

THE  
UNIVERSAL PRINCIPLE  
OF  
NATURAL PHILOSOPHY

By  
STEVEN M. SCULLY

# THE UNIVERSAL PRINCIPLE OF NATURAL PHILOSOPHY

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**Abstract:** The Universal Principle of [Natural Philosophy](#) states that the universe consists only of infinitely divisible mass, infinite volume, and gravity. This is realized due to a model which explains the [cosmic microwave background](#), the [redshift](#) in the light spectrum of all distant galaxies as well as [supercluster](#) observations using [gravitational redshift](#) and [gravitational lensing](#) alone. Evidence is shown that [gravity](#) is the only [fundamental law of the universe](#), and that [electromagnetism](#), [weak interaction](#), and [strong interaction](#) are *the results of gravity*, and therefore the Universal Principle of Natural Philosophy can be realized.

## 1. INTRODUCTION

The [Big Bang theory](#) is the prevailing cosmological theory for the universe in large part due to the observed cosmological redshift of all distant galaxies' light spectrum. This redshift has been attributed to the [Doppler effect](#) as a result of [expansion of space](#) which produces motion away from Earth. These distant redshifts are observed in all directions, leading to the Big Bang's argument that the universe must have started from a single point. However, the theory has many well-known problems. For example, the [horizon problem](#) is such that there is a degree of separation where two components of the universe are too far separated to have reached that separation from the singularity of the Big Bang, even if traveling at the speed of light from the time of the Big Bang (1). The [flatness problem](#) is such that the fine-tuning of the density of the universe suggests it should be relatively flat, which does not fit well with a model that predicts a uniform expansion in all directions (2).

All current popular theories rely on Doppler effects to explain the redshift phenomena of distant galaxies. They additionally arrive at a universe that is finite in time; before the Big Bang, there was nothing. This is philosophically illogical because the possibility of a finite lifespan of a universe is not evidenced by any observation except the assumed Doppler shift. This is explained by the logic that there cannot be nothing if there is nothing. In order to build a model of the universe that accurately fits the observations *in their entirety*, gravity must play its hand in the large-scale structures of the universe.

[Sir Isaac Newton](#), in his book [Philosophiæ Naturalis Principia Mathematica](#), recognized the law of gravity through natural philosophy; the philosophical consideration of nature. He understood the most fundamental concept of nature: gravity *rules*. When we look at the heavens, we are constantly reminded of gravity's awesome power. The moon orbits Earth, tugging on the Earth with its mass through gravity and causing tidal forces in the ocean that result in low and high tide. The Earth orbits the sun. The sun orbits the black hole at the center of the Milky Way. This philosophical logic points to a high likelihood of the Milky Way orbiting a center of mass because the systems we observe all are in orbit with larger systems. The model of the universe that fits the observational data must have a structure where the Milky Way orbits a center of mass. It is

absolutely essential to note that in order for a model to fit *all* observations, it must be philosophically sound as well as scientifically. Science allows for testing of hypotheses, but these must be arrived at through philosophical considerations of the evidence and the nature of the universe. Only through this mutual tug-of-war back and forth between both disciplines of science and philosophy can the true nature of the universe be revealed.

A [galaxy](#) is a system comprising a center of mass—a black hole—and stars orbiting it; a *galaxy of stars*. Our [Milky Way](#) and all other observable galaxies are orbiting a center of mass in a *galaxy of galaxies*. This will be evidenced to arrive at a system that matches our observations of all distant redshifted galaxies in all directions resulting in [Hubble's constant](#).

To understand how the observations match, the interaction of energy and gravity must first be considered. Herein, energy is equivalent to *divisible mass*, as defined by Einstein's  $E=mc^2$  (3); the only difference between the two is the means of observation, as will be elaborated on in this paper. There are two ways in which energy interacts through gravity observationally: via redshift or blueshift, and lensing.

The observation of redshift or blueshift itself can occur by two phenomena, [gravitationally](#) or due to motion in what is known as the [Doppler Effect](#). All current popular models assume that Doppler effect is the cause of our observed cosmological redshifting of distant galaxies due to [expansion of space](#) which is *introduced so as to not break the laws of physics due to calculated velocities greater than the speed of light* due to the observation of [Hubble's Law](#). This is where an object is simply moving away from an observer. On the other hand, blueshift occurs when an object is moving towards an observer and compressing; this we say we only observe “locally” due to [Hubble's Law](#) redshift overwhelming all other shifts at large distances.

Redshift and blueshift can also occur due to gravitational forces. [Gravitational redshift](#) occurs when a force of gravity pulls on a wave of photons moving away from a source of gravity so as to stretch it into a redshift. Much the same, if the photons are moving towards the source of gravity they will be blueshifted (4).

The second observational interaction between photons and gravity is known as [gravitational lensing](#). This is where a gravitational field will *bend* the path of the photons that pass through it, dependent on distance and the force of gravity. This was proposed by Sir Isaac Newton: “do not bodies act upon Light at a distance, and by their action bend its Rays; and is not this action strongest at the least distance?” (5). Gravitational lensing has been modeled in more detail since then (6). However, it is important to note that all current models, including those of gravitational lensing, *are approximations of systems*. These are sufficient for modeling within the degree of accuracy that we require to benefit from the models. In order for the systems to be fully realized, however, a universal principle must be obtained which *includes all systems of the infinite universe*.

## 2. THE UNIVERSAL PRINCIPLE OF NATURAL PHILOSOPHY

Pierre Simone Laplace, in his book [\*A Philosophical Essay on Probabilities\*](#), states “[W]e may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at a certain moment would know all forces that set nature in motion, and all positions of all items of which nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes.” (7). In 1963, Edward Lorenz recognized the impossibility of modeling such a system in what became known as [\*Chaos theory\*](#) (8). Lorenz described chaos as “when the present determines the future, but the approximate present does not approximately determine the future.” The inability to accurately model the system is an inherent characteristic of an infinite system where we cannot know all the variables. This, however, does not preclude the universe from operating under such a model.

The Universal Principle of Natural Philosophy states that the universe can fully be explained by encompassing *all gravitational interactions through classical mechanics*. This is because the universe consists only of infinite energy being manipulated by gravity in an infinite volume. Newtonian laws alone are sufficient for describing precisely the interactions *of the universe as a whole*.

Sir Isaac Newton showed that the gravity between two masses is defined as

$$(1) \quad F = G \frac{m_1 m_2}{r^2}$$

where  $F$  is the force of gravity,  $G$  is the gravitational constant,  $m_1$  and  $m_2$  are the interacting masses and  $r$  is their distance apart. Newton also discovered the laws of motion:

$$(2) \quad x = x_o + v_o t + \frac{at^2}{2},$$

$$(3) \quad v = at + v_o, \text{ and}$$

$$(4) \quad F = ma;$$

where  $x$  is position in the x-coordinate,  $x_o$  is initial position,  $v_o$  is initial velocity,  $t$  is universal time,  $v$  is velocity,  $a$  is acceleration, and  $m$  is mass. Therefore, acceleration of a particle in three-dimensional space can be defined by:

$$(5) \quad a(x_1(t)) = \frac{F(x_1(t))}{m_1},$$

$$(6) \quad a(y_1(t)) = \frac{F(y_1(t))}{m_1}, \text{ and}$$

$$(7) \quad a(z_1(t)) = \frac{F(z_1(t))}{m_1};$$

where  $x_I(t)$  is the position of a given particle in the x-coordinate at time  $t$ ,  $y_I(t)$  is the position of the particle in the y-coordinate, and  $z_I(t)$  is the position of the particle in the z-coordinate. After substitution of Equation 5 into Equation 2 the positioning of a particle in the x-dimension can be defined by:

$$(8) \quad x_1(t) = x_1(t-1) + v(x_1(t-1))t + \frac{F(x_1(t))t^2}{2m_1},$$

and a similar exercise can be performed in the y- and z-dimension to give:

$$(9) \quad y_1(t) = y_1(t-1) + v(y_1(t-1))t + \frac{F(y_1(t))t^2}{2m_1} \text{ and}$$

$$(10) \quad z_1(t) = z_1(t-1) + v(z_1(t-1))t + \frac{F(z_1(t))t^2}{2m_1},$$

where  $x_I(t-1)$ ,  $y_I(t-1)$  and  $z_I(t-1)$  are “initial” positions at time  $t-1$  of the particle and  $v(x_I(t-1))$ ,  $v(y_I(t-1))$  and  $v(z_I(t-1))$  are “initial” velocities of the particle in the x-, y-, and z-directions, respectively.

Equations 8, 9, and 10 are the core of the Universal Principle of Natural Philosophy and can be used to further derive the velocity of a particle as a function of position. The three-dimensional velocity of a particle can be defined by:

$$(11) \quad v(x_1(t)) = \frac{F(x_1(t))t}{m_1} + v(x_1(t-1)),$$

$$(12) \quad v(y_1(t)) = \frac{F(y_1(t))t}{m_1} + v(y_1(t-1)), \text{ and}$$

$$(13) \quad v(z_1(t)) = \frac{F(z_1(t))t}{m_1} + v(z_1(t-1)).$$

Finally, F as a function of position can be defined by:

$$(14) \quad F(x_1(t)) = G \left( \sum_2^{\infty} \frac{(x_n(t) - x_1(t))m_1m_n}{((x_n(t) - x_1(t))^2 + (y_n(t) - y_1(t))^2 + (z_n(t) - z_1(t))^2)} \right),$$

$$(15) \quad F(y_1(t)) = G \left( \sum_2^{\infty} \frac{(y_n(t) - y_1(t))m_1m_n}{((x_n(t) - x_1(t))^2 + (y_n(t) - y_1(t))^2 + (z_n(t) - z_1(t))^2)} \right), \text{ and}$$

$$(16) \quad F(z_1(t)) = G \left( \sum_2^{\infty} \frac{(z_n(t) - z_1(t))m_1m_n}{((x_n(t) - x_1(t))^2 + (y_n(t) - y_1(t))^2 + (z_n(t) - z_1(t))^2)} \right);$$

where  $F(x_1(t))$  is the force of gravity on the particle in the x-direction,  $F(y_1(t))$  is the force of gravity on the particle in the y-direction,  $F(z_1(t))$  is the force of gravity on the particle in the z-direction,  $x_n(t)$  is the position of an  $n^{\text{th}}$  particle in the x-coordinate at time  $t$ ,  $y_n(t)$  is the position of an  $n^{\text{th}}$  particle in the y-coordinate at time  $t$ ,  $z_n(t)$  is the position of an  $n^{\text{th}}$  particle in the z-coordinate at time  $t$ , and  $m_n$  is the mass of the  $n^{\text{th}}$  particle.

These equations result in a system where the mass in consideration,  $m_1$ , can be analyzed with respect to all masses,  $m_n$ , in the universe. In order for the system to be fully modeled, it must fully incorporate all interactions of all matter in the universe, and thus all  $n$  particles would require their own calculations. Even the smallest of gravitational forces must be considered, if the model is to be precise. However, this can ultimately be approximated as Newton's Law of Gravity when objects are so proximal that they overwhelm all other forces; as their radial separation approaches zero, their forces with respect to each other will approach infinity and they will *bind into one seemingly indivisible particle*. This is how all matter of all sizes is created.

The precise location, velocity, and acceleration of all particles at all times in an infinite universe can be defined by Eqns (8) to (16), once given initial conditions. This arrives at a model where the precision is absolute; there is *no approximation*, albeit we simply cannot expect to ever model accurately due to Chaos theory.

While other models, such as [Friedmann Equations \(9\)](#), can accurately model what we observe locally, they do not encompass *all of matter in the infinite volume of space and the infinite possible arrangements thereof*; in order to do so, the interactions of all of matter in the infinite volume of space must be fully accounted for. As each system is in itself a system composed of infinitely smaller systems, each individual system can be approximated as one system but this is solely an approximation. No systems are truly one indivisible component, but instead they are a system of divisible components where each is gravitationally lensed due to proximity such that they cannot escape one another. Therefore, the particles observably act as one to an observer sufficiently above their level of existence. Herein, all observable and non-observable levels: [photons](#), [quarks](#), [hadrons](#), [neutrinos](#), [electrons](#), [nuclei of atoms](#), [planets](#), [stars](#), [black holes](#) etc. are varying "levels of existence". The Universal Principle of Natural Philosophy states that there is no such thing as an elementary particle. Instead, [elementary particles](#) are an *observed* characteristic of the universe when we attempt to look more closely and reach a limit where we can no longer observe divisibility of the components.

This means that photons *are particles*. Firstenberg et al. demonstrated that photons can be shown to travel as massive particles (10). In their experiment, they “achieve this through dispersive coupling of light to strongly interacting atoms in highly excited [Rydberg states](#).” This is done in a near vacuum, where the temperatures are near absolute zero. In such conditions, the relative mass of the photon is much higher than in normal conditions, particularly with regard to the strongly interacting atoms used for coupling. This allows for experimentally observing the mass of the photon.

The Universal Principle of Natural Philosophy states that gravitational redshift and lensing can be redefined. Regarding gravitational redshift, when photons are moving away from a source of gravity the *particles* are literally slowed down because they have mass thereby producing a redshift. It is noted that we cannot measure the variation in the *velocity* itself, but only indirectly by observing the redshift can the change in velocity be detected. Much the same, when photons are moving towards a source of gravity, the photons are sped up unobservably with regard to their velocity, producing an observed blueshift.

Gravitational lensing is a result of the additive gravitational force in directions perpendicular to the direction of travel of the photons. Once a photon’s path of travel begins to curve with respect to a source of gravity, the force of the source of gravity can pull on the photon which causes it to be lensed more rapidly, the degree of which depends directly on the energy (mass) of the photon.

There is a limit to how small we can measure the mass of a system, and photons are past this limit, therefore we do not generally perceive their mass. However, we can perceive their energy, which is a measure of mass as was shown by Einstein’s  $E=mc^2$ . The very existence of this correlation shows that energy (such as a photon) is composed of mass, just as it shows that mass is composed of energy.

Philosophically, this should not be ignored in view of our limited observational abilities. Photons must not travel the [speed of light](#) precisely. What *is* the speed of light? This is the *limit of which all matter approaches*. In other words, nothing truly achieves the speed of light. The “speed of light” is herein defined as the limit of motion of matter. When photons are observed, they are moving sufficiently fast that they are *observed as moving the speed of light* for an observer a sufficient number of levels of existence above the photon that they cannot experimentally decipher the difference. This can be envisioned as a curve that approaches a limit at the “speed of light”. There comes a point where the line of the curve approaching the limit and the limit itself are so close that an observer simply cannot see the difference. However, if one were to “zoom in” on the portion of the curve closest to the limit—by relatively approaching the speed of light—they would once more see the limit is not reached, but instead again has the same overall shape as the previous curve. This, too, would have an observed point closest to the limit where the speed of light appears to be reached. Once more, “zooming in” on the curve by once more relatively approaching the speed of light will result in an observed curvature that appears the same as the

first. Indeed, all matter in the universe is moving so close to “the speed of light” that an observer in a level of existence sufficiently above the matter would *observe* the motion as truly reaching “the speed of light”, when in reality this is a misconception of the fallible observer. Nothing moves “the speed of light”; it is an unachievable *limit*.

### 3. EVIDENCE

The paper will now introduce the observational evidence of the large-scale structures of the universe to provide support for the Universal Principle of Natural Philosophy. In order to understand the observation of all distant redshifted galaxies in all directions, the recognition that gravity is causing the cosmological redshifts in general must be first realized.

#### 3.1) Cosmic Microwave Background

The system as defined by the Universal Principle of Natural Philosophy is a galaxy of galaxies. The universe has observably been shown to be flat. See, for example, Bernardis et al. [\(11\)](#). The Universal Principle of Natural Philosophy shows this is because it *is a galaxy of galaxies*. The center of mass of the system will be evidenced to be what is currently known as the [Great Attractor](#). Analysis of *galaxies* can be done to show the likely grander structure of a *galaxy of galaxies* in order to explain the [Cosmic Microwave Background](#) (CMB). This is the first of many such occasions of philosophically using a [Principle of Correspondence](#) between levels of existence: it is assumed that the CMB is caused by a [gas cloud halo](#) around our *galaxy of galaxies*, which is the structure of a galaxy. The Principle of Correspondence herein is such that all levels of existence have the same structural characteristics, simply observed differently by an individual observer.

The CMB shows evidence of a dipole as depicted in Figure 1:

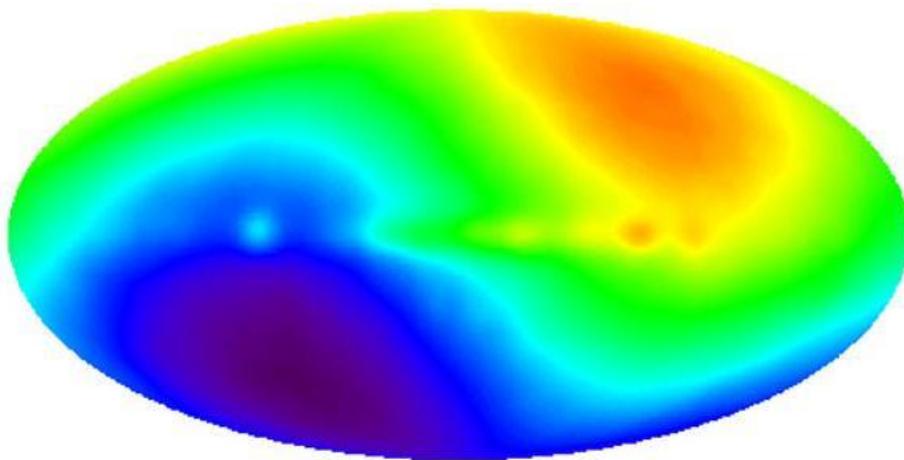


Figure 1: [Dipole](#) in CMB [\(12\)](#).

The Big Bang theory explains the dipole of Figure 1 as a result of our motion with respect to the CMB ([13](#), [14](#), [15](#)). However, this is a misconception due to the assumption of Doppler shift.

In the CMB dipole, light from the direction of the Great Attractor is gravitationally redshifted by the Great Attractor towards the focal point along the Great Attractor-Earth axis, where the center of the redshift has the highest redshift value. Inversely, the light from the direction opposite is blueshifted in the same but opposite manner.

The anomalies are critical evidence for gravitational redshift and not Doppler shift causing the cosmological redshift of the CMB dipole, as previously assumed. There are two [trajectories](#) from a single source that photons can take to reach Earth. In other words, there is a “low-angle” and a “high-angle” that the photons can take where both would arrive at the same destination from the same source. This can be envisioned as shooting two cannonballs from the same location on Earth at a set velocity at different angles whose trajectories meet; where their trajectories meet would be the “destination” and the angles at which they meet represent where they appear in the [celestial sphere](#). No other angles can reach the destination from a given source at a given velocity but those, and therefore there are two paths light can take from a source to reach Earth. The two-angle phenomenon is an essential consideration for understanding why the CMB dipole and other observations are in agreement with the Universal Principle of Natural Philosophy.

Using the current model and the prediction that the CMB is caused by a *galaxy of galaxies’ halo*, the cause of the anomalies can be immediately recognized through the Principle of Correspondence: *Another galaxy of galaxies in the halo of our galaxy of galaxies*. Earth must be located *generally between the systems*. This can be explained with a simple representation of the total redshift:

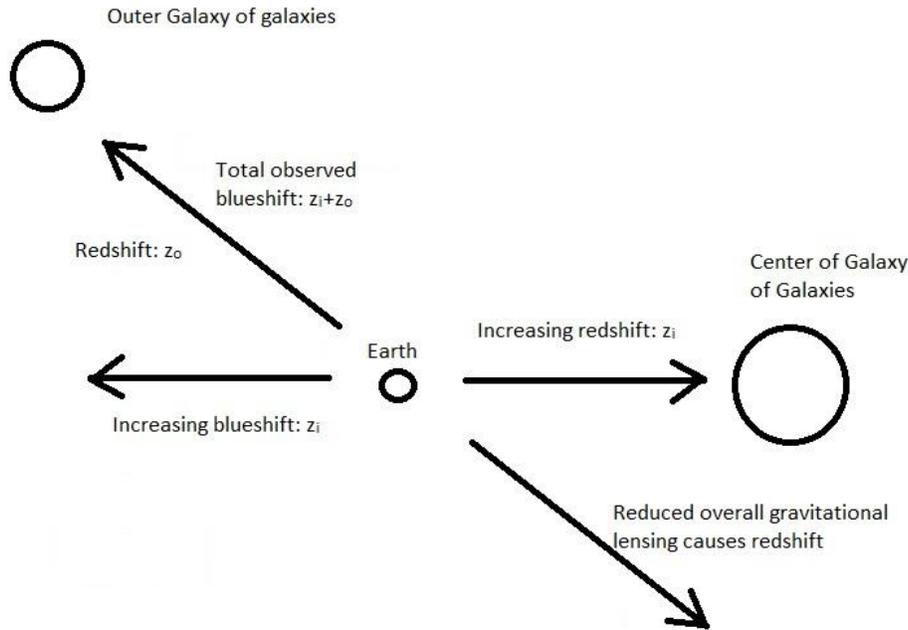


Figure 2: Total redshift caused by our twin galaxy of galaxies and our galaxy of galaxies.

As shown in Figure 2, the redshift in the outer direction of the celestial sphere will be the total redshift as calculated by:  $z_i + z_o$ , where  $z_i$  is the redshift of the Great Attractor and  $z_o$  is the redshift of the “outer” galaxy of galaxies. As the redshift effects of each system are *relatively opposite*, the light blue anomaly and the green anomaly (depicted on the left half of Figure 1) will occur due to the outer galaxy of galaxies’ redshift effects which cause the “low-angle” and “high-angle” trajectory of the light as discussed above. The existence of the two angles is essential to note, as this is crucial evidence of gravity being the cause of the observed redshift of the CMB dipole over Doppler effect. If the redshift were caused due to motion, these anomalies would only occur in one location. While they may appear as statistical anomalies with respect to the Big Bang theory, they are distinctly real in view of gravitational lensing and redshift.

Additionally, there are *two other locations at which the redshift occurs*, as depicted on the right half of the CMB dipole of Figure 1. Initially, the outer galaxy of galaxies would cause a blueshift in this direction. However, there are *two interactions of light and gravity*. The distant outer galaxy of galaxies’ gravitational lensing reduces the overall gravitational lensing effect caused by the Great Attractor along the outer galaxy of galaxies’ axis, especially because the photons are in a “free-fall” towards the outer galaxy of galaxies when traveling in this direction.

This causes the distance viewable from Earth to “stretch” in a direction generally towards the Great Attractor, as shown in Figure 2. By seeing further, we therefore see more redshift *due to the gravitational redshift of the Great Attractor*. As the Great Attractor is much more proximal, its effects are more prominent as gravity is an inverse function of  $r^2$  as per Equation (1). Note once more that there are two anomalies because there are *two paths from a single source that will arrive at Earth in which redshifting can travel* due to gravitational lensing.

Additional evidence can be found by the local dipole.

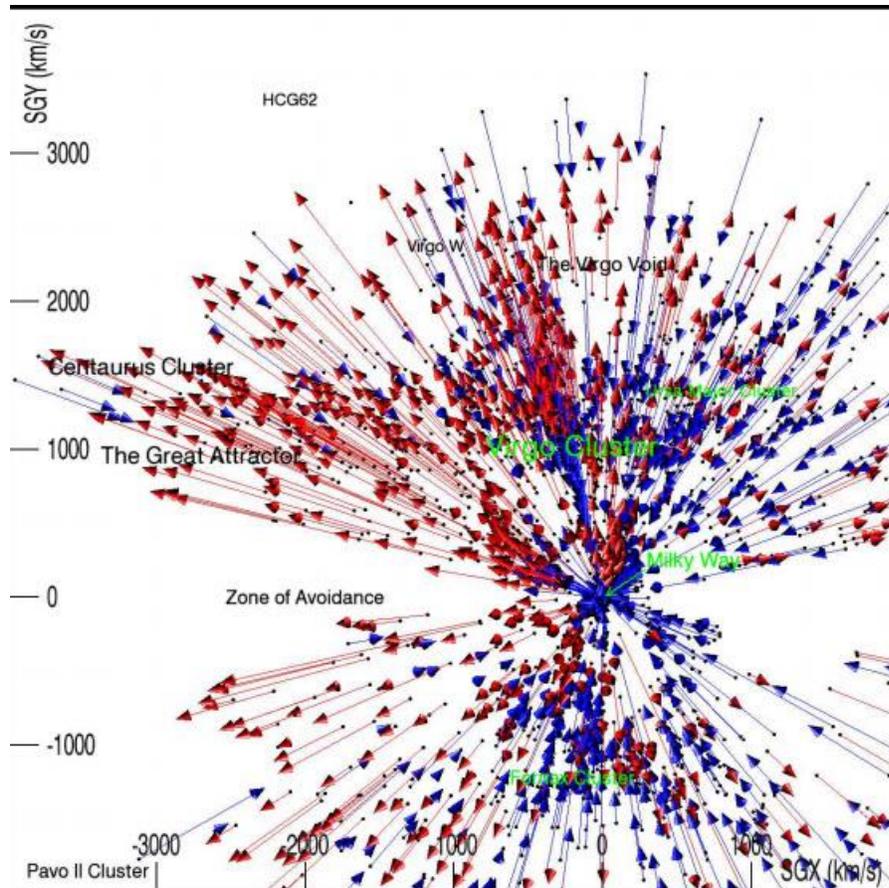


Figure 3: Dipole of local galaxies as shown by Courtois et al (13).

As Courtois et al. showed in Figure 3, there is a dipole where about half of the celestial sphere’s local galaxies are largely redshifted directly towards the Great Attractor and the other half’s are largely blueshifted, in accordance with the Universal Principle of Natural Philosophy.

Additionally, the local group has been shown to have a local void above and below (13). This is shown by the Universal Principle of Natural Philosophy to be the direct result of *the disc structure of the galaxy of galaxies*. Because the galaxies are significantly closer, they are exposed to the gravitational lensing effect far less, and are therefore much more accurately positioned in

the night sky. This results in the ability to actually *see a disc structure within observations skewed by substantial gravitational lensing*.

The above provides support for the theory that the CMB is caused by a halo gas cloud around the galaxy of galaxies because there is distinct evidence of another galaxy of galaxies in the halo. This also follows because, at great distances, a gas cloud would appear very uniform, as we observe with the CMB. The outer galaxy of galaxies will be further evidenced below.

### 3.2) Supercluster Filament Structures

There are [supercluster filament](#) structures which appear to converge on the [Centaurus cluster](#), directly in the direction of the Great Attractor. It was concluded that the Great Attractor is pulling all galaxies towards it, but this is a misconception of the cause of the redshift observations.

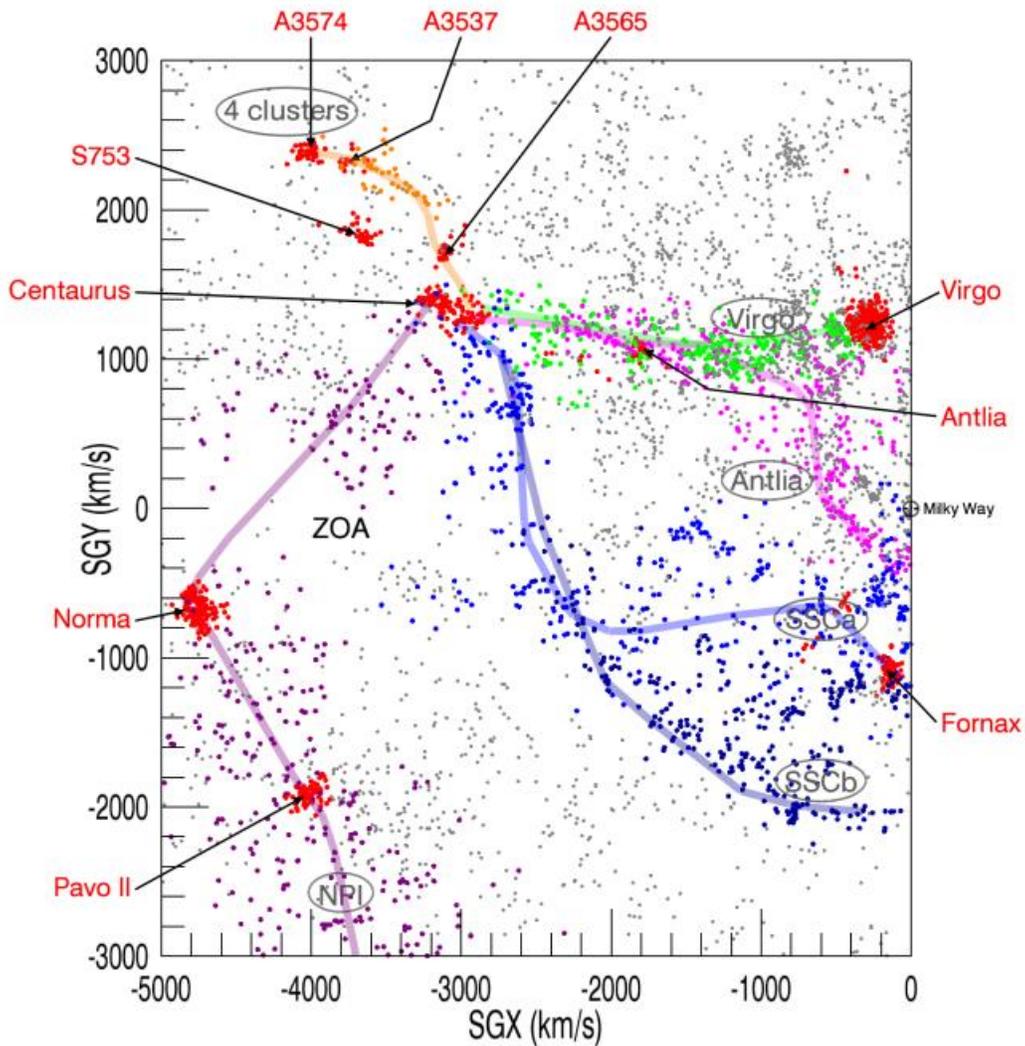


Figure 4(a): Courtois et al. (13) show superclusters and filaments in x- and y-directions.

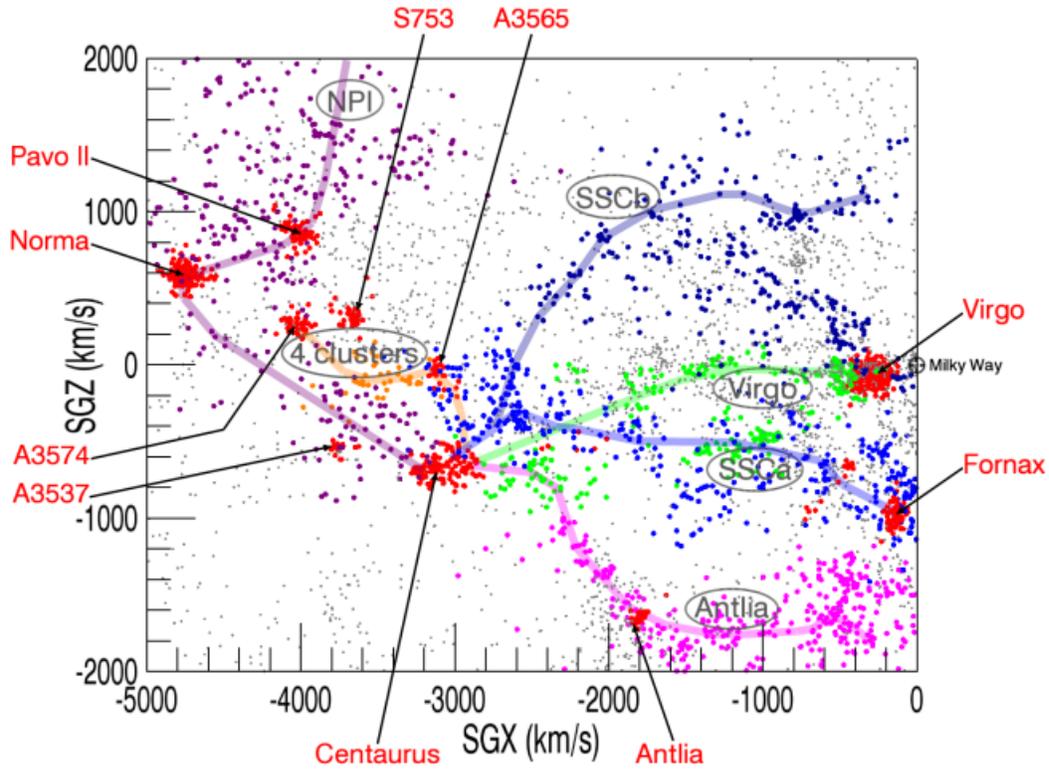


Figure 4(b): Courtois et al. (13) show superclusters and filaments in x- and z-directions.

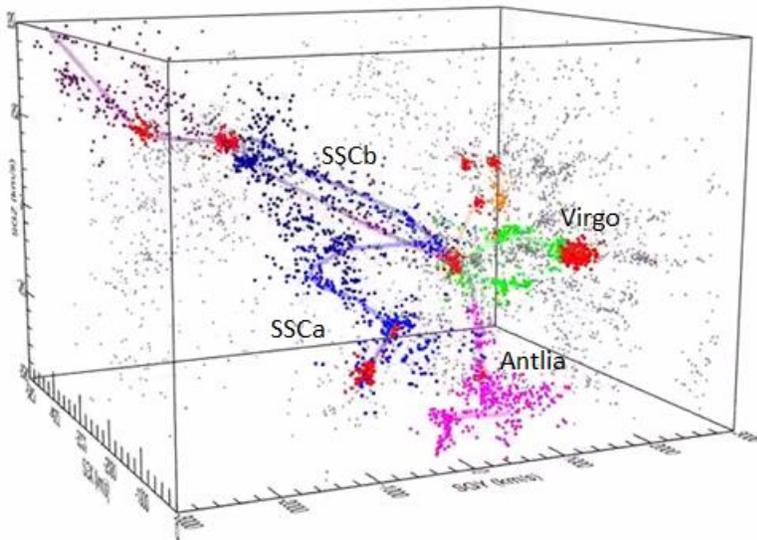


Figure 4(c): Superclusters and filaments as depicted by Courtois et al. (13) in their accompanying video, “Cosmography of the Local Universe” (16), published on Youtube, where Figure 4(c) is extracted from 9:20 of the video to provide a “head-on” view towards the Great Attractor.

As is shown by the filaments which snake away from the Centaurus cluster in Figure 4 by Courtois et al., there is a “moving” [Einstein Cross](#) in the galaxies where each portion of the cross—SSCa, SSCb, Antlia and Virgo superclusters—follows a parabolic shape from the Great Attractor which is located at the Centaurus cluster generally towards and around Earth, Earth being located at (SGX, SGY, SGZ) position of (0, 0, 0). The system is much more complex, particularly due to the outer galaxy of galaxies, but it is substantial enough to be immediately obvious in view of the Universal Principle of Natural Philosophy. Additionally, there is a filament beyond the Great Attractor thought to be moving towards the Great Attractor as well, and a filament, NPI, which will each be explained below.

Current models label these structures supercluster filaments. We recognize with the Universal Principle of Natural Philosophy that these are, instead, *curves of gravitational lensing formed as the angle of inclination required to reach Earth changes and the position in the celestial sphere where the galaxies are observed sweeps across the sky.*

The system of the disc of the galaxy of galaxies can observably be cut in half along the axis between Earth and the Great Attractor; light on each side would follow paths due to gravitational lensing. Herein, “disc” does not necessarily define a flattened sheet of a spiral galaxy of galaxies but may also include a rotating body alike to an elliptical galaxy or irregular galaxy. Each side of the disc of the galaxy would produce the *two-angle phenomenon* of redshifts within the Universal Principle of Natural Philosophy, *resulting in four superclusters: SSCa and SSCb—superclusters to the left half of Figure 4(c), and Virgo and Antlia—superclusters to the right half.* The Great Attractor lenses the light beyond it in what appears to be another supercluster filament, of which consists of another Einstein cross of four clusters of galaxies: A3574, A3537, A3565, and S753. The NPI supercluster can be explained also by the two-angle phenomenon. Galaxies at the Great Attractor in the Centaurus cluster can emit light to the right half of Figure 4(c) that travels approximately directly away from the Great Attractor and towards Earth that will reach Earth with an apparent position in the Centaurus cluster. However, they can *also* emit light in the very large parabolic shape shown in the bottom half of the Wiener filter model which forms so far apart due to the gravitational lensing of the outer galaxy of galaxies. This provides the two additional observed clusters, Norma and Pavo II, which are really the “low-angle” and “high-angle” of the alternative path of the light from the Centaurus cluster that is not directly towards Earth. The observed superclusters are therefore in agreement with the Universal Principle of Natural Philosophy.

### **3.3) Local universe gravitational lensing**

If the system is a galaxy of galaxies where the Great Attractor gravitationally lenses light around it, the interaction of the center of mass with the light that arrives at Earth would necessarily follow a general pattern as shown in Figure 5:

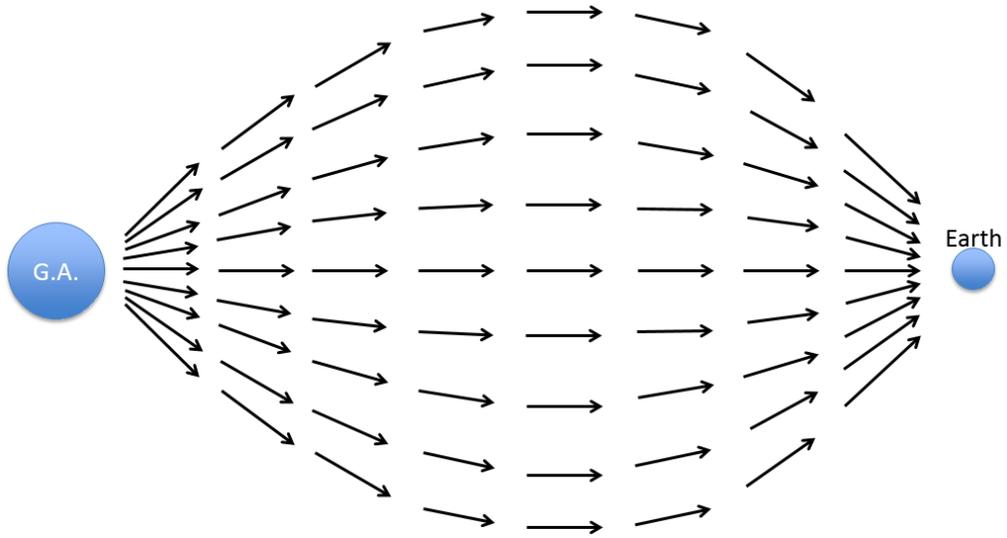


Figure 5: Gravitational lensing of light in the system lensed by the Great Attractor that arrives at Earth.

Returning to the work of Courtois et al. [\(13\)](#), it has been shown that precisely the structure of Figure 5 exists between Earth and the Great Attractor:

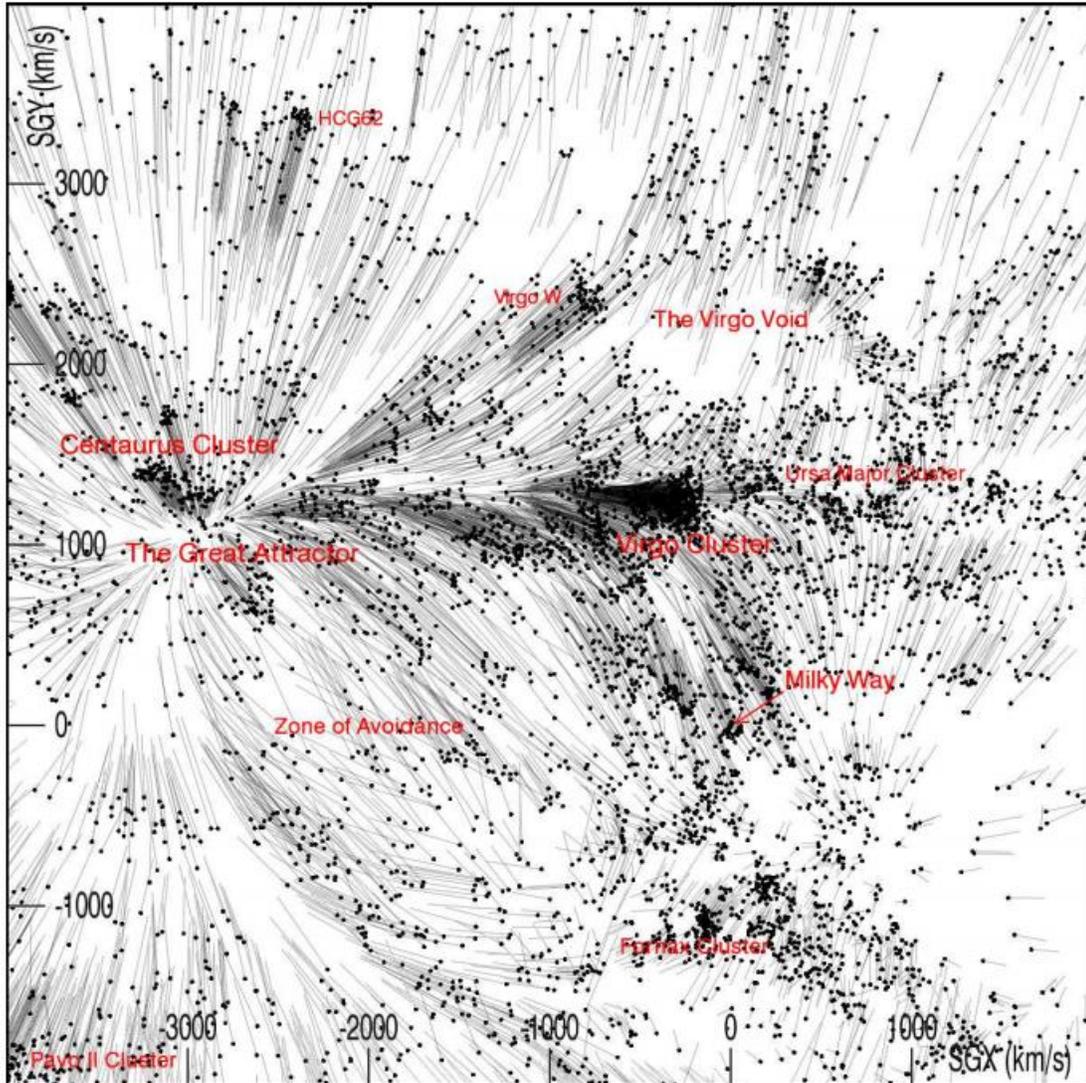


Figure 6(a): Wiener filter flow model Courtois et al. (13) showing flow in the x and -directions towards Great Attractor in view of Doppler shift assumptions. The Universal Principle of Natural Philosophy shows these are curves of gravitational lensing.

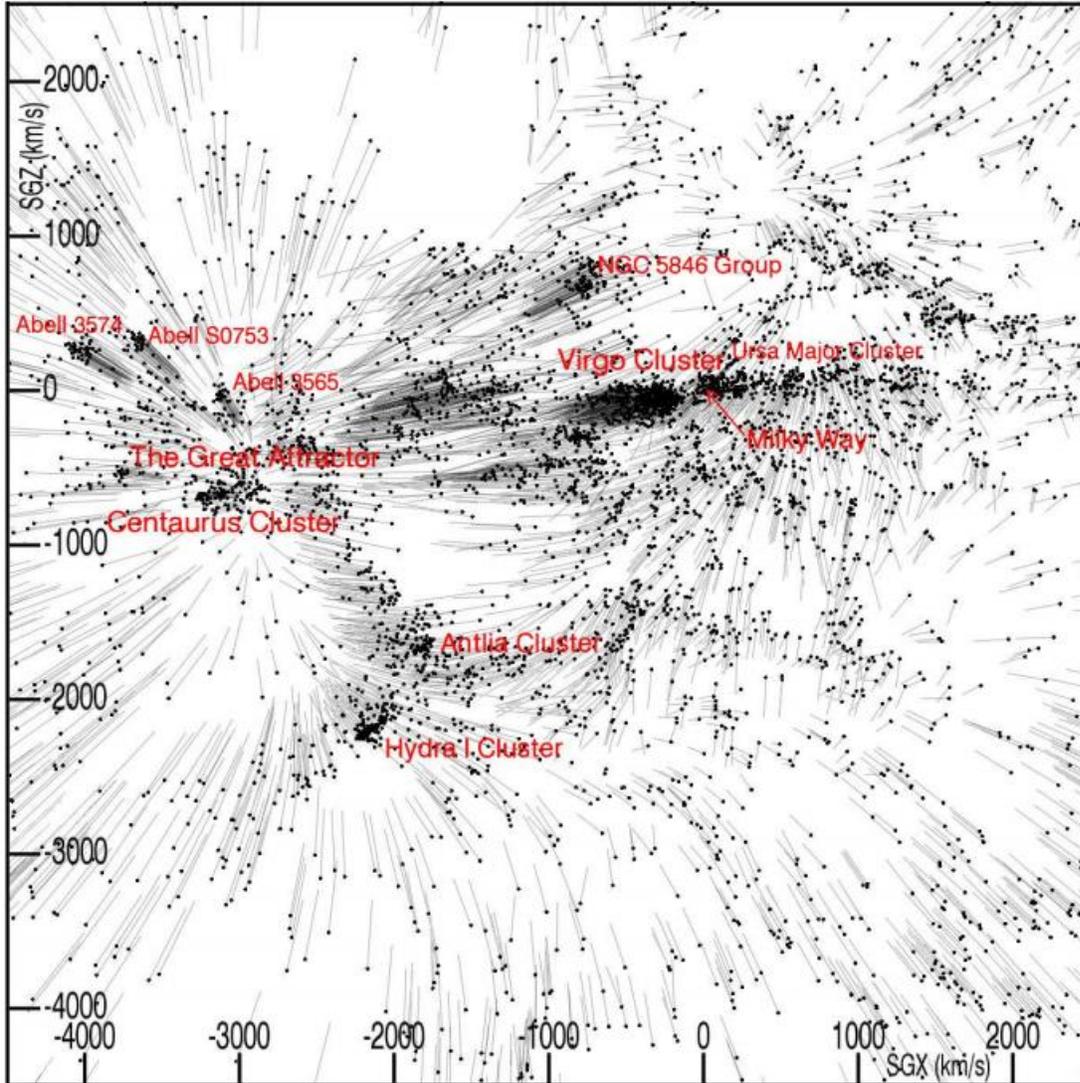


Figure 6(b): Wiener filter flow model Courtois et al. (13) showing flow in the x and z-directions towards Great Attractor in view of Doppler shift assumptions. The Universal Principle of Natural Philosophy shows these are curves of gravitational lensing.

As was necessary in view of the previously accepted model of the Big Bang theory, Courtois et al. assume that Doppler shift is causing a flow of galaxies in Figure 6. However the Universal Principle of Natural Philosophy shows that the gravitational lensing of light is instead causing the flow patterns; no such flow of *galaxies* exists, only the flow of light. This will be further elaborated on in Section 3.4.

As was shown with the CMB Dipole of Figure 1 and discussed above, an outer *galaxy of galaxies* exists. The Wiener filter flow model shows that the system of Figure 6(a) is stretched towards the bottom direction of Figure 6(a) in the portion labeled Zone of Avoidance with respect to the expected paths of Figure 5. This is *because of the gravitational effects of the outer galaxy of galaxies, as evidenced by the CMB dipole.*

The effect of the outer *galaxy of galaxies* on the observed redshift is evidenced because although the [Fornax cluster](#) has a distance from Earth very similar to that of the [Virgo cluster](#), its redshift is considerably higher ([17,18](#)). In fact, the Virgo cluster's redshift is said to produce a recessional velocity, due to the assumption of Doppler shift, of  $980 \text{ km s}^{-1}$ , while the Fornax cluster's assumed velocity due to redshift is calculated as  $1340 \text{ km s}^{-1}$  ([17,18](#)). This is because the outer galaxy of galaxies is redshifting light from the Fornax cluster while *blueshifting light from the Virgo cluster*.

### **3.4) Electromagnetism and distant redshifts**

In order to fully understand Figure 6 and the observation of all distant redshifted galaxies in all directions, the system must be fully explained. The Universal Principle of Natural Philosophy makes it clear that the fundamental laws of nature must be the result of gravity because the levels of existence of the universe are related through a Principle of Correspondence, and gravity is the only force we measure on such vast scales as the cosmos. Therefore, electromagnetism *must be a result of gravity*. Through understanding electromagnetism, all distant redshifted galaxies in all directions will be explained completely using gravity alone.

The [electromagnetic field](#) of a body, say the sun, is considered in view of the Universal Principle of Natural Philosophy. The universe cascades infinitely downward therefore there will always be smaller particles. The relatively intense pull of the gravitational field of the sun will flow these particles toward its center. This results in an approximately steady-state bulk flow of particles into and out of the sun because there comes a point when the particles are so small that they do not interact with the sun's components, which are fundamentally composed of much larger particles. This means the space between areas of density, such as in the empty space of the atoms, is sufficiently large that the particles can pass through, to a degree, without combining into a larger system due to gravitational lensing between the particles within the Sun. The gravitational pull of the Sun will lens the particles back inward on itself due to imbalances in gravitational fields that would necessarily exist that allow for the lensing to begin, the rate of lensing being directly dependent on the various masses of the particles which results in the observation of many flow fields. These flow fields are each composed of a flow of particles stuck in a "Figure-8" pattern about the center of mass, gravitationally bounded to the system. This flow of mass then can interact with flows of mass in other systems. If the flows are in the same direction, they will merge into one larger stream of mass, and this will pull the bulk material of each system, which are suspended in space, together like a zipper; this is the fundamental cause of magnetic attraction. Alternatively, when the flows are opposite, they will function alike to two streams of water which run directly into one another; there will be a back-pressure due to the turbulence where they contact. This back-pressure is the fundamental cause of repulsion of two systems suspended in space, therefore it can be shown that [electromagnetism](#) is fundamentally the result of gravity according to the Universal Principle of Natural Philosophy.

This helps us to understand the observation of all distant redshifted galaxies because it shows us that the photons in the system are in a gravitational flow *through the center of the Great Attractor* and can travel in a “Figure-8” pattern, alike to as occurs in electromagnetism, for long periods of time before they happen to land upon Earth where they are then observed. The Great Attractor is much denser than the sun, therefore the empty space between each mass is much greater because the individual masses are much larger, which allows for photons to pass through the system alike to the electromagnetic field particles of the sun. This is particularly evidenced by Figure 6. When recognizing that the photons operate as an electromagnetic field would, then it is clear in the Wiener filter flow models that the models provide *a representation of the [electromagnetic field](#) of the Great Attractor*.

Operably, the photons are constantly fluxing inward and outward, therefore the overall blueshift and redshift effect of the motion radially will be approximately zero. However, when the photons are lensed by the Great Attractor after exiting, they are lensed into a temporary “orbit” where they cannot escape *even though they [try](#)*. It is during this portion of the motion where a certain degree of redshift is produced with each revolution, before they once more “free-fall” back to the Great Attractor. This is therefore directly proportional to distance traveled, and thus capable of producing observations that match [Hubble’s Law](#). When the photons arrives at Earth, they can arrive at *any point in the process of lensing*. In other words, they may arrive directly from the Great Attractor, or they may arrive while they are in motion back towards the Great Attractor. This results in an observation of all distant redshifted galaxies *in all directions*.

### 3.5) Weak Interaction

[Weak interaction](#) is currently a [fundamental law of nature](#). The Universal Principle of Natural Philosophy states it is the result of gravity. Weak interaction causes [radioactive decay](#).

The Universal Principle of Natural Philosophy makes it clear exactly what radioactivity is, once we recognize that it is a result of cosmological activity. This is the process of *turning non-observable mass in the system back into observable mass, some of which escapes the gravity of the system because it is gravitationally lensed less*. In higher density systems such as an element that is high on the periodic table, the system will produce *more observable mass due to its relative density which necessarily increases the rate mass is drawn to it and transferred to observable mass through gravity*. Therefore, “instability” of such systems is a function of the density of the nucleus which in turn produces *more observable mass from the unobservable mass it collects*. This is how beta particles, and all other radioactive emissions, are created and emitted. In doing so, the system is fluctuating in steady-states until it reaches a point where the [radioactive element decays](#) because its *overall mass fluxes through these particle emissions to a degree where it can no longer remain stable*. For instance, uranium-238 decays, by way of thorium-234 and protactinium-234, into uranium-234. This is because the system is expelling energy within it until it can no longer operate in the steady-state of uranium-238, it must decay to the next level down where less energy is in the system; alike to a *supernova of an upper limit massive star*. Indeed, supernova luminosity

is known to literally be the result of radioactive decay within the star (19). Therefore, radioactive decay and supernovae of upper limit massive stars are the *same* phenomenon, both explaining how weak interaction is the result of gravity, through the Principle of Correspondence.

### 3.6) Strong Interaction

[Strong interaction](#) is the last [fundamental law of nature](#). The Universal Principle of Natural Philosophy, as with electromagnetism and weak interaction, states it must be the result of gravity. Strong interaction causes subatomic particles in the nucleus to remain bounded through nuclear fusion. Nuclear fusion is thought to occur generally at the center of a star, where bulk flow of materials of the electromagnetic particles, and all other masses, are centralized. As distances apart are much more likely and able to approach zero, such that masses may gravitationally lens and bind to one another gravitationally, this allows for nuclear fusion to occur on a sufficient scale to create observable mass.

[Quasars](#) are said to be the most luminous objects in the sky (20). This is because *we calculate their distance from Hubble's Law*, and luminosity is a function of distance. The Universal Principle of Natural Philosophy recognizes that the redshift is not a measure of distance. This is because there are *no local quasars visible*, this necessarily means they must exist *within the Great Attractor*. That quasars occur *within the Great Attractor* is further evidenced by Halton Arp, who recognized that the quasars may not be as far away as we believe, our beliefs based on a direct calculation of distance through redshift and Hubble's Law (21). Quasar redshifts are observably high, which must be the direct result of what quasars *truly are*, as it is clear they do not follow Hubble's Law if they exist in the Great Attractor. Quasars are known to derive their energy from mass falling onto the accretion disc. They tend to exist at the center of *very active and young galaxies*. Knowing that the Milky Way is in orbit about the Great Attractor, and that a level of existence is composed of levels below it, it can be seen that the Milky Way functionally is equivalent to a lower level such as an atom on the Great Attractor. Therefore, *quasars must represent the formation of new atoms (galaxies) through nuclear fusion*, providing another example of the Principle of Correspondence.

Therefore, there is only one fundamental law of nature: gravity. Given an infinite amount of divisible mass and volume, gravity is the only force of nature necessary to cause the observable universe to arise. All other observed characteristics of nature *are the result of gravity and its effects on mass*. This is philosophically supported by [Occam's Razor](#).

### 3.7) Gravitationally bounded galaxy clusters

The [Virgo cluster](#) is the closest gravitationally bounded galaxy cluster. This *produces the Fornax cluster*. The Fornax cluster, which is approximately the same distance from Earth as the Virgo cluster (17,18), can be divided into [two subclusters](#) (22). This is *because of the two-angle phenomenon of gravitational lensing* as a result of the Virgo cluster. The Virgo cluster provides additional gravitational lensing effects which cause "cluster" observations to occur due to the light

being pulled into an asymptote towards the Virgo cluster relative to other directions of flow of light. This causes more light to arrive at smaller portions of the celestial sphere than normal, resulting in the observation of *two* subclusters of galaxies due to the Great Attractor and Virgo cluster system.

The [Coma cluster](#) is another gravitationally bounded galaxy cluster. It is known to have a single X-ray source near its center (23). This provides substantial evidence that it is another higher level of existence, alike to the Virgo cluster and Great Attractor, and that there are such relatively vast individual gravitational sources.

The [Shapley Supercluster](#) is the largest nearby gravitationally interacting group of galaxies (24). There is speculation that it is alike to the Great Attractor. Once more, it is clear in view of the above evidence that this must be yet another such system as the Great Attractor.

Therefore, gravitationally bounded systems such as these *are* higher levels of existence. It appears that the Virgo cluster therefore is the Milky Way's *direct* center of mass, which then orbits the Great Attractor, given its proximity and relative size. Distant clusters therefore likely do not follow Hubble's Law because their light is not flowing through the Great Attractor in the same continuous Figure-8 pattern, much the same as quasars. Therefore, it is unlikely that distance calculations using Hubble's Law are accurate. These clusters additionally provide locations for quasars to originate that are not within the Great Attractor.

### 3.8) Dark Matter, Dark Energy, Pulsars

[Dark Matter](#) is considered nonluminous matter which can be detected by its gravitational effects (25). This is immediately realized to be the infinitely cascading systems below our own. These are so low in energy that we do not perceive their radiation, but we do observe their overall gravitational effect on the system. This gives meaning to how important the summation of all gravitational forces of Equations (14) to (16) truly is to understanding the overall workings of the universe.

[Dark Energy](#) currently explains the acceleration of expansion of space, which is fundamentally due to the observation of an accelerating *rate of cosmological redshift* with distance (26). However, the Universal Principle of Natural Philosophy shows precisely what is happening. When a photon is locked in the gravitational "Figure-8" orbit of the electromagnetic field of the Great Attractor, it is redshifted with each revolution as discussed above. This is an observation of the *reduction in the velocity of the particles*, which we cannot measurably detect at speeds so close to  $c$ . With each revolution, then, the photon must travel at a radial distance that is less than the last because the velocity is reduced relative to the previous revolution's velocity. This results in the degree of redshifting, which is inversely proportional to  $r^2$ , to increase over time because the radius that the photons can travel outward is reduced and thus the degree of redshift is increased during each orbital portion of the "Figure-8", which results in the observation of an increasing rate

of cosmological redshift that led to the introduction of dark energy into the current cosmological model.

[Pulsars](#) were discovered in 1968 and are now described as being highly magnetized, rotating [neutron stars](#), having poles which emit electromagnetic radiation (27). It is clear from the Universal Principle of Natural Philosophy that these are stars which are massive enough to lens *most* of their emitted light out of a path to Earth, but the poles—where lensing is least, as evidenced by an [electromagnetic field](#)—do not sufficiently lens the light, such that we observably can see the pulsing of the poles while the remainder of the star’s light is lensed from our view.

### **3.9) The high abundance of light elements in distant galaxies and galactic evolution**

The Universal Principle of Natural Philosophy does not presume an age of the system of which we are part, for the universe is eternal. Instead, it recognizes fluctuations in systems occur and *no single system is permanent*. Likely, the distant galaxies, which have high abundance of light elements, were formed when the individual system of which we are part was in its infancy and thus abundance of light elements was at its highest, their light “trapped” in the system for billions of years due to gravitational lensing.

Galactic evolution fits perfectly with the Universal Principle of Natural Philosophy. Systems form, evolve, and are recycled when they are no longer functional. The evolution of galaxies, from high abundance of light elements to relatively low abundance, is the logical flow of the evolution of galaxies in the Universal Principle of Natural Philosophy, where systems are constantly in flux.

The combined evidence presented herein shows there is no question that gravity causes all observations, doing so without the introduction of the expansion of space. Occam’s Razor requires the Universal Principle of Natural Philosophy to therefore be fully realized.

### **3.10) Entropy**

The systems are therefore *recycling the energy locally due to the electromagnetic bulk flow*. [Entropy](#) is a measure of the disorder in a system; the universe appears to prefer disorder. However, this is recognized to be a *recycling process*. Heat radiation is fundamentally the loss of *mass* of the infinitely cascading systems below our perception from the system being measured.

For example, radiation from the Earth will, at least in part, be lensed by gravity inward onto the sun. This, then, is recycled and once more used to shine energy down upon the Earth from the sun. The sun’s energy is, in part, recycled by the black hole of the Milky Way. The black hole of the Milky Way then radiates energy down onto the sun. The Milky Way’s energy is lensed to the Great Attractor. The Great Attractor then radiates energy down on the black hole at the center of the Milky Way. This recycling process allows for the universe to be eternal in existence,

while constantly creating anew across all the levels of the universe. This is philosophically necessary, as a finite universe is illogical.

Additionally, a given level will always protect levels below with its electromagnetic field from the higher energy of above systems, acting as a cocoon. For example, the sun protects Earth from the intense radiation of the black hole of the Milky Way, which protects the sun and the Earth from the intense radiation of the Great Attractor. Ultimately, the life of celestial bodies and creation of the elements, according to the Universal Principle of Natural Philosophy, must be further evaluated to understand the role of this electromagnetic bulk flow recycling system in extending the longevity of an individual system.

### **3.11) Superfluidity**

It is known that as temperatures approach absolute zero Kelvin in a system, the components *act as a [superfluid](#)*. Superfluids appear to defy gravity and surface tension ([28](#), [29](#)). However, the Universal Principle of Natural Philosophy explains this precisely. The internal energy within the system, as temperature approaches absolute zero, approaches zero. This is the result of removing the infinite systems below the observable; nearly all the mass of the system is removed, when creating a vacuum to reach such low temperatures, leaving only the upper layers which we observe. As shown by Equation (1), when  $m_1$  approaches zero, the force of gravity, too, approaches zero. Therefore, it does not “defy” gravity as much as it has nearly zero mass producing gravitational interactions; the force of gravity *is* observably essentially zero. Surface tension is a result of gravity; with essentially no gravitational interaction between the systems, there would be no surface tension for the component operating as a superfluid.

### **3.12) Quantum Entanglement**

[Quantum Entanglement](#) is the thought that an entangled pair is somehow communicating with itself such that they are able to “know” when the other is measured, even at distances and times that would require communication above the speed of light ([30](#)). The Universal Principle of Natural Philosophy theory explains this interaction. As shown by Equation (1), particles proximal enough will become gravitationally bound to one another. In becoming bound, they will orbit one another due to their velocities. This is currently defined as an entangled pair. Einstein suggested the [hidden variables theory](#), that the outcome of the spin measurements was determined at the moment of separation. This is precisely what is happening, as shown by the Universal Principle of Natural Philosophy. The particles are *gravitationally bound* and when they are separated, they maintain their spin momentum. This explains why the total energy and momentum are conserved: the system never was a single system, but instead a pair of gravitationally bounded systems.

### **3.13) Double-slit Experiment**

The [Double-slit experiment](#) is a well-known paradox. In the experiment, light can be shown to behave such as a wave *or* a particle. This arises in the [wave-particle duality](#) of light.

To test this, single photons are sent through double-slits, unobserved, which arrives in an [interference](#) pattern (31). Knowing that gravity is the means by which all things occur, fundamentally, then it is clear that once more gravity is at work. The photons can pass through any portion of the slit to arrive at the observed interference. Those at the center of the slit will be gravitationally lensed very little, but as the photon passes closer to the wall of the slit, the lensing effects are increased because gravity is an inverse function of  $r^2$  and therefore is much more prominent as  $r$  decreases to zero. Those approximately at the center are equally lensed by both sides, thus no deflection occurs, but those that approach a side are lensed unevenly. This, given sufficient single photons, would result in a wave pattern, which would result in an interference pattern when both slits are considered.

The real test lies in the removal of the interference with an observer. [Polarizers](#) used to show “which-way” are immediately within the explanation of classical physics; if the light travels in the x-direction, the y- and z-direction amplitudes are reduced by the horizontal or vertical polarization in each respective slit. This causes the removal of the interference pattern because it arises as a result of the additive amplitudes, so when one is very low it does not substantially affect the other.

Moreover, an attempt to detect a particle requires adding energy to the system. When attempting to observe a particle, energy must be combined with the object being observed, and if the energy is sufficient it will produce an observed particle pattern. If the energy is not sufficient, it will produce a partial interference pattern, because the degree of gravitational lensing is lessened but not sufficiently to fully remove the interference pattern. This is ultimately because the degree of gravitational lensing in the system of higher energy is reduced because it has a higher mass, thereby resulting in a particle pattern, given sufficient energy.

It is important to note what a wave *is* in the experiment, as this is evidence for the Universal Principle of Natural Philosophy in and of itself. Because the universe cascades infinitely, it can be assumed that a wave of light on our level of existence consists of many individual systems. When the light passes through an opening, the systems which are closest to the boundaries of the opening are literally gravitationally lensed the most. This results in a wave appearance. When the energy is added to “create a particle”, this is the same as causing the particles that *already exist* to have increased mass. Due to their increased mass, they are gravitationally lensed less as their path is not as easily bent as previously. This reduces the wave until sufficient energy is introduced such that it operates as a particle would; a tennis ball will not be gravitationally bent by the boundaries of the slit but many tennis balls going through a “slit” composed of stars instead of atoms would create the same lensed pattern of a wave; the system is dependent on the energy of the particles passing the slit relative to the local variation in gravity due to the slit’s mass. Whether something is perceived as a wave or a particle is solely dependent on the observer, but at its fundamental core, every wave is composed of many particles, as evidenced by the single photon experiment which still results in a wave pattern. This additionally explains why other particles such as electrons appear to operate the same way as the photon: they follow the same fundamental law.

### 3.14) Celestial bodies

The Universal Principle of Natural Philosophy requires that the [solar system](#) be a *galaxy*. This is shown to be true because they comprise a center of mass, orbiting masses such as the planets, the [asteroid belt](#), and the [Kuiper belt](#) (32,33), all of which is being manipulated into a galactic structure by the [heliospheric current sheet](#) (34), the solar system being surrounded by the galactic halo observable at least partially as the [Oort cloud](#) (35). Therefore, there are three levels of the same pattern in a row, including the Milky Way and the Great Attractor *galaxy of galaxies*. This sequence provides evidence for a continued pattern across all levels. One can philosophically arrive at the conclusion that the Great Attractor orbits another center of mass, forming yet another galactic structure. This pattern continues, and can be envisioned by conceptualizing galaxies within galaxies within galaxies, infinitely upward. To then remove the observer on Earth and cascade infinitely back downward from the infinitely large, there is *no reason to think of our level as special, which a base level would be*. Instead, the system continues to cascade *past our level of existence*. Philosophically, infinity must be *limitless*. This is why atoms are said to be made up of mostly empty space, and they have nuclei and orbiting electrons. Atoms, electrons, neutrinos, known quantum particles, even photons *are levels of existence in the universe*. This means that photons must have mass because they are simply levels of existence. What we define as “mass” is actually “*observable mass*”.

This means that [black holes](#) are simply a result of the observer’s level of existence with respect thereto because their gravitational field is so strong relative to the observer’s level of existence that the lower energy photons—that they observer would view as visible light—produced by the black hole are lensed more and more. This is evidenced by the progression of stars; as they age, they lose mass and are said to become larger ([red giants](#), for example), as well as by [pulsars](#) as discussed above. However, instead, as red giants lose mass their gravitational field is reduced and thus their degree of gravitational lensing of their own visible light is reduced. Black holes are simply so massive that they lens *all visible light* they produce such that it physically cannot reach Earth due to gravitational lensing. This is *why* we observe them as black holes, and *why* the systems of the different levels do not appear identical to an observer on a given level. The radii of all bodies in space are subject to reconsideration in view of the Universal Principle of Natural Philosophy. It is noted that the visible light lensing effect of black holes does not happen with photons of distant redshifted galaxies traveling through the Great Attractor because they are first blueshifted as they approach the Great Attractor, which necessarily gives them the velocity to travel radially outward sufficiently to reach Earth.

Planets, too, must be galaxies. The simplest examples would be [Saturn](#) and [Neptune’s](#) rings. However, planet Earth is known to correspond with galaxies as well through the solar system’s correspondence to galaxies. This is because the Earth can be shown to correspond to a solar system, and therefore is a galaxy: it comprises the [Inner Van Allen Belt and the Outer Van Allen Belt](#) which *correspond to the asteroid belt and the Kuiper belt* (36). Further, phenomenon known as [sprites](#) and Emission of Light and Very Low frequency perturbations due to

Electromagnetic pulse Sources, or [ELVES](#), have been recorded forming above the strongest of thunderstorms on Earth ([37](#)). Operably, they represent upward lightning that is able to reach altitudes such that they can extend beyond the boundary of the airglow of the ionosphere, creating the observations. ELVES are observed as dim, flattened discs which surround the sprite's position at the edge of the airglow of the ionosphere. In knowing that all levels of existences correspond, it is immediately apparent what these systems describe: solar flares and sunspots, respectively.

This is further evidenced by the locations of each. [Sunspots](#) generally occur nearest to the equator of the sun. Much the same, sprites and ELVES generally form nearest to the equator of the Earth where thunderstorms are most active. Therefore, the sun necessarily is receiving energy from a source (its own sun), which is producing the same observed phenomena. This is further evidenced by the [solar cycle](#) and the switching of the electromagnetic field of the sun ([38,39](#)). It is known that the sun has fluctuations every eleven years through solar cycles, which are defined by the number of sunspots on the sun over time. This means that the sun is necessarily directly orbiting a center of mass that is seemingly not the Milky Way's center, based on the period. The orbit is necessarily elliptical, such that the sun completes an orbit every two solar cycles where it reaches a minimum distance from the central mass approximately every eleven years. A single solar cycle is *half* of the orbital period because the first portion comprises the electromagnetic field in a first direction, and as the sun moves into the opposite direction of the electromagnetic field of the structure it is orbiting it would necessarily have a reversal of the electromagnetic poles if the sun is orbiting in the direction perpendicular to the Earth's orbit about the sun. This motion from the maximum distance to the minimum distance from the system the sun is orbiting produces "seasons" on the sun, which is observed as increased sunspot activity. This further evidences that sunspots and solar flares are equivalent to sprites and ELVES, which are directly related to the rate of thunderstorms, which are directly related to the amount of energy Earth is receiving from the sun.

This recognition of parallels between systems appears endless; every system must correspond in every level of the universe. In other words, in order to understand a system such as an atom, other levels of observation can be considered. For example, what is an electron? If the solar system, too, acts as an atom, then planets *are electrons*. Neptune and Uranus are known to have moved from a closer orbit to the sun to their current positions ([40](#)). If planets are electrons, then this would be the result of the electron *becoming excited*. Electrons become excited by gaining energy, i.e. mass. If a star, too, can act as an electron in a higher level of existence, then an electron returning to its original orbit would necessarily do so by way of *supernova*. This is because energy must be released spontaneously.

The Universe must be eternal in existence, and it can be reasoned that because we live during this present instant in time, life must be capable of existing during *all eternity*. Otherwise, the probability of our current moment in time being one of the moments of time in which life can exist in a finite period of time, in an eternal universe, is zero. Much the same, the probability of life existing only on our level of existence, in the infinite levels of existence, *must be zero*.

Therefore, philosophically, all levels of existence are levels in which life can exist, albeit not composed of the same level of existence (atoms) as we are.

It is observed that life on planet Earth is composed of atoms, i.e. the material of the level of existence below our planet's. Additionally, our star is the next level of existence above our planet's, and our black hole at the center of the galaxy is at least two levels of existence upward. However, the Universal Principle of Natural Philosophy shows that this is *dependent on the observer*. Consider an observer on the next level down; where an atom's nucleus *is observed to be a planet*. This observer would additionally *observe the next dimension above their own—what we observe as planets—to be stars*. They would observe two dimensions above their own—what we observe as stars—to be *black holes*.

Moreover, an observer who observes an electron *as a planet* would observe an atom's nucleus *as a star*, and a planet, say Earth, *as a black hole*. Objects that we observe as stars, too, would be observed as a planet by life composed of "planets" as their atoms. Additionally, observers composed of atoms would believe stars to be extremely energetic, whereas observers on a "black hole" would observe the energy of a "star" as equivalent to that of, say, an atom. An observer at any randomly chosen level will be composed of the level below their planet's and would perceive the levels immediately below and above them just the same as we perceive them: photons, neutrinos, electrons, atoms, planets, stars, black holes and Great Attractors, and every other observed particle. This is solely *dependent on the observer*. They will *perceive* their "photons" as moving at the speed of light because the difference, in their level of existence, is so undetectable that they cannot distinguish between the two. However, an observer on a lower level of existence would perceive those same "photons" as, say, neutrinos, electrons, atoms, planets, stars, black holes, or even Great Attractors and beyond. Photons are the term we use to describe levels of the universe sufficiently small that we cannot perceive their mass nor variation from the speed of light,  $c$ , the limit of motion in the universe.

*All things are relative*, as Einstein has shown, and the Universal Principle of Natural Philosophy further sheds light onto precisely how true this is.

### **3.15) Time dilation**

The equations of the Universal Principle of Natural Philosophy do not account for [time dilation](#). This is because the equations are simply a measure of the forces on a given mass, as a function of a universal time. However, the observer will experience time dilation. In a system where an observer moves relatively faster, energy must be added to a system in order for the observer to increase their velocity. As energy is added, the *rate of revolution* of the masses in the system *must decrease*. This is evidenced by comparing the rate of revolution of bodies in space. For example, the moon orbits Earth faster than the Earth orbits the sun and the Earth orbits the sun faster than the sun orbits the center of mass producing solar cycles. Therefore, the *rate of*

revolution changes as energy is added or removed from a system. Time dilation is the observation of this phenomenon.

#### 4. CONCLUSION

Many of today's most complex questions can be answered very simply by the understanding that gravity is the only fundamental principle of nature. Any question, given the Universal Principle of Natural Philosophy, appears to find philosophically and scientifically sound answers in a universe that consists only of infinite energy, infinite volume, and gravity. This, in and of itself, highly supports the accuracy of the Universal Principle of Natural Philosophy, due to Occam's Razor. Gravity is the only fundamental law of nature which governs the formation and retrogression of all masses in the cosmos.

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