

Title: The Aether of Time:

Keywords: Einstein photini photon graviton gravatini boson bosini gluon gluini gravitational time dilations acceleration translational light gravity waves mechanics general relativity special string theory universe black holes big bang white ultranova

Corresponding Author: Peter Lue, BSc

First Author: Peter Lue, Bsc

Order of Authors: Peter Lue, BSc

Abstract: The aether of Time is the second paper that in this series which attempts to prove conclusively, that space-time is not curved and the universe has an aether. In addition, it describes a hypothetical conceptual aether which seems to explain all of the forces in the universe in simple mechanical ways. This paper also tries to eliminate the almost magical properties of our concept of quantum particles and replaces them with very simple and testable theories. The theory encompasses much of the knowledge we have about sub-atomic particles and by a logical progression, describes a very simple and highly probable explanation of the aether, its constituents and their forces. This is followed by a brief discussion of the implications that this has with respect to our understanding of physics and the universe.

The Aether of Time

By: Peter Lue

Completed: Sunday, June 24, 2007 14:35:11

The Aether of Time

By: Peter Lue

Albert Einstein redefined physics with his concepts of relativity and space-time curvatures. His predictions of massless objects affected by gravity convinced the world of his genius. It seems nevertheless, that we have come to an impasse in our quest to understand some of the greatest problems in physics. In an effort to resolve this issue, an effort must be made to reconsider what we already know. An important concept in science is where we choose a stationary point. We could arbitrarily make the centre of the universe the Earth, but the mathematics is far more simple if we make it the sun, or the centre of a "Big Bang". If we choose the theoretical Big Bang as the centre of the universe, that does not make the Earth centered model wrong, it makes the Earth centered model out of favor. This does not mean that everything we knew about the cosmos was incorrect, but it makes more sense to think of the universe in a different way. We may have come to a bottleneck in our efforts to further conceptualize the creation of the universe and merge relativity with quantum mechanics because one or more of our assumptions is incorrect. We therefore need to retrace our assumptions and find any inconsistencies which may lead to a breakthrough in our understanding of how we entered into this

gridlock. The crux of the dilemma which has led to this blind alley in our reasoning seems to be the problem of the wave/particle nature of energetic particles and the possible existence of a graviton or particle of gravity. This combined with light's propagation through an aetherless environment yields a highly complex way of looking at the universe. It seems intuitive that there could be a much more insightful way to view the universe.

There comes a time in the life of almost every student of quantum physics and relativity when the laws of physics stop being intuitive and one is expected to rely upon the greater understanding of the great minds of people who have gone before. The conclusions presented here result from research that has gone on in the past and is readily available for analysis. It is through a greater understanding and a more cohesive analysis of all of that research, that a new perspective on the nature of physics in the universe can be formulated. Through mathematical analysis and experimental data, we can show that Einstein's theory of curved space-time appears to be flawed. With the collective research of the past one hundred years in hand, a new theory is proposed which agrees with all of the observed data. There is a tremendous amount of scientific evidence to support this theory, and methods to test the validity have been proposed herein as well.

The worlds of quantum physics and relativity are very confusing places. Due to generally accepted theories, quantum physics and relativity have given us a universe filled with many dimensions and extra-dimensional dark matter. Time is no longer something that means anything to more than a single object and therefore cannot be used as a constant frame of reference. Quantum mechanics gives us particles that travel every possible direction simultaneously at incredible velocities. These particles change direction constantly and seemingly instantaneously and yet expend no energy in the process. It seems that the theoretical discussion that follows may take all of the fun out of physics, but the most elegant solutions always seem to be the simplest. Doing away with the incredibly fantastic theories which have come out of quantum physics and relativity and replacing them with a simple hypothesis that is intuitive and has a tremendous amount of experimental evidence to back it up, should lead to tremendous surge in progress in the field of research.

When we do away with relativity and quantum mechanics, about one hundred years of research and the efforts of a tremendous number of scientists need to be reevaluated. If one pulls at the fabric of space-time, and it begins to unravel, the scientific community has a great undertaking ahead. The benefit is that a golden age of new discoveries may wait. The theories of quantum physics and relativity were based on observational analysis and good physical research. If space-time curvatures as Einstein described them do not exist, how can we explain all of the experimental data which has appeared to support it? The simple answer is that Einstein may have been describing an environment in which there was an aether. If you simply ignore the aether, then you are left with curved space-time. Most of the work that has been prepared until now although valid, must be reinterpreted given the new framework in which we will be exploring this hypothesis.

The benefits of putting the aether back into physics are that travel to other planets suddenly becomes possible, all of the fanciful and imaginary theories go away and we are left with non-magical dimensions and space that cannot be torn or folded. We are no longer dealing with the magical properties of particles that travel everywhere simultaneously, interfering with themselves along the way.

Physicists are currently looking for the messenger particles of force. This may be a misguided search. If the messenger particles are merely the waves in the aether of the true force particles, then we may never really find what we are looking for. We may find a messenger particle associated with gravity and claim that is the wave/particle “graviton” that we are looking for but will we really know for sure. We do not even know if the graviton in question is a wave or particle. Simply being around when forces of gravity are applied, does not imply that it is what we are looking for. The fundamental problem we may be encountering is how we have defined our search from the very beginning.

A fantastic turning point in history, for the world of quantum physics and relativity, occurred when Michelson and Morley conducted their famous experiment to determine if the aether of the universe had a drift. The Michelson Morley experiment appeared to show that there is very little or no aether drift in the universe. This opened the door to a universe of anomalies. Suddenly, the fabric of space became curved and extra unseen dimensions were no longer ridiculous ideas. The results of the experiment however, need to be re-examined to determine exactly what they are showing.

From their experimental results, we can safely make one of three assumptions. Either light does not travel in an aether, there is very little aether drift, or the drift of the aether in which light waves travel has very little affect on the direction of propagation of light through the aether. Making one assumption while completely ignoring any others is an error in judgment that highly trained physicists should never make. If the drift of the aether has very little affect on the direction of propagation of light, we may not have the right information about the aether. The aether may have unusual properties which make ultra high speed compression waves attain special properties above a certain amplitude, frequency or velocity, or below a certain wavelength. We may however be able to make inferences about these types of waves in the macroscopic world, by analyzing sonar and other compression waves in a current, to determine the relative drift in propagation of the wave. We could find the point of greatest amplitude and determine if this gets shifted and by how much in the presence of a current. The ratio of the distance traveled by the wave relative to the speed of propagation of light, should give some insight into our understanding of how much high speed waves are shifted by the drift of a current. We could then compare those results to results in a different medium or with a different type of wave. Once we have completed the analysis though, what have we really learned? If waves undergo some sort of phase shift at a certain energy level and photons are above that level, then our results are almost meaningless to our understanding of waves beyond that phase transition. It is clear however, that if there is an aether in the universe, then light waves appear to be almost unaffected by that drift. It is not correct to assume that an aether does not exist before we try to determine what would be the cause of light wave propagation to be almost or completely unaffected by aether drift.

Einstein claimed that massive bodies curved space-time in an effort to account for the apparent absence of an aether in experimental observations. Since light appeared to have a constant direction of propagation, he assumed that light must be traveling in an aetherless environment. This conveniently allowed him to ignore the affects of resistance in space.

If we can prove that there is an aether, then Einstein’s premise about the curvature of

space–time being caused by time dilations in an aetherless environment, no longer holds true. In addition, if we can prove that space-time is not curved by time dilations, then that leaves open the possibility of an aether unless a new aetherless theory of space comes along.

Einstein's famous formula, $E=MC^2$ seems only to be an approximation of the relationship of mass to energy. It yields an infinite answer to a question that logically should not have one. Intuitively, if the universe does have an aether, it should be possible to travel faster than the speed of light. The resistance that mass encounters as it approaches the speed of light should have a threshold level at which point, going beyond the speed of light is possible. If sonic booms are heard when breaking the sound barrier, we might expect to see an optic flash if we ever do surpass the speed of light. The increased resistance as we approach the speed of light may be caused by the same types of forces that cause increased resistance as we approach the speed of sound. $E=MC^2$ may also be a formula which approximates the resistance calculations when traveling through the aether of space.

As we begin our journey through time and space, we will need to redefine some important concepts and give them names to avoid confusion. If the universe has an aether, then the first thing we need to do is differentiate between particles and waves to avoid confusion. We will call the waves of force associated with the real particles of force, formally known as the “messenger particles”, the Photon, Graviton, Gluon and Boson. This is not consistent with experimental observations since weak gauge bosons have been determined to have a mass, but we will use this nomenclature to keep the naming conventions consistent. Secondly, I would like to define the particles of force in the aether as the Photini, Gravatini, Glueini, and Bosini respectively.

Experimental observations have indicated that photons, which are massless objects, may be affected by the gravitational field of massive bodies. By definition, if something has no mass, then it has no weight. How can light be both massless and affected by gravity? Einstein gives us a theory in which space-time is curved by massive objects and therefore, the fabric of space will alter the direction of propagation of light. Space and time are not to be considered as separate entities in this conceptualization. According to this theory, photons are attracted towards massive bodies by the slowing of time that massive objects cause due to gravitational time dilations which in turn warps space-time. The theory of space-time curvature states that accelerated motion causes the warping of space. This “warping” of space-time is given as an explanation of how massive bodies affect both massive and massless objects in a universe without an aether. If time is dilated and space-time appears to be curved due to the presence of an aether, this apparent warping of space is merely a simple way of solving equations in the absence of experimental evidence of an aether. The theory of space-time curvature does not in fact discount the possibility of an aether in the universe, it merely ignores it. These theories of time dilations and curved space-time, pose some very important questions that have not been answered in one hundred years. How do these theories account for the refraction of light in clear objects or the change in the speed of propagation of light in different media?

To explain all of the inconsistencies that we see in Einstein's theories, we need to make different assumptions based on the observations that we have made about the universe.

By analyzing waves in nature, it is possible to make some different assumptions which provide a more simplistic picture and a very plausible paradigm for the analysis of quantum physics and relativity. To begin with, all non-quantum waves that we can touch in nature travel through some sort of medium and these media are composed of particles. Our assumption that light does not travel through an aether is in part due to the observation that the speed of light is constant regardless of the speed of the observer. We on the other hand will assume, for the sake of this argument, that light does in fact travel through an aether. For light to travel through an aether, this aether must have special properties that give the false impression that there is no aether present. What are the special properties that this aether must have to make this possible? To put it simply, our internal and all external real clocks depend on the cycle of the universe. If the cycle of events results from the cycle of atomic or chemical reactions and the speed of these events is determined by the speed of propagation of light, all clocks will always yield a speed of light that is constant regardless of the actual speed of propagation of light. As light slows, all clocks and atomic cycles would slow proportionately as well. At relatively low speeds, any speed of light calculations would always yield a constant speed in m/s because as the distance a photon travels in one second changes, so does the value of the second in almost exact proportions.

In a universe with relative time, to further our understanding of an aether filled universe, we will need five dimensions to adequately describe it. We will need the familiar three spatial dimensions and the dimension of relative time which Einstein proposed, but we will also need to introduce a concept of real time as well. This real time must be unchanging and the same for everyone.

As we have seen, in all cases with waves that we fully understand in the macroscopic world, as the density of a medium in which a wave propagates increases, so too does the speed of propagation of the wave in that medium. The opposite is true for energetic waves and wave/particles however. This may be because we are assuming that these waves do not travel in an aether. If we assume that the universe does in fact have an aether, increasing the density of matter may also increase the density of associated gravitons, the particles responsible for gravity, and thereby decrease the density of the aether as a whole. This argument works equally well in the absence of gravitons if we assume matter has the same affect. This in turn would make the speed of propagation of the waves through the aether slow down.

One could also envision a scenario, in which as matter accelerates, or travels through the aether of the universe, the relative density of the aether inside the matter decreases. Essentially, the matter and associated gravitons at the leading edge of the matter, retards aether particles from entering the matter and the increased speed facilitates aether particles leaving at the trailing edge. The overall affect is that the density of the aether within the matter decreases. Decelerating in an aether filled environment has the affect of increasing the density of the aether within the object due to particles accumulating at both the leading edge outside the object and the trailing edge within the object thereby increasing the speed of wave propagation and relative time along with it.

Einstein proposed a linear relationship between accelerating and decelerating through his vector analysis approach. If the relationship between the dilation of time the degree of accelerating and decelerating in an aether filled environment is exponential or somehow not linear, then clocks would show time dilations in a trip that originates and ends at rest

in the same place in space. To determine if this is the case, in the absence of the possibility of non-accelerating time dilations, a spaceship could make a trip of non-linear accelerations. If the clock that was in motion is dilated with respect to a control clock after it returns to the exact point of origin at rest, then the universe would appear to have an aether since all of the vectors of acceleration should have added up to zero.

If light does indeed travel in an aether, the speed of light that we measure with clocks or our relative time will depend on the density of that aether. Around massive bodies and inside prisms for example the density of photinis, a term which may be used incorrectly here since it is being used for everything other than the gravitinis, or aether of light should be lower due to the increased presence of matter and possibly gravitinis or the particles of gravity and time should slow down. Since our internal and real clocks depend on the speed of propagation of light in this aether to determine time, if we travel in space at speeds greater than the motion or drift of the aether, the apparent density of the aether may decrease in direct proportion to any observed time dilations, so the apparent speed of propagation of light would appear to remain constant. The opposite would be true at speeds less than the speed of the aether and time would appear to speed up. To put it simply, if a relative second changes and the speed of propagation of light in relative seconds remains constant, then the speed of light in real time will be changing. At this point, we can try to define a hypothetical structure of these aether particles to further our discussion. Let us assume that the aether particles are like resonating compressible balls with arms, hooks or appendages that are curved in such a way that they can become somehow entangled with one another. In the aether, when the force of attraction is weak, the degree of curvature and/or flexibility of the appendages is either too small or too great to allow for the appendages to apply enough force to sufficiently allow for a great deal of attraction to occur. When aether particles exhibit a great deal of attraction, the degree of curvature and the flexibility of the appendages is closer to the optimal amount yielding a great deal of attraction. In this way, the aether with resonating constituents at an average specific speed and with appendages of a variable "stickiness" will allow for forces of attraction, repulsion and a balanced situation in which neither attraction nor repulsion occurs.

It may be true that the aether of the universe is made of compressible balls with appendages of many sizes with varying degrees of compressibility and lengths of appendages. However, it may also be that there is only one type of aether particle which can be manipulated in various ways under differing conditions. We could have an aether with four types of resonating particles that each has their own kind of sticky appendages. That is, one type of aether particle for each of the four elementary forces. Photinis could be the part of the aether which changes to create the electromagnetic force since photons appear to be the messenger particle of that force. Photinis, which appear to not have a force under normal conditions, may not have any appendages at all or the appendages of the photinis could be in perfect balance so that they do not repel or attract each other unless a specific charge is applied. A charge may simply be certain types of waves in matter, waves within the aether, or particles moving within the aether.

If gravitinis are the particles of gravity within the aether, anti-gravity may result from finding a way to manipulate the appendages on the gravitinis by applying some sort of charge to modify the appendages and their degree of stickiness. Along the same lines, we may be able to manipulate gluinis and bosinis for the strong and weak forces. It also seems possible that each of the four elementary forces, which are the strong force,

the weak force, gravity and electromagnetism, occur because of matter acting on different constituents of the same aether particle. We may have a single aether particle that has been manipulated four ways. We may have three aether particles, one of which with two states. We may also have two aether particles each with two states. Then again, there may be thousands of different types of aether particles and we only notice the affects of four of them through their forces. The possibility of other aether particles may account for some of the interesting properties of the aether.

In the scenario with four types of aether particles, matter particles would be surrounded in a field of aether composed of a different composition than that of the aether of space. This aether might be higher in concentration of gravitinis, but lower in concentration of photinis. If gravitinis and photinis are in a mixture in the aether, the speed of propagation of gravity could be identical to the speed of propagation of light because they are part of the same solution even though they have distinctly different physical features. The changing concentration of gravitinis around massive bodies would account for the change in density of the aether around those massive bodies. If the aether of light and the particles of gravity are in a homogenous mixture, it should be possible to devise a simple experiment that shows gravity change due to the change in the properties of the aether. If the universe does in fact have an aether, the approximate density of that aether and size of the elementary particles, may be determined by examining the speed of propagation of light waves through elements of varying densities. Clear liquids may simply allow the waves in the light aether to pass through whereas opaque ones do not allow as much. By charting the speed of propagation of waves in various media, it may be possible to gain insight into the dimensions and properties of the aether particles of light, gravity, weak force and strong force. The speed of propagation of light traveling through clear fluids, solids and gasses of various densities could also yield important clues as to the nature of this aether. By comparing the speed of propagation and wavelength of light to things like sound in water and waves in various media, we can elicit important information about the nature of the various “invisible” aether media. As the density of the propagation medium increases, so too does the speed of propagation, whereas the wavelength decreases. Because the calculation of the speed of propagation of waves through a medium is dependant on so many different factors, it defies simplistic charting. Formulating an accurate model of the density relationship to speeds of propagation may be a very challenging undertaking involving multidimensional graphs and charts.

Studying waves in space is substantially different than studying waves on Earth. In space there is no gravity to separate particles into different densities. As opposed to surface waves, space waves radiate out in three dimensions. In a weightless environment, all of the particles are mixed into a cohesive solution. These types of mixtures could be studied in outer space. Another interesting experiment would be the electron interference or double slit experiment in space. Space has interesting properties such as relative weightlessness and very cold temperatures. It is these peculiarities which may give the aether its special properties. The resonance frequency of the aether particles: gravitinis, photinis, gluinis and bosinis may be partly responsible for this aether’s special properties as well. Some might ask why the aether of the universe does not slow objects down as they pass through it. The answer to this question may be found in superconductivity. In all calculations of motion, the velocity of the aether can be used as the reference point. This means that we no longer will be using relativity for our conceptual framework of motion.

Another experiment that could be reexamined to gain a greater understanding of the aether is the Casimir effect. The Casimir effect is produced theoretically by small quantum vacuum fluctuations which cause a tiny attractive force between two plates. This tiny attractive force between the plates has been attributed to vacuum energy. This may also be caused by the aether.

At this point, if we had to name the aether, we could call it the plue (short for P. Lue) of the universe. The term aether is sufficient for our argument at present. If the universe has an aether, then Einstein's theory of space-time curvature is no longer absolutely valid and must be rethought. Einstein provided a framework which does not discount the possibility of an aether, and much of the experimental data has seemed to support his framework. If an aether exists however, then this framework is flawed and we should be able to find those discrepancies to prove the existence of an aether.

If we assume for the moment that Feynman's argument of electron motion is faulty, we now have a theory of resonating balls with sticky appendages and no mechanism for the resonance. With Feynman's argument go "quantum jitters" as a possible explanation of the resonance of the aether particle. The aether may be composed of elementary indivisible particles if the resonance is a result from external forces, but they may be divisible if the force is internal. Therefore, the elementary particles of force may be composed of even smaller particles which produce the resonating properties at such specific average frequencies. A resonating aether makes things like "quantum tunneling" unlikely. The constituents of the aether that binds matter would prevent one object from passing through another. If quantum tunneling was a real possibility, the odds of partial quantum tunneling should be extremely high in the real world and this seems not to be the case.

All of the components of the aether should therefore have a mass, and gravitons may have weight as well. Gravitons in theory may interact with other gravitons, and the forces of attraction may not be completely cancelled out by the forces of repulsion. It seems likely however that the gravitons are in perfect balance while they entangle other massive particles. If they were not in perfect balance, they would tend to clump and we would have regions of high gravitational acceleration and places of low gravitational acceleration in the universe. As an object becomes more massive, it would attract more gravitons out of the aether and its acceleration due to gravity would increase. Of course, if history has taught us anything, it is that we should not make assumptions.

The above discussion yields a very important question: What is time? To continue our discussion, we must now introduce another dimension into our conceptualization of the universe, that of real time. We could call each second in real time, a lue (pronounced loop and short for Lue P.) being equivalent to one average second at sea level on Earth. This means we now are looking at a universe with three spatial and two time dimensions for a total of five dimensions.

Particles that are independent of time dilations due to the aether of light are the particles in the aether itself. These particles would be independent of relative time calculations. Any calculations with these particles that involve velocity, speed, acceleration, momentum and gravity would need to involve a concept of real time.

Particles in a particle accelerator experience extremely long life spans. Examples of these are muons. As muons travel through a particle accelerator, the density of aether that they experience decreases due to the flow of the aether and the resistance it encounters. This lower pressure of the aether reduces the apparent density of the aether and all the waves within the aether would slow down as well.

If the passage of relative time depends on the density of an aether, it may only be possible to slow down and speed up relative time. Since time is wave dependant in an aether filled environment, relative time can only ever be slowed down to a standstill and can never go backwards. Going backwards or forwards in time yields some very interesting paradoxes. Once you eliminate vector analysis as a means for generating time dilations, it becomes impossible to travel backwards or forwards in time. An interesting side affect of this is that if you are traveling faster than the speed of light, the waves within your body would also slow down dramatically or even stop, so a trip across the universe would appear to you to be extremely quick or even instantaneous. You would also age very slowly or possibly not age at all during this trip. Another problem that you might encounter is that as your speed increases, the power of your rocket engine would decrease due to the waves within it slowing. An engine would need to be devised that would not be affected by the density of the aether. One drawback of a faster than light trip is that everyone that remained stationary during your trip would have aged at their normal rates and upon your return, from your trip across the universe, they may have already died of old age.

Another thing about the universe in general and time in particular is that like the Earth, we may see the three spatial vectors and the two time dimensions as flat when in fact, they are circular much in the same way the surface of the Earth seems flat when it is in fact curved. In this way, time would be repeating but always changing due to the changes in relative time, much in the same way that if you travel around the Earth along the same path many times, many things would change but the path would remain the same. The presence of relative time in relation to real time would ensure that time would never be truly identical in each circle. If time is in fact circular, we could arbitrarily choose a beginning of time and that would also become the end of time as well. It may be possible to set a beacon in time that we would notice much like a mountain on our journey around the Earth, which although changing, may last for a tremendously long time. That beacon however, may be subject to "graffiti" or alteration over time if unscrupulous people learned how to alter it. I am not sure it would be a wise idea. The cycle of real time may even be extremely short, maybe even a fraction of a second.

If space had a ground level, we would be able to see a horizon and know for certain if space was flat but space does not have a surface. One way that we could determine if time were repeating is to build a computer and send it to the surface of a black hole. We could ensure that the computer is able to repair itself so that it could conceivably last forever. We could then have it tell us if time repeats. Relative time on the surface of the black hole in theory would be going extremely slowly and it may only be a few thousand years in the relative time for the supercomputer before real time repeats for us outside the black hole. We can only hope that the black hole does not explode by then. The other option would be to give it the ability to move between black holes before they explode. In this way, we may get a glimpse of what may happen in the future. So, if a computer was programmed to give us a message as to the length of time for one cycle of time, we

may know the length of the cycle in our next lives. This argument would only be valid if we and the human race exist in the next cycle of time. If the universe ends or begins in a cataclysmic event, it may be impossible for the computer to survive. However, a learning computer capable of reason may find a way to survive that as well.

As discussed previously, atomic clocks are made up of matter that depends on the cycle of the universe. The speed of reactions and the cycle of events in the known universe depend on the speed of light. Our internal clocks would be affected in the same way as the cycle of events in atomic clocks are affected and we would age more slowly if the speed of light slowed down. If one slows down the speed of light, one slows down relative time proportionately. Therefore, if one were to slow down the speed of light, the speed of clocks would slow down proportionately. Finding a clock that is not dependant on the speed of light may be difficult, but using something like a pulsar might be better than using atomic clocks for time dilation experiments on Earth.

One might ask if it is possible that real time, as opposed to relative time, has an approximate cycle of just two thousand and seven of our years. Two thousand and seven is used in this example since that is the year in which this paper was written. The simple answer is yes. In fact real time, if circular, has a period of what ever we decide to make it. The structure and nomenclature of real time has not been finalized yet. A cycle of two thousand and seven real time years may be the speed of time in the most aether dense part of the universe.

There are three very different types of time dilations in relativity but due to the equivalence principle and vector analysis, many people think of two of these as being the conceptually the same. To differentiate between the three types, we will call time dilations due to motion, Translational Time Dilation, time dilations due to nongravitational acceleration, Acceleration Time Dilations and time dilations due to the acceleration of gravity, Gravitational Time Dilations.

We will begin our quest for truth about space-time curvatures, by grasping at the fabric of space-time to see if we can get a thread of hope that an aether exists. If we can show that an aether does actually exist, we can achieve an intellectual breakthrough and begin a golden age of scientific exploration. We should therefore start by looking at the time dilations that according to Einstein curve space-time.

The traditional method of showing that time is dilated for the object in motion with respect to the observer at rest using vector analysis is flawed. Imagine a person watching a car on a race track. In relativity, since we are dealing with an aetherless environment, it is possible to choose any point as a stationary point. If we make the stationary point the centre point between the two objects which is in fact moving with respect to both objects, this once moving but now conceptually stationary midpoint keeps the velocities of the two objects identical with respect to the midpoint of the vectors. Since direction is unimportant in an aetherless environment, that is, if you simply turn around, you go from traveling forwards to backwards, time would be dilated equally for what was initially the object in motion and the observer at rest. This cancellation of time dilations in every instance of motion between any objects should be taken to mean that time dilations never occur due to translational time dilations in the universe.

Einstein addressed a special case of this scenario with the twin clock paradox in

relativity, in a paper written in 1918, Contrary to most textbook versions of the resolution, Einstein admitted that the time dilation was symmetric for the twin clocks, and he had to use the equivalence principle and gravitational time dilations during the brief periods of acceleration to justify the asymmetrical aging. What is important is that Einstein did not use any argument related to simultaneity or Doppler shift in his analysis. Essentially, the twin clock paradox postulates what would happen if two identical clocks are traveling through space in opposite directions. In aetherless space, a clock has no way of knowing if it is at rest or in motion. Therefore, in essence time would slow for the clock that you choose as the object in motion and not the one that you chose as your stationary clock. Switching between clocks as the stationary clock yields the paradox that time would slow for both clocks relative to the other and no time dilation could therefore occur.

Once we eliminate time dilations by vector analysis as the cause of observed dilations, the entire fabric of quantum physics and relativity begins to unravel. What accounts for all of the real observed time dilations that we have seen in experimental data over the years? We must therefore take this discussion further and find a different mechanism for explaining the observed time dilations to account for experimentally observed time dilations.

Since we can now rule out the vector analysis approach to translational time dilations as an explanation of observed asymmetrical ageing, we are left with acceleration and gravitational time dilations as an explanation for observed time dilations. The equivalence principle according to relativity implies that gravitational time dilations should only occur at times of acceleration and deceleration. At any other time, an object is at rest with respect to any other object.

When an object begins to move or speeds up, it has accelerated and when it slows down or stops moving, it has decelerated. The equivalency principle in relativity tells us that all accelerations are equivalent to gravity. The equivalence theory however ignores the possible existence of a particle of gravity or gravitini. This would therefore not be an accurate representation of an aether filled environment. In an aether filled environment, acceleration in a gravitational framework may be due to the resonance frequency of the gravitinis in the aether and the entangling abilities of their appendages as opposed to being caused by the curvature of space. The acceleration in a rotational framework, with or without an aether, would be due to the tiny incremental vectors of motion wanting to maintain their momentum or directional velocity. It would be interesting to discover how these two different types of acceleration differ if at all. If they are exactly equivalent since the mechanism for both is different in an aether filled environment, then this would support space-time curvature. However, if there are any observable differences between the two, this would support an aether filled environment. However, the mere existence of a particle of gravity or gravitini in the gravitational situation and the absence of a gravitini in the rotational situation makes these two situations fundamentally different. The fact that Einstein proposed the existence of a graviton may be an indication that he did not believe that space-time was in fact curved. His use of curved space-time may have been a stop gap measure to allow for the further research in the absence of proof of an aether. The presence of any unforeseen instability or stability in gravitational scenarios, gravitational resistance or non-linear motion just to name a few examples, makes gravity and acceleration analogous but not equivalent. This is important because it

gives us a means to test for the existence of an aether.

Once again, the equivalence principle, in the absence of an aether or a particle of gravity, tells us that gravitational acceleration and acceleration due to motion are equivalent and can be used interchangeably for time dilation calculations. If in space we have two identical clocks at rest beside each other and send one on a journey across the universe, as long as that clock finishes its journey in exactly the same place it began its journey at rest, all of the vectors of acceleration would add up to zero. Therefore, the entire trip would have a net acceleration of zero. What this means to time dilations is that a journey that begins and ends at rest in the same place will yield no translational, acceleration or gravitational time dilations. A simple way to resolve this issue is to rapidly accelerate and then decelerate an atomic clock at a constant rate of acceleration in space. If it shows no time dilation, since the time dilation due to the acceleration would be eliminated by the time dilation due to the deceleration, then we have a linear relationship between relative time and acceleration and there is a possibility that no aether exists. If however, a time dilation remains, then the universe has an aether.

A gravitational time dilation experiment has already been carried out on Earth. Two planes were flown in opposite directions around the Earth. The acceleration due to gravity on the Earth is a constant 9.8m/s^2 . Since these two planes were in the same gravitational frame of reference and we have already ruled out vector analysis as an explanation for any observed time dilations, we need to ask if the presence of an aether could account for any observed time dilations.

If we assume that there is an aether in the universe and this aether is in motion with the rotation of the earth to some degree, it may be possible if two planes that are flying in opposite directions around the Earth for one of the planes to fly faster than the aether and the other plane to fly slower than the aether. If the speed of travel through the aether of the plane in the air is greater than the speed of travel through the aether of the clock at rest on the ground or control clock which is also traveling through the aether, then the apparent density of the aether for the plane in the air would decrease with respect to the clock on the ground and the clock on the plane would slow down relative to the clock on the ground. If on the other hand, the planes speed of travel through the aether is less than the speed of travel through the aether of the stationary or control clock, then the apparent density would increase and time should speed up. This is precisely what happened when they performed the experiment. As the planes traveled around the Earth in opposite directions, the plane that traveled against the rotation of the Earth had clocks that traveled slower compared to a control clock on the ground. The plane that traveled with the rotation of the Earth had the opposite happen and the passage of time for the clock on that plane increased with respect to a control clock on the ground. Since we have ruled out translational time dilations as a possible cause of any observed time dilations and the gravitational time dilations of the two planes was more or less equivalent since they were in the same gravitational frame of reference, the fact that time on one of the clocks appeared to travel faster than the control clock whereas time on the other clock appeared to travel slower, tells us that there is aether, and that the aether is in motion around the Earth. This is in direct contradiction to the Mickelson Morley experiment which appeared to show that since there was no aether drift, there could not be an aether of light in the universe. The rotation of the Earth appears to move the aether with it, but this aether motion is not quite at the same speed as the rotation of the Earth because it is

possible for a plane to not only fly faster than the aether, but to fly slower than it as well. Another important issue to deal with in our examination of the curvature of space and the possibility of an aether in the universe is the constant speed of light regardless of the speed of the observer. A simple way to explain this, as was previously discussed, is to assume that the speed of light changes, but so does our perception of time, so that although the speed of light is changing, so too is the length of a second due to the time dilations caused by moving through the aether. This seems to be the simplest solution to the problem of the constant speed of light regardless of the speed of the observer, rather than having distances or the speed of light through a medium changing. As our speed increases, the relative density that we are experiencing per second decreases with respect to a stationary aether. This makes the apparent speed of the propagation of light in a vacuum constant when in fact, it is really slowing down.

Further to our discussion, for simplicity's sake, we are now going to assume that photons are compression waves in the aether of photinis, rather than assuming that there is a phase transition above a certain energy level which yields a different type of wave other than a compression wave, that we have yet to discover. Light slows down in condensed matter and photons move fastest at speed c in a vacuum. The reason that light slows down in condensed matter in an aether filled universe appears to be because the matter particles and their closely associated gravitons change the density of the aether of light propagation, thereby decreasing the density of the light aether.

Since we now have a theory in which there is an aether that fills the universe, which is apparently extremely dense, since it is able to propagate waves of very small wavelengths at extremely high speeds, it also seems possible that we are having problems traveling faster than the speed of light because we are trying to push our way through this extremely dense aether. We may even need to ask ourselves what exactly is a particle if matter? Could a particle be an orbital wave which is affected by gravitinis and other force bearing "particles" which may in fact be waves in their own right? Could the universe be composed of waves of many different varieties in an ocean of a single sphere of, for lack of a better name, "stuff"? Einstein's famous formula $E=MC^2$ may be a reflection of the resistance to propagation through this aether. Matter may lose integrity at some point due to the resistance of the aether at high speeds yielding energy in the quantities described in the formula. As matter begins to travel faster, it requires more energy to make it accelerate. The amount of energy required to make a particle travel faster could be due to the resistance it encounters. Particle accelerator experiments have clearly demonstrated that it requires substantially more energy to accelerate particles as they approach the speed of light. However, saying that it is impossible to travel faster than the speed of light may be an inaccurate statement. In an environment with an aether, it is possible to travel at speeds greater than the speed of light as long as the vehicle that you are traveling in can withstand the affects of resistance in that aether. We may find ways to combat the degradation of matter in the same way we surpassed the speed of sound. The formula, $E=MC^2$ may also be an approximation since this formula yields exponential growth to infinite value as the speed of matter approaches the speed of light. The Earth is circular but its circumference is finite. We might one day even discover that the universe is finite in the same way circles can be expressed in finite terms. The universe seems to have many limiting factors which make many infinities explainable in finite terms.

Continuing our discussion into the aether of the universe brings us to gravity. Gravity appears to affect the density of the universe's aether in much the same way that mixing a dense liquid with a less dense liquid yields a liquid of a density which is in direct proportions to the quantities and density of the two liquids that were combined. In this way, a massive body may decrease the density of the aether of light by increasing the concentration of gravitinis. This change in density may also be due to the presence of matter.

Light may be bent around the sun in the same way a prism of glass bends light. The atmosphere of the sun may be refracting the light. Much of the results we have seen corroborating Einstein's discoveries do seem quite suspect. When a clock was placed at the top of a tower and another clock was placed at the base of the tower, the clock at the base of the tower appeared to travel slower. This may have been caused by the differences in speed of the aether between the top and the bottom of the tower, or it may have been caused by gravity. Since the speed of the aether at the base of the tower should be traveling faster than the speed of the aether at the top of the tower, time should travel slower at the base in a rotating aether. The only way to know if the cause was due to either aether drift or gravity would be to repeat the experiment in conditions which eliminate either the aether or gravity as a possible explanation. One could envision the same experiment repeated on the far side of the moon, which is a non-rotational body. If both clocks showed no time dilation, then the time dilation was due to the rotation of the aether. If both clocks do show a time dilation, it could be due to the density gradient of the aether caused by gravity or some other factor.

To continue our discussion, we will assume that gravity does affect the aether. Gravity appears to change the density of the aether of light thereby changing the speed of propagation of light through the aether. Once again, our internal clocks depend on the cycle of waves in the aether and altering that cycle affects things like ageing and how clocks run. Increasing the concentration of gravitinis decreases the density of the aether and therefore slows relative time. The change in density of the aether could also be responsible for the bending of light. This may also be why light does not escape black holes. Light waves may be getting bent into black holes due to the decreased density, in the same way light bends in a prism, and not the affects of curved space-time. The density of matter seems to reduce the density of the aether around massive bodies thereby decreasing the speed of light along with it. Light would therefore bend towards a black hole. (Light may also bend towards black holes and get absorbed due to their extremely dense atmospheres, but we will not peruse this for now.)

The hypothetical special relationship between gravitinis and matter should mean that they ought to exist in higher densities around massive objects. This should also mean that the density of gravitinis around massive objects ought to be quantifiably greater than the density of gravitinis in space. This increased density of gravitinis in theory should decrease the density of the light aether and therefore decrease the speed of light. Since our internal clocks and real mechanical clocks depend on chemical reactions and the rhythm of their elementary particles for their ability to maintain a constant rhythm, time would slow as the density of mass increases. If gravitinis alone are unable to propagate photonic waves, in an immensely dense matter environment heavily saturated with gravitinis and in the absence of any other types of aether particles, the density of the aether might be at a maximum and relative time would in theory be at its slowest or even

stand still. This ought to imply that gravitinis are a part of the aether of light when combined with the other constituents of the aether in a mixture. In the absence of other types of aether particles, the propagation of light waves may stop. Due to the decrease in the density of the aether around massive bodies, the speed of propagation of light would slow down when it intersects a region of space of lower density and it would be bent towards the region of lower density if it intersects the side of a sphere or if it intersects that region at an angle. As stated previously, this decrease in density of the aether may also be due to the simple presence of matter.

In contrast, normal objects that are not transparent would still be saturated with aether particles. Non-transparent matter must somehow absorb waves of light commonly referred to as photons. The speed of energy waves and reactions within non-transparent matter would still travel at the speed of light however.

Increasing an items density may increase its mass because it gives more gravitinis the ability to operate in a given area. This would have the affect of increasing the density of gravitinis. The rate of acceleration due to gravity would depend on the resonance frequency of the gravitini and not the number of particles acting on an object. Since this seems to be a very constant number, the average resonance frequency of all gravity particles must be extremely constant.

Intuitively, gravity seems to defy one of the laws of thermodynamics. It is a state of decreasing entropy. As time elapses, the universe may become more ordered and less entropic due to all of the forces of attraction.

If gravity is transmitted by a gravitini, then the angles of force may be greater for less dense objects and they may fall only very slightly slower. This may be an experimentally observable phenomenon.

The Earth has been hit by numerous asteroids over time and we send rockets and aircraft off of the planet on a regular basis. All of these events ought to have the effect of deforming or altering the orbit of the Earth to some degree. What makes the rotation of the Earth relatively stable? Newtonian physics and relativity have given us a concept of gravity that does not adequately explain systems with more than two objects in it. What may be missing from these concepts are the mechanical properties of the gravitinis in the aether which may be able to explain these discrepancies. If space-time is curved, the speed of propagation of gravity would be the speed of deformation of space-time due to the presence of massive bodies. If the speed of deformation of space-time was exactly the speed of light, what would be the mechanism for that deformation?

An experiment that was done to confirm Einstein's prediction of space-time curvature involved looking at a distant object during an eclipse and seeing massless photons of light bend as it approach the gravitational threshold of the sun. If the universe has an aether and gravity affects that aether, then the direction of propagation of light is not being bent by the curvature of space. It is either being bent by the change in density in the sun's atmosphere, the change in density of the aether as the photons intersect the sun's atmosphere or the gradient increase of aether particles. Gravitinis and other aether particles appear to be in a homogeneous mixture. In the presence of a massive body, gravitinis around that mass may be more dense than in the aether of space whereas the concentration of the remaining aether particles is less dense than in the aether of space. The density gradient may also be caused by the particles of matter in the suns atmosphere. Light should therefore be bent slightly by the density gradient at the edge of

star where the density difference is relatively small. Since we are dealing with a gradient transition in density and the amount of light refraction is relatively small, the light remains white.

Now that we have, in an attempt to aid our understanding, given gravity particles physical properties, we can ask questions like how does movement affect gravity and what is a tachyon particle. A tachyon particle, or particle with negative mass, may be a particle of mass which somehow has the strings or appendages that have somehow lain down or straightened out. This would result in tachyon particles being repulsed by gravitons. Experimental analysis has brought science to a place where it believes that things such as photons and electrons are particles which exhibit wave-like properties. The wave/particle duality of light however, could also lead one to the conclusion that fast moving waves have particle like properties. High energy waves, which include the waves of light, may be compression waves or they may undergo a phase transformation at a certain energy level and become these particle/waves that we have been calling massless particles. More research needs to be done before we have a definitive answer, but for now, it helps the discussion of the possibility of an aether, if we think of these as waves and not particles.

According to Planck, the minimum energy that a wave can carry is proportional to its frequency. Waves appear to also have maximum energy levels as well. At certain levels, the crest of waves in water, form whitecaps. An analogous scenario with high energy waves may be when photons are ejected during particle collisions in particle accelerator experiments.

Thomas Young's double slit experiment raises some very interesting questions about the nature of light and electrons. The most interesting version of this experiment involves sending one electron at a time through double slits. The double slit experiment, when performed with electrons, produces an interference pattern until we use a method to look at the electrons to see what we are sending. This experiment alone is responsible for an explosion in quantum mechanics theory involving "electron clouds" and "quantum jitters". The electron appears to interfere with itself and create an interference pattern as long as we do not look at it. However, when we do look to confirm that we are actually sending single electrons, the interference pattern disappears. The fact that we have ever since described both types of results as the same interchangeable event is troubling. So, what could explain this unusual result? We may be dealing with a third type of wave which has particle like properties. This phase transition could occur when the electron gains sufficient energy simply by us sending energy to look at it. If a phase transition is in fact happening, this would allow us to determine a threshold energy for these new types of non-interfering bullet waves. Another explanation may be that in the noninterference pattern instance, electron particles are being sent and in the interference pattern instance, waves associated with an electron particle are being sent. We may not see these types of waves in nature because macroscopic waves are not energetic enough. The fact that we believe we are sending single electrons while we see an interference pattern should lead to questions of other phenomena taking place. Simply put, a particle interfering with itself defies all of the preceding intuitive laws of physics and is merely a stop gap measure for understanding the observed phenomenon until we really understand what is going, in much the same way that the theory of curved space-time is a temporary placeholder for our understanding of aetherless gravity and light propagation.

Let us assume for a moment that the electron we see producing an interference pattern does not exist as a particle. If an electron is a wave of energy that displays particulate nature, we can explain its unique properties due to the special nature of the aether. If we are able to send a wave as a single packet of energy in the aether of the universe, how is an interference pattern created when there is only a single wave being sent? We might assume that our understanding of what causes an interference pattern may be in question. The simplest explanation for the interference pattern may be that it may be impossible for the wave to fit through one slit at a time until it attains a certain level of energy. When we are not imparting energy into the wave by looking at it, the electron wave passes through both slits simultaneously. When we are looking at the wave, the act of looking at it, imparts enough energy to significantly narrow the wave and allow the waves to pass through a single slit at a time. Even when we send individual electron waves, the angle of incidence of the electron wave will determine the direction of impact on the photographic paper creating an interference pattern when the energy levels are low enough.

Passing through the double slits may also have an affect on the wave of electron energy in that just like light passing through a prism, the path of electron wave could be altered due to the density of aether and its confined space as it passes through the slit. The interference pattern may alternately be caused by the low energy waves passing through the second slit altering the path of the main packet of energy. When we know an electron particle is being ejected, we do not get an interference pattern. When we think an electron is being ejected, we get an interference pattern. This could also lead to the explanation that what we send when we see an electron is an electron and what we send when we think we are sending an electron is a wave. These two phenomena may have been merged into one phenomenon, giving energetic particles their wave/particle duality. In the end, we have more questions then answers. The physics community surprisingly has somehow come to a consensus in the midst of all this ambiguity.

Feynman's argument that an electron travels in every possible trajectory simultaneously, is equivalent to an electron traveling as a wave. He is making an excellent argument that the energy from an electron travels as a wave. The wave pattern may disappear as the wave crosses above a certain threshold energy and then changes properties. This could be the biggest hint we have to the properties of high energy waves. Feynman's explanation does not seem to fully agree with the observational data.

Electron chemistry is well documented, however there are many aspects of electrons that are accepted that have no basis in science. As scientist, we should be asking what creates electron states. Why do electrons make interference patterns with seemingly nothing? Why do we have the Heisenberg uncertainty principle? These questions should make one question our true understanding of the nature of electrons.

The double slit experiment introduces a tremendous amount of confusion to the study of quantum physics. This single experiment is the basis for the particle/wave duality theories that has lead physics into an ever deeper convoluted quagmire of confusion. At this point, it may just be easier to say that our interpretations of that experiment were faulty, but that is really not science. We need to examine our assumptions and try to understand where we made our mistake.

The theoretical wave of energy that comprises a photon or packet of a light energy is unlike anything that we have studied in nature. Photons are extremely fast and have extremely small wavelengths by comparison. These features, along with the unique features of the aether that they travel in, may give them their unusual qualities.

An interference pattern caused by light or electrons is not the same as an interference pattern produced in water. Firstly, these are not longitudinal waves. We also assume that we can fire single photons or electrons one at a time but in reality are we really sending waves of energy in the aether? We need to rethink our concept of a photon. The photographic plate should only react to photons above a specific threshold of energy so although you may be sending many photons, only photons above that threshold will be observed.

We have proven that a quantum packet of energy that we call an electron exists and this packet of energy has some very interesting properties but have we actually proven the existence of a particle? Heisenberg's uncertainty principle tells us that we have not. An electron may be a particle with a size and appendages that corresponds to the size of a bosini or an important multiple thereof. This could be the real reason behind electron states. Born's probability assertion is an argument that results when you think of an electron as a particle and not a wave. Another question that we could ask is what exactly is an electron cloud? Could it be a wave trapped around a particle of matter or is really a particle in suspension around an atom? Are electrons particles or waves? We should revisit these experiments and determine once and for all if we are dealing with two distinct phenomena or if we are dealing with the same phenomenon with two separate states. One could ask the question, is it possible to have orbital waves in certain environments when we have an aether that is energetic and has a resonance frequency? The easy answer is maybe, because it would solve many of the problems in quantum physics, but to assume that it is true could send us down the wrong path for another one hundred years.

In an aether filled environment, it is possible to know the position and momentum of a "quantum particle", if we are in fact speaking about a particle and not an unusual wave. The unquantifiable "particles" that we have discovered so far are possibly particles with interesting properties or waves in an aether. Problems in quantifying the exact position and momentum of "quantum particles" may also be a direct result of the resonance nature of the aether.

Not adequately dealing with these issues, has lead us to a place in physics, where in quantum field theory when a particle and anti-particle collide, they temporarily annihilate each other and produce a photon, then reform again later. A conceptualization of this event is surprisingly similar to when two waves in an ocean are sufficiently large enough to combine and we see whitecaps. One should never assume that the macroscopic world is completely analogous to the quantum world, but if the dark matter in the universe is composed of these particle anti-particle annihilations that emit photons, wouldn't the universe be filled with anti-particles that have reformed after their collision and be lit up with a glow of emitted photons? The descriptions of particle anti-particle annihilations, makes one imagine two waves passing through each other and once combined, attaining a critical amplitude in which excess energy, analogous to a whitecap is ejected as a photon of light. In this example, the explanations of particle collisions in accelerators seem quite dubious.

Now that we have a conceptual idea of the nature of the aether of the universe and how it affects the universe, we can use it to explain the forces we experience in nature. The electromagnetic force may involve any component of the aether, but we have chosen to call the particle of electromagnetic force the photini. If we agree with experimental observations, since photons or photonic waves seem to be associated the electromagnetic force, it seems likely, in a resonating aether filled environment, as was described previously, that the aether particles of light or what we have called the photini may have something to do with the electromagnetic force. One can envision a scenario in which when there is no charge, which may simply be waves in the aether or particles of matter, the appendages on the photinis or particles of light aether are attracting other photinis with the exactly the same but opposite force that the resonance of the particles creates. These two forces of attraction and repulsion would completely offset one another and no net attraction or repulsion would take place. When two objects have the same charge, like in the case when two poles of a magnets of the same charge come together, the appendages on the photinis may lie down, straighten or lose their rigidity thereby removing any attractive forces that offset the repulsive force and the two objects repel each other. When the charge is opposite, the appendages may be altered in such a way that the force of attraction between the two objects increases in such a way that it more than offsets the force of repulsion and the two objects attract on another. If this is the mechanism for repulsion and attraction, we may soon be able to discover the difference between a positive and negative charge.

The question should now be asked, why it has been so hard to find a messenger particle of gravity. The simple answer might be that we have evolved to see waves in the aether of light or photons because there is a definite survival advantage to it. Our eyes have retinas and are specifically designed for detecting photons. We may also be unable to see waves in gravitons for another very important reason as well. The information may be useless or even cause a survival disadvantage. There may be things in the observation of gravity waves that may be detrimental to our health. In the latter case, we may need special apparatus to detect gravitons (no to be confused with gravitinis). Could the massless messenger particles that we have so far discovered really be waves generated by the actual particles of force when we try to see at them using our confused wave/particle model? Once we introduced the wave/particle duality into quantum physics, waves and particles became interchangeable. We could no longer differentiate between the two. This could be one of the greatest mistakes of the past one hundred years.

Another interesting byproduct of introducing an aether in the universe, is that all massless messenger particles that we have so far discovered, may be waves in the actual particles of force; the exception being the boson which has a mass. That is, a photon is a wave in the electromagnetic force particles or photinis and a gluon is a wave in the strong force particles or gluinis. Alternately, like the whitecaps on an ocean, “messenger particles” may merely be waves of extra energy produced by the actual particles of force when a force is applied. In this scenario, the “messenger particles” would not be the particles of force because in the paradigm in which we are working, we cannot have massless force particles traveling as wave/particles comprising the aether. It also seems possible that if the electromagnetic force can be caused by a manipulation of aether appendages, then the photon might also be the “messenger particle” of force in gravity. However, changing

the properties of the aether may yield a different type of wave altogether if wave phase transitions are occurring. No one has ever proven that the “messenger particles” are the actual particles of force; their mere presence during certain events is not an absolute indication that they are the actual particle of force that we are looking for. In an aether filled environment, it makes more sense from a practical standpoint to think that the elementary forces generate waves in the aether of the universe of the kind that we refer to as “messenger particles”. Many events produce photons, so saying that the photon is the “messenger particle” of the electromagnetic force because we see them when the force is applied is quite a jump in logic.

Our search for the “messenger particle” of gravity seems to have been more difficult than initially thought. Some of the greatest minds in science have been looking for this “graviton” for approximately one hundred years. We could assume at this point that the “graviton” simply does not exist. Given this theory on the aether of light however, I think we may be looking in the wrong place. The aether of light may be dynamic and undergo many changes. Gauge symmetry may yield some very important clues as to the nature of the aether or how it possibly changes under certain conditions. Another reason we may not have found the “messenger particles” of gravity, is that the gravity aether, that is the gravitinis, do not transmit waves into the aether since their frequency is incompatible. The frequency may also be so high that we have not developed equipment to discover them yet. Since gravitinis in a massive environment, when forces are applied, are particles under constant tension in long chains of force, much like a tightly tuned violin string, one could expect the frequency of these particles to be unusual in some ways. The force of gravity is a very weak force in comparison to the other forces, so as Planck observed, the frequency may be too low to interact with the aether. We may try looking to see the “gravitons” under conditions of very weak or very strong gravity in an effort to alleviate these problems. Black holes are objects of immense gravity; the radiation that we see coming from black holes or Hawking radiation may be the “messenger particles” of force being created by gravitinis.

Physics has tackled some very tough concepts and it is our understanding of these concepts that allow us to progress in a logical fashion. If we are to proceed into the theoretical study of physics, we need to have the proper tools for this exploration. Mathematics has been one of mankind’s greatest inventions and has given us the means by which we may one day travel the universe. Quantum physics and relativity, on the other hand, have given us fanciful and fantastic unprovable theories with extra dimensions and torn space-time. If we are to succeed in our quest to travel through the stars, then we will need to improve our understanding and develop new techniques to solve the most difficult problems.

Infinity is an imaginary number that Newton used to create calculus. There is no doubt that infinite states exist. The question, how many times can you traverse a circle; can be answered with the answer infinity. A circle however, does have a finite size and shape and can be described completely in finite terms. The concept of infinity is a very useful tool that we can use as an aid in our understanding of the universe. When we get infinity as the answer to a mathematical question, it does not necessarily mean that the infinity must be thrown out. Until we come up with a mathematical way of determining the validity of infinite results, it simply means that we need to put it into a conceptual framework in which we can determine its true value.

On the other hand, the extra dimensions that come out of calculus are troubling. String theory has replaced infinities, which may have been accurate representations of the real world, with extra dimensions, which may also be accurate representations of the real world. The final solution to the questions of the universe may involve infinities and extra dimensions, but until we can find mathematical ways of determining their legitimacy, it seems like a prudent course of action to revisit results with extra dimensions in practical applications of physics until we can get a grasp if extra dimensions really exist. If one draws a circle on a flat surface with radius r , it has a different circumference than a circle drawn on a sphere or a saddle with the same radius. That may simply mean that they are different objects and if the surface changes, so does the shape. A universe with a curved and ever changing fabric of space-time has some very troubling consequences. Simply by changing the curvature of space, we change the distances required to travel between two points. All of our journeys into space have shown that this is not in fact the case.

The study of quantum mechanics has introduced some very interesting problems into our understanding of the universe. Since photons cannot be used to probe elementary particles, they may be telling us something very important about either elementary particles or photons. One could argue that the problem is that a photon is a wave and not a particle, and the elementary particles are too small to be probed with waves. The “quantum jitteriness” in photonic pictures may have more to do with the wave nature of a photon than the motion of the particle.

The world of physics today is very confusing. Particle accelerators are somehow able to elucidate a single trajectory from an electron which at the same time, if Feynman was correct, is impossible to determine. We are able to collide particles, which under certain conditions, yield interference patterns and interfere with themselves as though they were waves. These inconsistencies in the conceptualization and mathematics of particle accelerators and string theory require a better explanation of what is going on. It is one thing to accept the mathematics because it fits observed situations, but it is an altogether different thing to allow mathematics to defy previously defined laws and just accept them without an explanation. We have conceptually flawed theories, which under certain circumstances; produce elegant mathematical answers to difficult problems. This makes the mathematics very compelling and yet very dubious at the same time. It may be that the current experimental method will lead to a true understanding of what is really going on but it is important to recognize all of the conceptual flaws and errors before proceeding. In an aether filled environment, the study of quantum mechanics becomes a much more simple task. We are now dealing with either waves or particles and not both.

String theory has opened a new conceptual framework for the universe. One thing to note however is that the strings in string theory are not the aether of the universe as is described here. The strings in string theory are both the waves and particles of quantum mechanics. String theory uses extra dimensions to solve five dimensional problems. Much like an answer of infinity is an indication that we need to look deeper into what the mathematics is really telling us, so too are the extra superfluous dimensions of string theory. String theory substitutes extra dimensions for infinities. Are they equivalent in some way in that they both really do exist but only under very special circumstances or is it a double verification that string theory is fundamentally flawed? If string theory contains a single error in the mathematics, all future endeavors relying upon that error, are theories about nothing. The more assumptions you make, the greater the chance that

one of them is incorrect. Calculus was never meant to be an approximation, but when we deal with infinite values, the meaning becomes unclear. Using calculus as a means of solving those problems may be a serious issue. We may need to redefine calculus or come up with a way of determining which infinities we can keep and which infinities we should throw away; the debate into this will likely rage on for years.

String theory has given science some very interesting theories. One of the most interesting, is one in which black holes are akin to large elementary particles that can only be defined by spin, charge and mass, in exactly the same way that quantum particles are defined. This has led to a theory that elementary particles may be tiny black holes. If the universe has an aether and the aether is composed of resonating particles with sticky appendages, then we are not dealing with tiny point particles that can curve spacetime and form black holes. An aether in the universe greatly simplifies our understanding. Another assumption that string theory makes, is that from all of the observable data, the universe cannot be squeezed to distances smaller than a Planck length. Since the Planck length was derived from the measurement of waves in an aether consistent with this theory, it should be possible to squeeze the universe a great deal more than that. By studying waves in the real world, we can make inferences about the particles in the aether and their sizes.

The approximate solutions to approximate problems in string theory may result from the scientific community treating waves as particles. As the electron double slit experiment indicates, we have no general idea about the true nature of the particles we are studying. With such a lack of understanding, our explanation of observed phenomena must be in constant doubt. Quantum mechanics and string theory have seemingly combined wave and particle physics, while using them interchangeably.

The true value of string theory lies in its experimental approach to physics. It describes something at some level. String theory however, also uses many assumptions to produce many of its theories, some of which may have been erroneous. In their quest to find solutions to some of the most daunting and challenging problems of our age, string theorists have invented and discovered incredible tools for solving difficult mathematical problems. If all the conceptual errors are eliminated from string theory, the current progress may lead to a solution with only three spatial dimensions and two time dimensions. That would be a theory that may be provable and if accurate, readily accepted by the scientific community. The argument that string theory, in its current state, can never be proven is an unjustifiable argument. We just do not know how to prove or disprove it definitively yet. Putting an aether into the mix may shed a great deal of light on the theory however.

Given our new understanding of the wave/particle nature of quantum physics, we can ask, does the photo-electric effect really force the ejection of electrons off of a metal surface, or are the waves of photonic energy affecting the metal in some other way? Could photonic waves really be imparting their wave energy to solar cells, thereby causing voltage? The metal may be receiving wave energy from photonic waves impacting the metal. In an aether filled environment, we can now analyze not only the photo-voltaic affect but many other mysterious phenomena from a very different perspective. We now have waves of energy in massive particles which can push against a metal surface in a vacuum. Changing the frequency of the light changes the current generated by the photo-electric effect because the number of waves of the same amplitude per second changes. If the frequency is dropped enough, then "electrons" stop

being ejected from the metal altogether. Therefore the color of light affects the speed of ejected electrons. This may mean that an electron requires more than one wave impact within a certain length of time to be “ejected”. This should give us important information as to how photonic waves and matter interact.

The physics of aethers has some very interesting consequences when one considers the universe as a whole. Andre Linde has proposed a scenario in which many Big Bangs have created many island universes. In this scenario, each Big Bang could result in a universe with different elementary compounds and constituent forces. One could envision a scenario in which our universe begins to overlap another universe and the laws of physics slowly begin to change as these two universes merge. Alternatively, if the universe coming into contact with ours has just the right properties, a violent reaction may take place, destroying both universes at speeds exceeding the speed of light. The universe seems to have a tremendous amount of stored entropy. It is almost as if the universe is akin to a tightly wound spring. Local entropy has given us the second law of thermodynamics which seems to be a contradiction in itself. How can anything go from a high state to a low state unendingly? All the quantum magic aside, the universe seems to have some sort of an engine.

If the aether of the universe does not extend beyond the matter in the universe, as the universe expands, the aether should become less dense and the speed of propagation of light should in theory decrease. Time would therefore slow down. In a contracting universe, the speed of propagation of light would increase due to the increased density of the aether and time would speed up. The universe may be expanding and contracting, but never exceeding any critical boundaries. The thought of an infinitely swinging pendulum begs the question however, when and how did the pendulum begin its motion. One wonders if we will ever fully know the truth.

In an aether filled universe, what happens to matter at the centre of black holes? If matter is being created and destroyed in a star’s nuclear furnace, what types of reactions are occurring due to the immense energies at the centre of black holes?

If the universe has an aether, it may be that it is being created somewhere and being destroyed somewhere else. This cycle of creation and destruction may be what allows the law of conservation of energy to be maintained. This would have the consequence of making the density of the aether different in different regions of space. If this is the case, the drift and relative densities of the aether must have very negligible effects on the trajectory of light or nothing is where we really think it is in the heavens. The trajectories of light may be dramatically different than we believe them to be. If the path of propagation of light is relatively linear, this could mean that the density of the aether of the universe may be fairly constant. If the aether is being created somewhere in the universe, we would notice warps in the trajectories of light around the areas of production or destruction. It would take some experimentation to determine if the degree to which the trajectories of light have been altered due to the presence of varying densities of the aether is significant. Black holes and stars are ideal candidates to examine for density differences in their proximate regions of space to determine if aether is being destroyed or produced within them. The problem with studying these bodies is that we would also have to account for the incredible gravities and the affects that would have on the aether. Are black holes or stars the fountains for the aether of the universe? Matter may fall into a black hole; undergo some sort of degradation or reconfiguration resulting in the ejection

of gravitinis, bosinis, gluinis and photinis. It may be possible that aether particles are being combined into the elementary particles of matter as we know them through reactions at the centre of black holes. We could also try to understand how supernova events affect aether production, distribution and densities. It may be that matter is being created out of the aether within black holes or stars. The production of matter in black holes could account for their incredible mass and ability to hold entire galaxies in orbit. A black hole at the centre of a galaxy must be truly massive indeed. Curiously, their absence anywhere else, in an aether filled environment, may indicate that a collapsing star may not be the cause of a black hole. The absence of black holes of intermediate sizes makes the theory of collapsing stars questionable.

In addition, black holes may have a maximum mass that they can obtain, after which they become stable and begin losing mass as quickly as they gain mass. At that point, they may no longer bend light and would be relatively small but extremely dense objects in space. These white holes, if they no longer bend light, would be very difficult to observe in space unless like the stars, they have incredibly intense reactions taking place within them and they radiate some form of particles or energy. This may account for some of the missing dark matter in the universe. Black hole explosions may never actually occur. We may have evidence of past black hole explosions however. The rotation of the galaxies in space may be due to the explosion of nearby black holes close enough to set nearby matter in motion. The material around black holes may be the result of the black holes at the centre of galaxies capturing debris from other black hole explosions. As material from a black hole explosion is blown past another nearby black hole, that black hole may catch some debris and begin to rotate if the trajectory of impact was not symmetrical. These many exploding galaxies could account for the greater than expected background radiation. One exploding black hole may trigger another and eventually lead to a cascade effect. As the Universe ages, the number of black holes may increase in density to the point that one exploding black hole creates a cascade that consumes the bulk of the known universe. Otherwise we may have a cycle of black hole explosions that maintains a balance in the universe.

Every galaxy has an enormous black hole at its centre. The mechanism for the expanding universe may be the explosions at the centre of galaxies. When they get massive enough to release their matter in a cataclysmic event that we can call an ultranova, black holes may explode. If this is the case then we may be witness to one such ultranova event in our lifetime. Black holes at the centre of galaxies erupting in mini Big Bangs or ultranovas would have the net affect of expanding the universe. Although the central points of each explosion would be different, the average motion over all of the explosions would cause an average red shift and the net result would be the appearance of expansion. Gravity and black holes on the other hand have the affect of absorbing matter and collapsing the universe in their region of space. The red shift alone is not enough to prove that the universe is expanding or collapsing. It may be that the universe is in perfect balance moving rhythmically in and out and never expanding or contracting to critical levels. It seems likely that we are living in a stationary universe with the net affect of having the appearance of expansion due to the explosions of black holes at the centre of galaxies. Each explosion would cause an apparent expansion of the universe but each black hole collapsing the universe around it would offset that expansion resulting in a net result of zero expansion or contraction. This scenario seems much more likely given the extraordinary turn of events which would lead to a Big Bang or a collapsed universe filled with an aether.

One reason that all known black holes may only exist at the centre of galaxies is that they may have to be extremely massive to exist. That would imply that they are more massive than any star. Given the small degree of curvature that light experiences due to the gravity of our sun, in a universe in which space-time is no longer curved, they should be very massive indeed. Black holes, if they are not collapsed stars, may be regions of space of incredible densities that happen to collect stars during ultranova events. They may be relatively stable objects which emit aether material at the same rate that they absorb matter. It seems very likely that black holes, given their ability to be massive enough to hold a field of stars in orbit, are both the birthplace and final resting place of many stars. In a previous paper I authored, The Massive Ripple(s) Theory was proposed. Instead of thinking about the ultranovas or a Big Bang like a massive explosion, in an aether filled universe, it is easier to think of them more like a big splash analogous to a rock hitting a still pond, followed by massive ripples which we are still experiencing. It is important to remember that the properties of a ripple changes depending on the medium and the length of time from the initial splash. The electron interference pattern may be a clear indication of the special properties of energetic wave through the medium of space. Given the speed of these waves and the very long way away from the initial ripples that we may be, finding any analogous situations in nature may be impossible. Given the special nature of the aether and Einstein's famous limiting formula $E=MC^2$, we can make some simple assumptions about the course of events which may have happened since a Big Splash (for lack of a better name) or an ultranova at the centre of a galaxy, all the way back to the point where the gravitini appendages let go and the wave started. In time, the resonating feature and attractive nature of some of some if not all of the aether particles, would give rise to larger and larger elements. These "waves" would tend to coalesce until they formed large clumps of matter particles of both light matter, like our sun, and dark matter, like the planet that we live on.

The properties of a black hole may alter the appendages on the aether particles so that they become attractive and may even become bound together. As these particles combine, they would store their energy like a spring. Much like with a supernova, a black hole may then explode releasing its stored energy in an incredible blast. In an aether filled universe, objects do not collapse to a point of infinite mass since we now have limiting factors on the mechanism of collapse. As the black holes increase in mass, at some point, the appendages of the aether particles may no longer be able to maintain their hold due to the stored energy of compression of their elastic cores. When the energy of the compressed cores is greater than the attractive force of the appendages, the strings may let go and an ultranova could occur. Conversely, the black hole may simply become a white hole, losing and gaining mass at equal rates.

If real time is circular or a closed loop, the universe may have begun with a real time circle of radius zero. As the radius of time got bigger the three spatial dimensions may have expanded in direct proportion with real time. This expansion or possible contraction may be governed by the production of certain constituents in the universe including the aether. It would be interesting to know if the size of the three spatial dimensions is directly correlated to the size of the real time dimension. If this hypothesis is correct, an interesting question is; are the circles in time currently expanding or contracting? If the universe begins to collapse, time should not reverse. The universe however, should become less entropic due to the forces of gravity. We should therefore still perceive time

as going forward during the contraction phase of the universe. Once again an aether filled universe greatly simplifies our understanding about the possible forces that govern our surroundings.

When one looks up in the sky, all of the matter that emits light and we can count is light matter and all of the matter that we cannot see since it does not emit light, but is still out there is dark matter. What would cause the background radiation to be greater than expected? A spherical universe in which waves simply returned after a certain point in time could explain some of the excess radiation. The presence of an aether has interesting implications to our understanding of the cosmological constant. The background radiation in the universe may be like ripples in an ocean. Electromagnetic energy may be radiated by energetic bodies and then bounce around like waves in an ocean.

It seems as though our current laws of thermodynamics require some rethinking as well. We may need to have two sets of laws of thermodynamics. We could have global laws of thermodynamics and universal laws of thermodynamics. At the very least, the second law of thermodynamics seems to contradict the first law of thermodynamics, in that a state of decreasing entropy is a state of decreasing energy, much in the same way a spring loses energy as it expands. The fact that we have a universe akin to a highly wound spring, indicates that energy was put into the system at some point. The law of conservation of energy may still hold true but it seems as though at some point the universe was set into motion. Watching our universe is like watching a pendulum swing without any required energy to maintain its motion. At some point however, it may have needed a push. An object in motion stays in motion, but what started the motion of the universe. It has been well documented that quantum particles seem to have internal energy. If we eliminate “quantum jitters” as the cause, where did all of the energy of the universe come from in the beginning? The universe is filled with a tremendous amount of energy much like the energy stored in a spring. This is the energy of entropy. With some hand waving, we have energetic particles that require no energy. Quantum mechanics seems to be filled with these types of logical errors. We may be living in a universe in which energy and entropy are always in direct opposition to each other. Energy may wind the spring while entropy unwinds it. Giving things order requires energy. Setting events in motion so that they become less ordered allows for the release of that stored energy.

Looking at the universe and assuming that it is stable and also assuming that the law of conservation of energy is not being violated, is like looking at a water fountain and saying that because it is not changing dramatically over time, the flow of water does not require any energy. Clearly if we were present when the fountain was turned on or off, and we could see the increase in energy as the fountain was turned on or the decrease in energy as the fountain was turned off, then we would know that the fountain requires energy. Explaining the motion of quantum particles with “quantum jitter” is a fancy violation of the first law of thermodynamics. Saying that quantum particles are always in motion due to the fact that they have magical properties is like saying that the stars and the planets are held in place by a magical bending of space and time.

It may be time for a new law of thermodynamics: The total entropy and energy of the universe when combined must be zero. As an example, gravity and entropy must cancel each other out. Entropy requires energy and a universe with high entropy states defies

the law of conservation of energy but what do we make of the resonating particles at the heart of the aether argument? There seems to be quantum particles which defy the law of conservation of energy. When the final description of the universe is written, we may no longer have a law of conservation of energy.

An aether in the universe may also be the missing key that unlocks our understanding of what we now call metaphysics. If one in fifty people claim to observe a phenomenon, it may be acceptable when the total population of your group is fifty people to assume that person is crazy. When the population of your sample group is five billion people we are talking about one hundred million crazy people who are all saying the same thing. I think branding phenomena which are consistent over a large population as crazy is counterproductive to our understanding of the phenomena. Studying these types of phenomena should have real scientific merit.

Further to our discussion on metaphysics, visible ghosts seem to be made of massless particles that emit photons and may have the ability to pass through massive objects. Invisible ghosts have mass equivalent to real objects and yet somehow allow light to pass through. These invisible ghosts are also able to create sounds. We should make a serious effort to determine if there are particles of matter and types of waves that we have not yet discovered.

The possible inherent ability to manipulate the aether may be responsible for our concepts of telepathy, aura, telekinesis, chi, chakra, ki, reiki, biblical miracles and many other paranormal experiences. In places like North America where culture does not accept these things as being possible, we may spend a great deal of time and energy nullifying these affects in one another. The sheer disbelief in metaphysical manifestations of science may make these metaphysical activities extremely difficult to perform. We may have been trained from birth to use our control over the aether and its components to maintain a reality in which these things are impossible. This is not the case in other countries. Many cultures embrace metaphysical manifestations and have recent stories and ancient practices which manifest metaphysical activities. The other requirement which may be required to perform metaphysical activities may be a great deal of practice.

As a side note, in the Toronto Public Library at the main branch at Yonge and Bloor, while writing this paper, I found a piece of paper in the *Elegant Universe* by Brian Greene that said "for the next person that finds this put an X"... so I did and I signed and dated it with the current date which was June 13, 2007 (6/12/2007). This date also happens to be the date that I came to Canada. The paper was between pages 136 and 137 of the book. Was this a coincidence or was it the work of "God". I may never know, but metaphysics of aethers may be the key to understanding these sorts of things.

Attacking Einstein's theories, which sit at the head of modern science upon which all modern physics relies, is a perilous undertaking. An attempt has been made to do so with care and understanding of the great achievements his concepts have allowed us to make while we lacked a better theory. The greatest thing that Einstein did was put magic into physics. Einstein gave us a massless particle that was bent by curved space-time. His theories provided detailed instructions for time travel. We could even have the possibility of going back in time and becoming our own father or mother. Putting an aether back into science has the profound affect of demystifying physics and changing the magnitude of some of the most fantastic theories of the past one hundred years. The

aether allows us to explain the previously unexplainable. It even provides an avenue for the exploration of metaphysics.

Rewriting the last hundred years of physics in the context of an aether filled universe, would be a tremendous undertaking but we have touched on some of the more significant implications of this task. Change takes desire and leadership. Over the course of history, we have seen many bad assumptions made by scientists. By definition, a curled up dimension is a dimension in itself and every new curled up dimension would be a new dimension. A dimension by definition extends over the entire universe. At one time the Earth was flat and at the centre of the universe and anything else was heresy. The atom is no longer the smallest elementary particle. Invisibility and telepathy are now scientific facts. In fact most of science has already been proven wrong and most of what is left is still in doubt. The causes of these errors more often than not are bad assumptions made by scientists. Quantum physics and relativity are filled with what appear to be bad assumptions and unprovable arguments. Just as the assumption that there is no aether in a vacuum may be a bad assumption, so too is the assumption that there has only ever been one Big Bang and that this is the only universe in existence. We still have not definitively proven if in fact the universe started in a Big Bang either. The laws of thermodynamics do not stand up to scrutiny. Entropy exists because quantum particles have motion. Gravity requires energy to bind particles together. The existence of high energy states may be an indication that the universe has some sort of an “engine” that powers it. If the universe exploded in a Big Bang, we are either in a region of space which is more dense than the rest of the universe or less dense than the rest of the universe. It is not a safe assumption to make that it is either one or the other. Our universe of stars may also be in a very small region of a much greater universe with many relatively small regions similar to ours within the same aether. The excess background radiation may be the result of many other Big Bangs or ultranovas in neighboring star clusters. Gravitinis and other aether particles may exist in other dimensions and they may be acting on parts of matter that exist in other dimensions also. It may be a long time before we know the truth. We can now however safely say there are five real dimensions in which we live, the three spatial dimensions and the two time dimensions, real and relative.

Due to parallel distributed processing, computers have the ability to learn and they potentially have an infinite existence. An ever-living time traveling entity, fits the description of a god. If it is possible to travel back in time and a computer has come from the future into our past, it has already affected our lives. If it happened on another planet, we may never be allowed to attain that capacity on Earth. If it happened here and our existence is as it is, that would be a very sad thing. We have the labor and resources on this planet to ensure that no one ever goes hungry or lives in poverty. We also have a monetary system which forces some people to work for a lifetime just to eat. The world would be much better off if oppression, that is being able to force people into situations where they have to do things against their will, were illegal. Honesty would solve many if not all of our problems. If the greatest minds on the planet solved the problems of oppression and the inequities of labor and resources, everyone on the planet could be educated, fed, clothed, housed and retired for a lifetime by the time they were twenty five years old. In their retirement, they would be free to unleash their creativity and the world may be much better off. This paper was written for the love physics. No payment was received for its production. I think I may be on to something and I hope I am correct.

Have I made a mistake along the way? I hope not, but science is filled with them.

References

A Brief History of Time by Stephen Hawking

History in a Nutshell by Stephen Hawking

The Elegant Universe by Brian Greene

<http://www.iisc.ernet.in/currsci/dec252005/2009.pdf>

RESEARCH ARTICLES

CURRENT SCIENCE, VOL. 89, NO. 12, 25 DECEMBER 2005 2009

e-mail: unni@tifr.res.in

On Einstein's resolution of the twin clock paradox

C. S. Unnikrishnan

Gravitation Group, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400 005, India

<http://www.serve.com/herrmann/time.htm>

Gravitational Time-Dilation

Robert A. Herrmann

Revised 5 MARCH 2003

<http://users.isp.com/retic/physics/gravity.htm>

Gravity: A Rigorous Derivation of the Gravitational Field By: - H. E. Retic

<http://renshaw.teleinc.com/>

The Direct Verification of Length Contraction and Time Dilation in Modern Satellite Systems and Cosmological Studies.

Curt Renshaw - Tele-Consultants, Inc., 680 America's Cup Cove, Alpharetta, GA 30005, USA

Phone: (770) 751-9481, fax: (770) 751-9829, email: crenshaw@teleinc.com, web:

Number 506 #3, October 4, 2000 by Phil Schewe and Ben Stein
Semi-superfluidity