of the charges decrease. The resultant velocity of the charges is found with vector summation of the tangential velocity of the charges and the axial velocity of the system, which again yields C as shown in the following:

$$V_{charge} = \sqrt{V_t^2 + V^2} = \sqrt{\sqrt{C^2 - V^2}^2 + V^2} = C$$

For the positive mass model, if the velocity of the charges in the system exceeds C with respect to the ether, then the system will collapse to a “singularity”. This occurs because either the motional electric (due to axial motion) or inertial electric (due to tangential motion) forces will overpower the PEL (Coulomb) forces. If the velocity is less than C then the system will fly apart because the PEL forces prevail. If the system collapses, the radius between the charges decreases to near zero and the inertia of the system increases (see “New Electromagnetism”) monumentally. Consequently, if the system flies apart, then the energy of the system is released.

For the negative mass model the opposite is true.

The actual mechanism that regulates the radius of the particles will be described in the paper titled “Ethereal Mechanics” to be available shortly after the paper titled “New Magnetism” is released. See [www.EtherealMechanics.com](http://www.EtherealMechanics.com) for details.

This section shows that the energy of the system is  $E = MC^2$  as observed by a stationary observer regardless of the motion of the system. The next section will show that the energy of the system is  $E = MC^2$  as observed from a non-stationary observer as well.

## *6.7 What happens at relativistic speeds*

An interesting thing occurs when the binary model attains the speed of light (relative to the ether); it stops spinning. Does this mean that time is standing still? No, the coulomb forces and the motional electric laws are quite active and are in balance; consequently, there remains no need for a tangential velocity to maintain stability.

Because this system is no longer spinning, it no longer produces a magnetic moment and other such processes that matter performs (material processes) as a result of its spinning. Although time hasn’t stopped, the rate at which this system used to perform its cyclical functions have ceased; thereby giving the appearance of being frozen in time.

At relativistic speeds, the material processes in this system slow according to the time dilation function ( $\sqrt{1 - v^2 / c^2}$ ).

If an observer were traveling with the above system with equipment designed to measure the tangential velocity of the system, the observer would always measure that the tangential velocity is C, the speed of light. This occurs because the observer and his equipment are composed of these same systems, as such they too will experience the same slowdown in material processes.

Logically then, the total energy of the system is  $E = MC^2$  regardless of the reference frame that the system is observed from.

## *6.8 The two frames of time*

I personally do not like the concept of “time” as put forward by science fiction. I prefer the concept of “the rate at which things happen”. The definition of which is covered in the paper titled “The Rules of Nature”. For now I will use the word “time” with caution. There are two frames of time that need to be identified. The first frame of time is electromagnetic time, or the rate at which electromagnetic interactions occur. The second frame of time is material time. Material time is the rate at which material processes occur. An example of material time is the rate at which the Binary Mass Particle (BMP) spins.

Electromagnetic time is the rate at which electromagnetic fields convey changes to the rest of a given system. As in the case of the BMP, the electromagnetic time is constant regardless of the motion of the system. If however, the density of ether changes as the location where the system exists, then the electromagnetic time would be affected.

Material time is the rate at which the material processes occur. This time is derived from electromagnetic time. As shown in previous sections, the motion of a system, such as the BMP, through the ether affects the rate at which material processes occur. Although the tangential velocity of the BMP slows, the rates at which electromagnetic interactions occur have not. This is evidenced by the fact that although the tangential velocity of the charges slows, the absolute velocity of the charges is still the speed of light.

## *6.9 Beyond the speed of light*

Beyond the speed of light, the motional electric forces of a positive mass binary model (a system of two like charges) overpower the repulsive coulomb forces and the system collapses.

For the negative mass binary model the opposite is true. Beyond the speed of light the repulsive motional electric forces overpower the attractive coulomb forces causing the system to explode.

## *6.10 Luminous distortions*

This section is intentionally incomplete.

## *6.11 Age of the Universe*

One method for measuring the age of the universe is from observing stars known as Cepheid Variables.

Because this paper proposes that the speed of light is not constant; that it depends upon the density of ether for the rate of propagation, then the method of measuring the age of the universe using CV's requires some adjustment.

This paper proposes that the density of the ether near the core of the universe is not as dense as the ether near the edge of the universe. It follows from this that light passing across the center of the universe takes much longer to reach us than we had initially thought. This would mean that the age of the universe is much older than the value measured using CV's with the assumption that the speed of light is a universal constant.

## 6.12 Collapsed stars – Black holes

Since we have reasoned that a positive mass model collapses if its velocity exceeds the speed of light, relative to the ether. What about an object so massive that it annihilates ether at such a rate that the velocity of ether flowing towards it exceeds the speed of light at its surface?

To derive such an object we can set the ethereal velocity equation equal to the speed of light and solve for the radius.

$$1) \quad C = \sqrt{\frac{2K_G M}{r}}$$

$$2) \quad r = \frac{2K_G M}{C^2}$$

The above relationship is of course the Shwarzschild radius. If the radius of a star of mass M falls below this radius, it collapses to a black hole. The actual mechanism of collapse is described by New Electromagnetism.

Because the paper titled “Ethereal Mechanics” shows that the density of ether diminishes toward a massive body, the above equation is only an approximation. In fact, the density of ether at the core of a black hole is assumed to approach zero. And since it is also assumed that ether is the conveyor of all field phenomena then the core of a black hole is a place where gravitational and electromagnetic forces may no longer exist.

# 7 Conclusion

This paper explains the force known as gravity to be electromagnetic induction. It also shows that the concepts of Relativity can be derived from New Electromagnetism.

Where the theory of relativity only shows what happens, New Electromagnetism shows why it happens. In section 6.6 it is shown that the speed limit of matter is the speed of light. Because the mechanism that governs this speed limit is now understood to be electromagnetic in nature, it may be possible to construct a starship that “drags” the ether along with it, thereby eliminating Einstein’s speed limit and the problem of inertia. The passengers of such a ship will be able to travel to the stars at any velocity and will not feel the effects of acceleration or time dilation. A ship that could manipulate ether in such a way could also produce a region of accelerating ether within the ship to provide an artificial gravity for the comfort of the passengers.

There is much more work in the New Electromagnetism series to be published. The next paper to be published will be “The Rules of Nature.doc” a treatise on mathematical models of nature. This paper derives set of rules that nature always seems to follow and other rules that nature will never follow. Because any given physical system may have many mathematical models that yield correct answers, it would be nice to know which models explain the phenomenon closest to the way nature does it. For example Einstein’s Theory of Relativity gives the correct values for time dilation but does not explain how it works. New Electromagnetism explains the actual mechanism of time dilation such that a work around to the speed limit might be possible. The “Rules Of Nature” also explain a continuity problem between mathematics and nature that must be resolved to prevent erroneous conclusions. These principles are used throughout the paper “Ethereal Mechanics”.

Another paper to be released before “Ethereal Mechanics” is “New Magnetism”. This paper fixes the remaining problems in electromagnetism. A complete description of magnetic phenomenon is required before the paper “Ethereal Mechanics”, which explains the actual mechanisms of field phenomenon, can be released. Because “New Magnetism” describes a completely new magnetic field phenomenon, it is supported by experimental supplements just as “New induction”.