Dark Energy
As An Illusion Caused by Space-Time Expansion

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Introduction

The Universe is expanding. That is to be expected. Within the last ten years it has been determined that not only is the universe expanding, that expansion is accelerating. That was totally unexpected. Only through an infusion of energy can anything of mass accelerate. The greatest mystery in cosmology today is "Where is the energy coming from that is causing the universe to accelerate its expansion?". For lack of a better term it has been labeled "Dark Energy" because it is invisible to every attempt so far to "see" or detect it. Yet it, and another term that represents more invisible "stuff" in the universe, Dark Matter, have alluded all attempts so far to identify their source.

I was writing another paper on the expansion when, one night while finishing my thoughts about that paper, it occurred to me that there may be a connection between the premise in that paper to the source of Dark Energy. I did some quick math in my head and realized that the data fit the theory. Excitedly, I hurried to write down some notes before I forgot my train of thought.

This hypothesis, and the mathematical support contained, confirm the arguments in my first paper, that time is a multidimensional entity, and makes that case even stronger. This paper constitutes a hypotheses and mathematical argument, that the universe is indeed expanding multidimensionally, and Dark Energy and its source are explainable, but not of the form expected.

Background

Two independent teams of astronomers, in 1998, searching for the rate at which the universal expansion was slowing down, discovered to their surprise, that it was, instead, accelerating. This was contrary to all that was known at that time. It seemed a tremendous surge of energy, from an unknown source, had begun accelerating the expansion as much as 10 billion years ago

There have been many theories advanced to explain the phenomenon, but so far all have shortcomings. This energy would have to be the largest single source of energy in the universe, comprising 2/3 of all the energy in existence, to affect the expansion to the degree observed. The mystery is just as real now as it was 10 years ago.

In this paper, an attempt will be made to explain the phenomenon known as "Dark Energy" in a simple, understandable way that is irrefutable. The solution was found in the writing of another paper by this author entitled, "An Analysis of The Big Bang From a Multidimensional Perspective".

In order to fully understand the cause of Dark Energy, the reader must accept some new, revolutionary concepts about space-time that this author has advocated and given ample support for in the previously named paper. The important concepts necessary for understanding this "solution" will be given under the various "Hypotheses" given and numbered in the text. Very little will be given in the area of "review of literature" because the concepts are so new that little has been written in this area except in the papers of Albert Einstein's theories of Relativity.

In order to appreciate the model of the universe used throughout this paper it is recommended that the reader read the previous paper submitted by this author which

goes into more detail as to why he believes the universe has the structure that is advocated in this “solution” to the Dark Energy problem.

Definitions:

Inertial Reference Frame – A collective structure of matter and space-time that behaves and reacts as a unit, and moves with a uniform motion.

Space-Time – The most basic structure of the universe in which all matter and components reside.

Universal Time - An imaginary external time line which acts as a reference to which events that happen in local space-time can be compared to. May possibly exist as another dimension of time, separate from Real Time.

Real Time – The term we use to measure distance between, and the order and sequence of events that transpire within a given Inertial Reference Frame. What we usually refer to as "time".

Big Bang – The initial event, an expansion, that created the structure and composition of the known universe.

SR - Special Relativity

GR – General Relativity

UGF - Universal Gravity Field, A field of gravity waves comprised of the collective gravity fields of all matter in the universe.

Expansion Wave-Front Sphere – A shell that represents the expanding sphere of space-time and all the matter and energy that was thrown out from the Big Bang.

C, or the speed of light – The maximum velocity, and the speed at which all electromagnetic waves travel through space-time.

Reality Shell – The 3 dimensional area on the surface of the sphere in the Wave-front Shell of the Big Bang that is expanding outward. It is basically the universe as we see it through our telescopes.

Quantum Realm – The sub-micro area of the universe that underlies all matter and energy contained in space-time, in which Quantum processes controlled by probability and spontaneous creation and destruction of elementary particles takes place.

Moment – For the sake of this paper, a moment is defined as the distance light travels in one second, or 300,000 Km.

Hypotheses

Hypothesis # 1:

The universe began with the "Big Bang" and expanded from the initial explosion in all dimensions, including space and time.

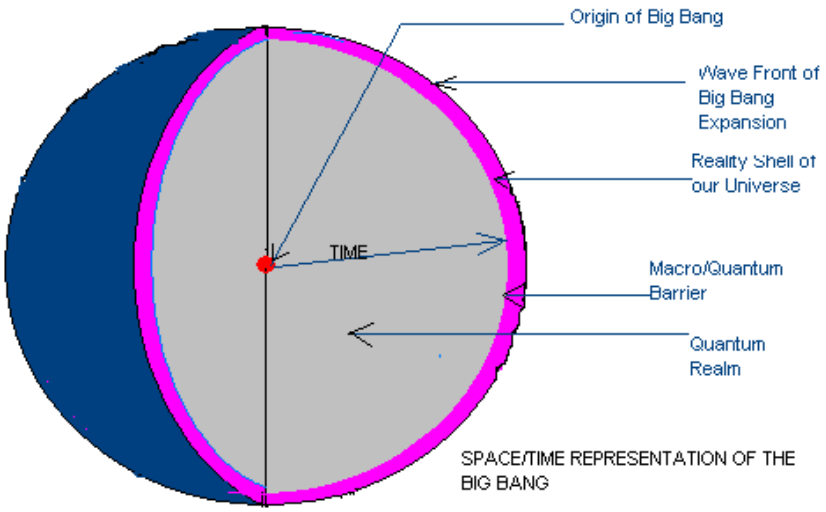
If the universe is multidimensional, is it not reasonable to think that the expansion took place not only in the physical 3 dimensions we call our reality, but also in the other dimensions as well? This would include the dimension we sometimes call the 4th dimension, or time. Like gravity to Newton's critics, time is the forgotten dimension when it comes to analyzing the Big Bang in that it has simply been assumed and taken for granted, that it was the lone constant in the process. The popular notion is that, if there was time before the Big Bang, it was a constant value and flowed forward at the same rate before and after the explosion. But is time a dimension, and if so, what are its characteristics? The first part of this paper will be dedicated to identifying what the term "time" really represents and what it is not.

To understand the following hypotheses you must accept that there was no time before the Big Bang and time ***expanded*** outward ***from*** the Big Bang, along with space and all the energy and matter contained within. The key to understanding the processes and nature of the creation of the universe is to understand that time was not a static element in the creation but was as much a part of the expansion as the expansion of of space, as well. It is also important to recognize that time is not just moving out from the Big Bang but is ***expanding***. The expansion of time mulltidimensionally is a new concept that this author has not seen discussed in any other paper.This may seem to the

reader a trivial point, but as will be shown later, the explosion and expansion of time is all important to the visualization and understanding of the expansion of the wave of energy that we call the Big Bang.

In order to assist in the comprehension of the multi-dimensional imagery of the entire process from the time of the creation, I need establish in the mind of the reader a space-time diagram to relate all following processes to. Other space-time diagrams are usually presented in Cartesian coordinate systems with time on the y-axis and space on the x-axis. This diagram is different in that it represents time and space on a spherical diagram with time being represented radially around a central point, the Big Bang, and space represented in the outer shell of a sphere about the center.

The initial explosion created a wave front of energy that had the form of a sphere exploding outward from the center. Former images of this wave referred to it as being like a balloon inflating. I would like to retain and use that image also, with one important change. Picture the balloon with all 3 spatial dimensions on the surface with the radius of the object being the time element, not space.



It would be easy for the reader to misinterpret the above image as representing the explosion entirely in spatial units. It is crucial to the understanding of the diagram that the reader remember that the distance from the center of the diagram, representing the moment of the Big Bang, to the outer surface representing space does not necessarily infer spatial distance from the Big Bang. *The radius of the sphere is a measure of the Time elapsed since the explosion.* The reader is cautioned not to confuse concepts of the explosion of space-time with the popular concept that it was simply an explosion of space, with time being constant. There is a world of difference, and it is that difference that separates this theory from other Big Bang theories.

The universe that we "know" is the area inside the sphere, between the outer surface and the inner "Quantum" realm", and is labeled the "Reality Shell" on the diagram. While this "shell" can physically be represented 3 dimensionally as inside the sphere, it more accurately should be imagined as 3 dimensions represented 2

dimensionally on the surface of the sphere. We cannot see the inner area under the shell anymore than we can see backward in time, as that is what the region represents.

Even though the picture represents the distance from the Big Bang as time, it still can be considered as visually accurate. We can see that in this sense, time as a dimension is very similar to a spatial dimension. It would be easy to overlook another characteristic of time. The region inside the sphere is 3 dimensional, not 1. Since the inside of the sphere does not represent space but time, this implies that time itself is not a single dimension but is 3 dimensional.

Einstein's equations show that any movement in space requires also a movement in time. This concept of time allows for that in that the three dimensions of time would overlap the corresponding dimensions of space. Since it is possible to move in 3 dimensions of space, it would be impossible to move in space without also moving in the three time dimensions. This 3 dimensional concept of time also shows that for any point on the surface of the space-time sphere there is a direct path back to the origin or Big Bang. It is also this 3 dimensional aspect of time that allows it to ***expand.***

We can immediately see that every point within the "Reality Shell" that represents our universe has a unique set of time coordinates associated with it. More accurately, from this point on these will be referred to as "space-time" coordinates. This may seem like a new concept, but Einstein's relativity equations predicted this over 100 years ago. The difference between then and now is that when the theory of relativity was first published it was thought that time was unique and was a single value. Accepting this new concept of time, we now see it as a *set* of coordinates in the same way we define a point in 3 dimensional space.

Another way to visualize the 3 dimensional concept of time is by means of a thought experiment as follows.

Imagine a subject who possesses a switch that can "freeze" time at any moment. He/she flips the switch and observes that everything around is frozen and all events have stopped in the state they existed at the moment the switch was thrown. But, if the subject is observing this and experiences time passing still, it must be that they are on a different time line that is perpendicular to the first and will continue moving in that direction of time. This could happen once more with this 'magic' switch and the subject would see that all time on both previous time lines is frozen and he/she is still moving in time in a different direction, otherwise they could not be 'experiencing' the observing of the first two. This new time line would be one that is perpendicular to the first two and would be the 'z' axis of a three dimensional x, y, z coordinate system.

Accepting this possibility, one can visualize that there are 3 dimensions of space and time, taken together.

Hypothesis # 2:

Time is 3 dimensional in the same way that space is 3 dimensional, and overlaps space exactly in such a way that movement in space is identical to a movement in time.

We have problems identifying time and space together because we see no change time-wise in local movement, yet in all respects it seems that the two are becoming inseparable. This author would like to propose a model for space-time that seems radical at first yet fits the evidence in every way.

Hypothesis # 3:

The term "space-time" actually represents one entity. There is no such thing as space and time separately.

Actually, any movement is space should be considered as a movement in time. The reason we find that hard to accept is that we see movement all around us but fail to see a time difference. The difference is so small, and this is predicted in special relativity, that it is insignificant. The reason time is so small compared to spatial dimensions is because of the very high velocity of the speed of light. How small is that difference? It takes 300,000 kilometers of travel to equal one second in time. Does this mean that we are moving 300,000 Km. every second through "space". Yes, and so is the entire universe. The Universal Gravity Field of every object in the universe is moving uniformly through space at this rate.

The question arises at to what reference do we use to measure "time" if we are measuring velocity through time itself. This is where the extra dimensions of time comes in. As we look down on the universe as a 2 dimensional disk of matter in the xy plane of space-time moving outward at a velocity C, it is helpful if we can imagine that we are in the Z axis of space-time, a separate "time-line". Because all movement in space is really a movement in time also, it is reasonable to assume that to move 3 dimensionally in space implies that you can move 3 dimensionally in time also. This makes it possible to observe an event moving in one time direction while moving in a separate time direction.

Hypothesis #4:

There is a universal time-line that is separate from the time-line we call the local time. It represents time in another axis of space-time. All references to absolute velocities, rate, and time external to the local space-time of the discussion will be to this time.

This concept is helpful in examining events that transpire in "real" space-time. It is impossible to describe a sequence of events in space-time without referencing to an

external standard to compare it to. This "universal time-line" may actually be the "z" axis of space-time, and may have come to be due to the expansion of the Big Bang being more planar in the xy plane, due to the spin or rotation of the primordial core. In any case, whether that is true or not, it is very helpful to visualize velocities, rates, and other time-related phenomenon in a way that is separate from "real" space-time, when trying to understand processes that involve space-time itself.

Hypothesis # 5:

We experience the illusion of time because the mass and UGF of the universe is rotating through space-time in the direction of the original spin of the primordial mass.

Space is expanding at the same rate that time is. We are carried along on the wave front of the expansion because space and time are expanding at the same rate. If matter were thrown out from the Big Bang along with space-time the two would be moving at the same velocity and would constitute a single Inertial Reference Frame.. This would not allow for the "passage of time". Time only appears to "pass" when matter moves through space-time. The question now becomes how and why does matter move through space-time?

Just as Michaelson and Morley had problems identifying movement within the "Ether" in the late 19th century, it is impossible to identify movement within space-time now. That is part of the problem in recognizing the nature of time itself. At the moment of the Big Bang, the energy of the explosion cast both matter and space-time outward with the same velocity. Matter, however lagged space-time a small amount because of inertia and acceleration. There was another factor that resulted in matter taking a different path than the straight-out path of space-time. The original primordial mass from

which the Big Bang sprang was revolving, and this "spin" was manifested in every particle that comprises the matter we see in the universe today.

As we now know, subatomic particles have this as one of their properties and as we look out into the heavens we see that all galaxies and bodies with mass, macro and micro, have a certain amount of spin.

When an object that is spinning undergoes a transformation, spin is conserved due to a physical law that says, "In any transformation of matter, angular momentum (spin), is conserved".

Hypothesis # 6:

The illusion of local time passing is the result of the changing of the coordinates for an object due to its movement from one point in space-time to another point.

When, in the writing of this paper, a problem arose concerning how time was passing, it was realized that in order for time to "pass" it must be moving relative to something else. In an explosion that cast everything out linearly in a straight line, space-time would not be moving past anything, particularly the matter that followed, due to there not being anything to move past, because all things were moving at a constant velocity, the speed of light. However, it was realized that if matter had a rotational property about the core of the Big Bang, it would not go out in a linear fashion but would rotate about the center of the explosion. The reason for this rotation as matter moved out away from the center is explained by the effect matter has on space-time itself.

It is well known from General Relativity that a massive object distorts space-time and creates the illusion of objects moving in a circular path about the center of mass

when they are following the curvature of space-time. A spinning core of mass distorts space in such a way that it is curved about the core, and also causes space to follow the spin in a phenomenon call “Frame Draging”.

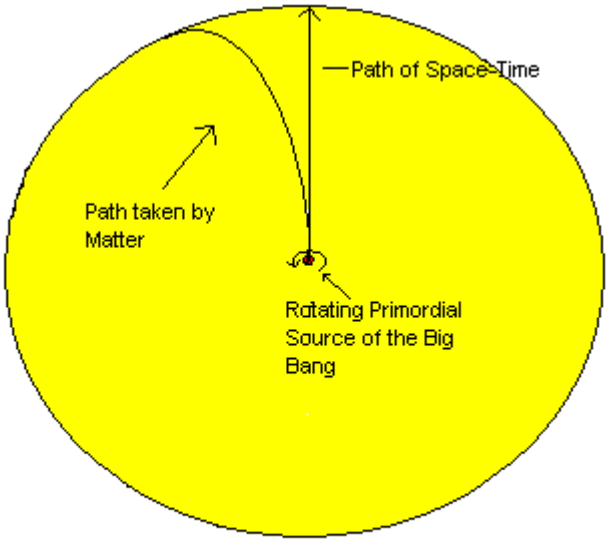
At the time of the explosion, space time was most distorted around the massive center, and as the explosion took place, as space-time expanded linearly outward, all matter followed the outward expansion toward the wave front as well as the curvature of space time about the core. This resulted in a spiraling motion outward toward the wave front while at the same time taking on a rotation about the center of the explosion due to this Frame Dragging. In this way space-time, expanding straight out from the center would be moving differently from matter. Space-time does not have momentum or inertia and would not be affected by the conservation of angular momentum as matter is.

In Special Relativity, we see the rate at which time passes, change within the inertial reference frame as an object attains high velocity near the speed of light. This confirms that the passing of time is due directly to movement of something of mass within the framework of space-time. We don’t see this effect at low velocities because it is insignificant. This confirms that for time to be passing, the mass of our local inertial frame must be moving at, or near, the speed of light, C, through space-time. Since matter, or mass, was thrown out from the initial blast at the same rate as space-time this would suggest that matter should be constant within the local space-time framework, and we should see no such effect of time passing. However, the fact that we do experience time means that there must be movement within the space-time framework and that could only come if all matter were moving, not only linearly, but laterally at some rate to

the direction that space-time is moving. This supports the above hypothesis that matter took a different path to space-time at the initial explosion of the Big Bang

Why is this important?

In the writing of this paper all possible ways were considered in which the illusion of the "passing of time" was possible and all failed logistically except this one. The conclusion was that *there was an initial "spin" to the primordial mass from which the matter of the universe was created.*



Expansion paths taken by Space-Time Vs. Matter

Because all the mass in our local inertial frame of reference is moving with space-time outward, and at the same time, moving laterally through space-time, due to the original rotation of the primordial mass, we experience the phenomenon of a continual changing of our space-time coordinates at a very constant rate, causing us to "sense" that time is passing. All events that take place in our frame of reference have different space-

time coordinates, therefore all events have a different position in space-time. Because it takes a great distance in space-time to affect differences in time by a significant amount, we do not notice these differences.

For time to be "passing" something must be changing. What is changing is that, all matter is "rotating" through space-time, about the center of the explosion Therefore, at every moment, every material object in the universe has a different set of coordinates.

This implies another characteristic of space-time

Hypothesis # 7:

Space-Time is composed of discrete entities which for lack of a better term we will call a "moment"

Before we can examine the statement "changing of the coordinates" we must define what we mean by "coordinates".

What is the coordinate system we are referring to? If space-time is composed of discrete entities, we do not yet know what the characteristics of these entities are. For the sake of clarity let us imagine a universal coordinate system that transcends the universe, in which one coordinate is equal to 300,000 Km. in size. We will say that a moment in time is equal to one second and occurs when matter moves this distance through space-time.

For the time being let us define a moment as a space-time unit with a length of 300,000 Km. As space-time expands outward it would be expected that these "moments" would also expand. While a moment at present is defined as 300,000 Km. It is logical that in the past it was smaller and in the future it will be larger. Matter is moving in an ever steeper curve through this space-time in its curved path outward and

around the center of the Big Bang. If the "moments" are expanding but the rate and velocity of matter, relative to the previously defined "universal timeline", through these moments is constant, it is logical to assume that the greater the expansion, the fewer of these moments matter will pass through in a given unit of universal time. This implies that locally the "sense" of the passage of time would be slowing down. This would be undetectable as all other processes, including biological processes, would be slowing down at the same rate. A corollary to this hypotheses would be that in theory, the speed of light would also be slowing down as time goes on due to the yardstick becoming larger by which it is measured.

As matter rotates through space-time, every point in every "bit" of matter is being redefined with a new set of space-time coordinates. Every time this set of coordinates changes, we experience an "new" moment in time.

As material objects experience the passing of time because of movement through space-time, this passage, and thus the changing of coordinates would be proceeding less fast if space-time were expanding. At any given point in universal time, matter would be moving through fewer moments of space-time due to space-time expansion than at a previous time.

After 14 billion years of expansion this change in rate would be small because as a balloon grows larger at a constant rate of inflation, the surface will be changing less and less the larger it gets.

Nevertheless, ***there is a decrease in the rate at which time passes, however small, due to the expansion of the universe***, because matter is passing through fewer coordinates, or moments, of space-time for a given movement of matter relative to

universal time, due to space-time components being larger from expansion, and the speed of the rotational component of its movement from the center being constant. This change would be imperceptible except for observation of very distant objects, such as galaxies, from which the light started toward us at a time when time flowed more quickly. The result would be the appearance that the galaxies were accelerating outward at a slower rate as time goes on. The reason that this movement appears to be slowing down is because, as our local time slows down, external events to our local inertial reference frame would appear to speed up. This includes the frequency of light we receive from distant galaxies. This light would experience a 'blue-shift" because it would appear to arrive at a higher frequency than expected according to the Hubble Distance Law. Just as a red-shift implies distance and velocity away from the local environment, a blue-shift would show up as a reduction of the red-shift, implying a slowing down of the outward velocity. If the outer galaxies, which represent the universe 10 billion years ago, are moving outward at less than expected velocities, then the present universe must be speeding up, or accelerating.

This illusion is being observed today and is mistakenly interpreted as being due to "Dark Energy", when it is actually due to a distortion of space-time.

A simpler explanation of this effect is that, since we are observing events that took place in the past at a time when time itself was moving faster, with eyes now that are experiencing a slower rate of time, all past events and processes will appear to be speeding up, including the frequency of light from the distant galaxies. This would seem to create a paradox in that distant galaxies would appear to be moving away faster at the same time that the Red Shift of the Hubble law would be moving back toward the

opposite side of the spectrum. This could be confirmed visually if we had some means to visually measure the velocity of distant galaxies other than using spectrum analysis. Because we cannot, we will see only that the Hubble law for distant galaxies is giving a less than predicted Red Shift compared to nearby galaxies. This results in the conclusion that space is expanding locally more than it did in the past, thereby giving rise to the theory of Dark Energy.

This is an optical illusion due to the expansion of time.This is possible because as space-time expands, matter is passing through fewer coordinate points for the same amount of movement relative to UT, and time is effectively "passing" at a slower rate for the observer than it did some 10 billion years ago as measured by the redshift of distant galaxies.

Thus, "Dark Energy," as it is being called, is not energy at all, but the illusion of matter being accelerated due to the slower rate at which local time now passes compared to the time when light from observed distant galaxies left their source.

Newton's law of

1. F=MA
2. can be expressed as F=M(dV/dT) substituting for A, acceleration.

Traditionally it has been accepted that matter can only accelerate if a force(energy) F, is applied, but this is valid only when time as a factor of acceleration A, (d V/**dT**), is held constant. If we let time vary downwards, the value of factor A will vary upwards with no increase in F. As the slope of dV/dT increases, there is a corresponding increase of acceleration, A. With a decrease in the rate at which time passes (dT), the factor A (acceleration) can also increase with no corresponding increase in energy (F).

It was special relativity that first introduced the notion that time as a variable, must also be a factor of any energy equation. Up to that point, time was considered immutable.

From the rate at which the local galaxies are accelerating we can determine the amount of ”time deflation” that has occurred since 10 billion years ago when the light from distant galaxies left their source. From this we should also be able to determine the degree to which matter’s path from the Big Bang has deviated from a straight path alongside the space-time path. This “deviation” would indicate the amount of original curvature or distortion of space-time existed at the time of the explosion. As space-time continues to expand outward, this effect should increase until matter is moving in a path effectively perpendicular to the path of the space-time expansion. Eventually this process would result in time slowing to a rest state. This would happen only in the distant future, many billions of years hence.

There is a remaining mystery of the structure of the universe that is not resolved and very rarely discussed.

All previous Space-Time diagrams of the Big Bang show matter being distributed evenly throughout the universe, leaving the impression that matter is evenly scattered about the center of the Big Bang. This would not be possible in a uniform explosion in which the initial energy of the explosion would impart equal velocity to all matter.

All matter we see today should be equidistant, within a range, from the source of the blast, leaving a vacuum in the center. When we measure the distribution of galaxies in the universe today we get a result that is reasonably homogeneous and even because

we can only see the "shell" of the wave front given off by the explosion. This "shell" also includes Space-Time that is also moving evenly outward from the center along with the matter contained within it. Following this logic we should see a "hole" in space-time left by the initial explosion. The reader is cautioned not to interpret this as a hole in "space" but of space-time. We see no "hole in the universe because only the matter thrown out originally and the space-time it occupies is visible to us. The "hole" would not contain space-time because it has been thrown out also, leaving a region of chaos, void of all that is familiar to us.

Could this region be the area portrayed earlier on the inside of the Space-Time diagram, underneath the area labeled the "Reality Shell"? If so then that diagram is really more accurate visually, dimension-wise, than was suggested earlier because all known space-time and matter is shown contained in a spherical shell about a region of quantum chaos. This lends support to the original concept of a Quantum "Barrier" separating the visible Space-Time universe we see from the Quantum chaos that lies underneath all physical matter, and suggests that this concept is an accurate representation of the true structure of the universe.

As we can see from the above examples, because space and time overlap, any movement in space results in a movement in time also. The hardest and most important concept to grasp is that our illusion of time moving forward comes from our sense that the space-time coordinates are changing. This illusion of time "passing" is directly due to relationship of the path taken by matter through space-time compared to the straight line path that space-time took from the initial explosion of the Big Bang. In other words, the amount of time that passes is dependent on the length of the time line from the

originating point to the destination. This is directly related to the number of "moments" or coordinates the entire gravity field of the universe has passed through since the Big Bang. The rate at which it passes is inversely proportional to the size of the expansion sphere.

The most important concept in this paper to understand is that, ***it is the expansion of the space-time wave-front on the sphere that results in the decreasing rate at which time passes.*** Without this expansion, matter would be passing through space-time coordinates at exactly the same rate as at the initial Big Bang. Because space-time is expanding outward, matter is constantly passing through an "expanded" area of space-time and therefore fewer space-time coordinates for the same amount of movement relative to UT.

To calculate the amount of displacement since the target galaxies began sending light in our direction, we first get an estimate of the age of the universe. Current figures suggest 14 billion years. The galaxies that appear to be accelerating are local galaxies as compared to galaxies at a distance of 10 billion light years, therefore the amount of space-time expansion increase must be 14/4 or 350% of the value of the rate at the time of the galaxies we are observing. This suggests that the observed expansion rate of local galaxies outward should be 350% greater than the "normal" velocity of distant galaxies of 10 billion years ago.

When an explosion occurs, objects thrown out from the center of the blast fly away at a constant velocity that is given to them at the moment of the blast. They do not accelerate, once put in motion. Given this, the rate of time should have remained constant since the Big Bang. The rate of time however is proportional to the expansion

of the space-time wave form sphere and therefore will change and decrease as the surface area of the sphere increases. This happens because our sense of time "passing" is tied to the rate at which our space-time coordinates change. As the surface of the sphere changes and expands, these coordinates are constantly changing inversely proportionally. As the sphere grows larger the rate of change will decrease.

Because most theories now see time as one dimensional, they cannot account for, or recognize that we experience the phenomenon of the rate at which time passes, increasing with time from the center of the creation. Only a 3 dimensional time matrix will account for this phenomenon, and explain the "mystery" of Dark Energy.

Every time the set of time coordinates changes, we experience an "new" moment in time. This serves to point out that time could only "expand" if it were multi-dimensional.

Why is this expansion of time important?

Why does the slowing down of time cause local galaxies appear to be accelerating as compared to distant galaxies? If time is moving at a slower rate, everything in the local region will also change by a like amount as well and therefore, the change will not be noticeable. When we look through our telescopes at galaxies 10 billion light years away, we are looking at events that took place long ago in another time, and a process that was tied to another rate of time. Because we are seeing those processes through eyes that are tied to a slower time rate they will appear to be running faster that normal, normal being the rate that was tied to its original time.

In another analogy, if the clock for our local inertial reference frame runs slow then for every tick locally, more ticks of a clock tied to the inertial frame of reference for

the distant galaxies will pass. The farther away the event is the faster it will appear to be running. This results in all processes locally looking as if nothing has changed but once the observer peers into space at a distance of billions of light years, he suddenly is looking with eyes that are running slower than the events that he is observing. Thus the light coming from those objects appears to be "running faster" in frequency, resulting in their spectrum being slightly shifted backward toward the blue side, or a smaller than expected red-shift.

In a similar manner, our clocks are ticking at a slower rate than they would have 10 billion years ago due to time expansion, but we would not sense the change unless we "look out the window" of our space-time frame of reference. Our frame of reference is our local region of space-time where the changes in time's rate from one point to another are insignificant as compared to points billions of light-years away. Our "window" is our telescopes that point in the direction of galaxies 10 billion light years away and see that they are moving unusually slower than they should due to a normal constant rate of expansion of the universe.

We conclude the local universe is accelerating when the answer is that it is we who are measuring distant events with a clock that runs slower than the same clock would have 10 billion years ago during the time period we are "seeing".

The change in the rate of time is not great and it would take billions of years for it to show up, and then only when we look at very distant processes that are far removed from our "local" area. Remember that the events we are seeing are not 'simultaneous' to our local space-time. The light from those events took billions of years to reach us and we are peering far into the past.

At a distance of 10 billion light years, galaxies which were moving during a time when the passing of time was faster will appear to be moving slower than expected according to the Hubble law, which is exactly what we are observing today.

Here is the basic argument that dark energy is simply an illusion due to space-time distortion.

If the rate at which our time passes is decreasing as the universe expands, we are constantly using a changing yardstick to measure the rate at which distant galaxies are speeding away from us. As we measure galaxies farther away, we are observing processes that took place at a different rate of time in the past. This difference becomes more pronounced as we look farther back in time, which is what we are doing by observing distant galaxies. Observational data from many sources confirm this. It appears that the local galaxies are accelerating and this acceleration is increasing when it is due to our "time" based yardstick ticking at a slower rate now, compared to the time during which the more distant expansion actually occurred. Remember that we are observing light from those distant galaxies that started its journey 10 billion years ago, and we are measuring it with a clock that has decreased its rate over that time to a slower "tick" rate.

Would we be aware that our rate is decreasing? No more than a space traveler who is moving at close to the speed of light, is aware that the clock on board his spacecraft has slowed down relative to a clock outside, at rest relative to his moving frame of reference. Only when the traveler looked out the window of the spacecraft would he realize that objects are moving past his vehicle at a fantastic rate would he be aware that something had changed.

In a similar manner, our clocks are ticking at a slower rate than they would have 10 billion years ago due to space-time expansion, but we would not sense the change unless we "look out the window" of our space-time frame of reference. Our frame of reference is our local region of space-time where the changes in time's rate from one point to another are insignificant as compared to points billions of light-years away. Our "window" is our telescopes that point in the direction of galaxies 10 billion light years away and see that they are moving away slower than they should due to a normal constant rate of expansion of the universe. We conclude that expansion of the universe is accelerating when the answer is that it is we who are measuring with a clock that runs slower than the same clock would have 10 billion years ago during the time period we are "seeing".

If the rate of time expansion matches the observed rate of acceleration of the local galaxies, we have to conclude that the acceleration is due to the expansion of time and not from a "Dark Energy" source.

Conclusion

From the above hypotheses and accompanying mathematical support it seems clear that Dark Energy is simply an illusion due to the expansion of time, since the galactic movement really occurred, and is not due to some "unknown" energy source. In conclusion, any the observed spectrum of light from a moving object tied to a faster "clock" will appear to blue-shifted if our local clock runs slower. The farther away the object we observe, the more pronounced this illusion will be.

Questions and Comments:

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