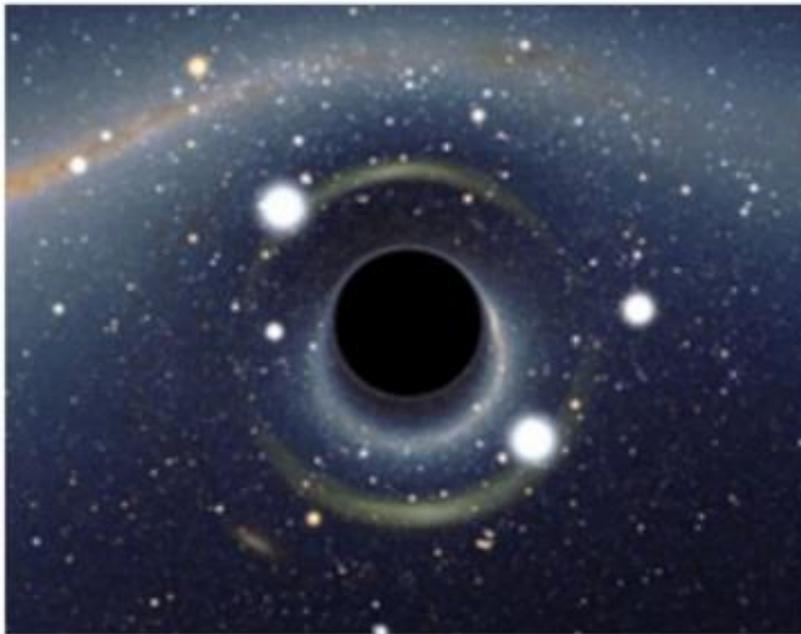


[Home](#) > [Current News](#) > A Constant Universe – Section One

## A Constant Universe – Section One

*Published on March 23, 2018*

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## A Constant Universe – Section One

October 2015

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### ABSTRACT

The cause of gravity and its relationship to the formation of the Universe is explored together with a possible relationship between our nearest Black Hole, and Earth.

**Keywords:** Big Bang, Steady State, Gravity Waves, Kruskal Szerkeres, electromagnetic momentum, Gravimass, [Gravispheres](#), Planck constant, Hubble Telescope, positrons, electromagnetic force, universal gravitation constant, Mid Atlantic Ridge, Katla eruption, Maunder Minimum, Dalton Minimum, Expanding Earth.

### 1 INTRODUCTION

This treatise is presented as a short series designed to stimulate new ideas which may answer some of the many conundrums surrounding our knowledge of the Universe. The keyword selection covers the series rather than just this edition, but provides some idea of the overall direction.

In presenting this series I am conscious of advice given to Stephen Hawking:<sup>1</sup>

*“Early in 1983, Hawking first approached [Simon Mitton](#), the editor in charge of [astronomy](#) books at [Cambridge University Press](#), with his ideas for a popular book on cosmology. Mitton was doubtful about all the equations in the draft manuscript, which he felt would put off the buyers in airport bookshops that Hawking wished to reach. With some difficulty, he persuaded Hawking to drop all but one equation.<sup>[4]</sup> The author himself notes in the book's acknowledgements that he was warned that for every [equation](#) in the book, the readership would be halved, hence it includes only a single equation:  $E = mc^2$ . The book does employ a number of complex models, diagrams, and other illustrations to detail some of the concepts it explores.”*

I will attempt to follow this advice, but probably not as exclusively as discussed here.

The Big Bang Theory is currently accepted as the most plausible explanation of the start to our Universe. An alternative theory “Steady State” was extensively argued in mid-20th [century](#)<sup>2</sup>, but failed through a lack of supporting evidence. “Big Bang” finally gained wide acceptance throughout the scientific community.

Notwithstanding this general acceptance, there remain some significant problems with this theory including:

- Galaxies appear to be moving apart, which conflicts with our understanding of gravitational attraction.
- The start point involves elements of time, mass, and energy which are generally incomprehensible.
- The concept of “[Dark Matter](#)”<sup>3</sup> is inferred to explain astronomical sightings of visible matter, but remains a hypothetical construct.
- Our understanding of gravity, both strong and weak is quite deficient, yet gravity must represent a critical element for understanding any universe evolution theory.

Perhaps it is time to have another look at the Steady State theory with the aid of more recent information, or information presented in a different way.

Other PSI authors have questioned the Big Bang theory, or basic elements of it including recent articles by Raymond HV Gallucci:-

[Gravitational Cosmic Redshift with Variable Light Speed](#)

[A Possible Anomaly in Galactic Recessional Speed Alleged to Increase with Universal Distance](#)

[Who Needs Dark Matter? Is the Galactic Rotation Anomaly an Optical Illusion?](#)

[Questioning the Cosmological Doppler Red-Shift](#)

and by Robert Beatty:-

[GRAVISPHERERS: What's the matter with Dark Matter?](#)

'A Constant Universe' series considers various issues from a 'back to basics' approach, and attempts to answer, or provide alternative explanations for some of the unknowns along the way. The broad finding is that our universe is in a state of continuous cycling between various forms of energy and mass.

We start with a general understanding of the Big Bang Theory.

## 2 THE BIG BANG THEORY

The Big Bang Theory is based on the apparent fact that galaxies appear to be moving away from each other at mind numbing speeds, based on the Doppler shift of radiation frequency and known as “Hubble’s Law”.

Therefore by reversing the process, constellations must have logically originated at a point in space as a very compact mass. This became unstable, and exploded in a Big Bang event - the evidence for which is still visible in the universe today as background radiation, shown at (Figure 1.)<sup>4</sup>

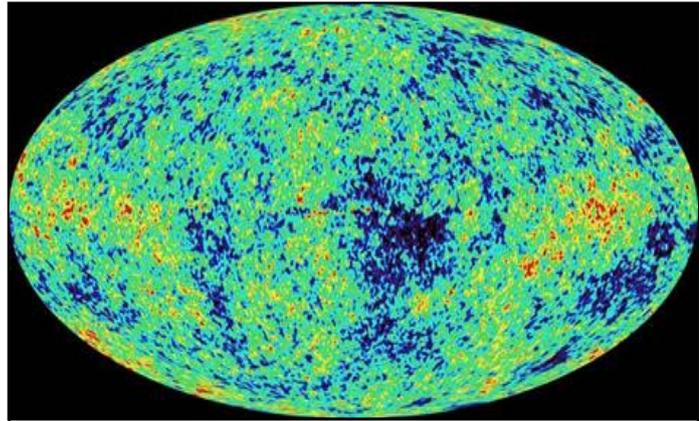


Figure 1 Universe Background Radiation

This reminds me of standing at a conveyor loading point and watching the conveyor belt continuously moving away (Figure 2.)

Now let’s assume there are four such conveyors starting from this point, each one travelling to one of four points on the compass. An uninitiated observer stationed at the centre may draw the conclusion that they were standing where an infinite quantity of conveyor belt rubber forms, moving out along the various conveyors routes and forever getting further and further away. A version of a conveying ‘Big Bang’ theory.



Figure 2 Overland Conveyor

We are assuming here that our observer is not familiar with a conveyor operation and is not aware that there is also a return belt which is out of sight.

### 3 THE UBIQUITOUS BLACK HOLE

Notwithstanding recent PSI publications regarding the Electric Universe Theory,<sup>5</sup> it seems EU theory has yet to reach a stage of general acceptance, and this treatise will assume the common view of a Black Hole operation which involves digestion and reallocation of incoming mass.

Black Holes seem to be a well-accepted part of cosmology, even though studying them is difficult because they are seen by inference rather than directly. The most notable evidence is the motion of dust and stars near a Black Hole, which circle ever closer before disappearing into what is evidently a region of very high gravitational force.

There is also a big difference in the size of Black Holes, with the largest ones appearing to be in the centre of some galaxies.

Other evidence for Black Holes includes an occasional mega beam of light which seems to originate from the poles of a Black Hole, as seen through the Hubble telescope (Figure 3.)

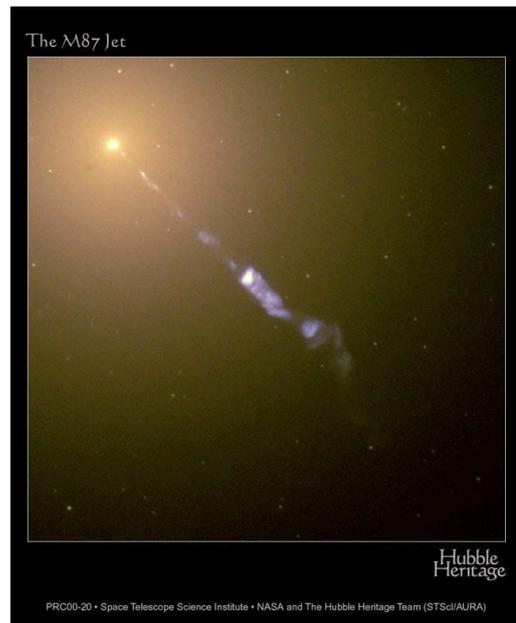


Figure 3 Hubble Telescope Image

Of particular interest in ‘A Constant Universe’ is

*“the binary star system **IA 0620-00** which is a [binary star](#) system in the [constellation](#) of [Monoceros](#).<sup>6</sup> “A0620-00 consists of two objects. The first object is a [K-type main-sequence star](#) with a [spectral type](#) of K5 V.<sup>[2]</sup> The second object cannot be seen, but based on its calculated mass of  $6.6 M_{\odot}$ ,<sup>[2]</sup> it is too massive to be a [neutron star](#) and must therefore be a stellar-mass [black hole](#).<sup>[4]</sup> At a distance of about roughly 3,300 light-years (1,000 parsecs) away, this would make A0620-00 the nearest black hole to the [Solar System](#).”*

This black hole (now referred to as V616) is particularly interesting because the twin star associated with it is visible and orbiting in a fashion which indicates it is being influenced by a very strong associated gravitational force.

#### Interim Conclusion:

- If the constellations are moving apart at whatever speed, and are simultaneously being replaced by some mass derived from energy, this could provide another explanation for the evolution of the universe, which does not involve a big bang explanation.
- The evidence for the existence of black holes is strong given the apparent gravitational effects and the Hubble discovery of issuing rays coming from black hole regions.
- It is apparent that the force of gravity varies widely throughout the universe.
- V616 is likely to be involved if black holes have any influence on our solar system.

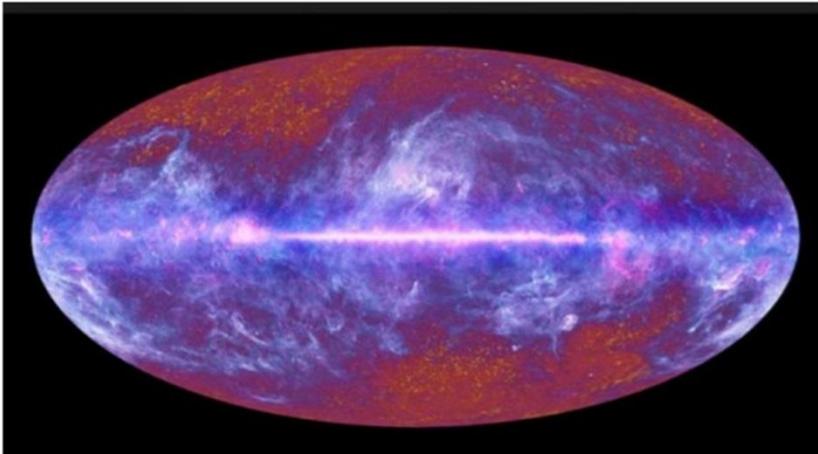
In Section Two we will look at how warped is space/time, colliding particles, and Newton's law of universal gravitation.

[Home](#) > [Current News](#) > A Constant Universe – Section Two

## A Constant Universe – Section Two

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## A Constant Universe – Section Two

October 2015

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### 1 INTRODUCTION

In Section One, it was concluded:

- If the constellations are moving apart at whatever speed, and are simultaneously being replaced by some mass derived from energy, this could provide another explanation for the evolution of the universe, which does not involve a big bang explanation.
- The evidence for the existence of black holes is strong, given the apparent gravitational effects and the Hubble discovery of issuing rays coming from black hole regions.
- It is apparent that the force of gravity varies widely throughout the universe.
- V616 is likely to be involved if black holes have any influence on our solar system.

Section Two explores how warped space/time may be, colliding particles, Newton's law of universal gravitation, the Kruskal Szekeres hyperbolic diagram, and Max Plank's Constant.

### 2 HOW BIG IS THE UNIVERSE?

The short answer is nobody knows, but there is an intriguing possibility that the universe is warped by space-time. Consider the barber's chair experiment where two mirrors are placed in front and behind the client. The overhead light image in Figure 4 seems to disappear into infinity through multiple reflections.

If space-time is bent to this extent, is it possible that images at the limit of identification are mirror images of much nearer objects, but displaced by time and development to the extent that paired images are no longer easy to compare?

I

n this event, the universe could be much smaller than we anticipate.



Figure 4 Barber's Shop Image

### 3 MASS COLLISIONS

Two bodies on a collision course normally bounce off each other as with billiard balls. However, in the case of meteorites entering Earth’s atmosphere there is usually absorption of the smaller body with the Earth, albeit with heat and melting involved. In the case of Black Holes, we move to a much higher level of absorption where the incoming body appears to be completely degraded atom by atom.

Isaac Newton’s famous Law of Universal Gravitation, illustrated in Figure 5, states the attractive force (F) between two bodies is proportional to the product of their masses ( $m_1$  and  $m_2$ ), and inversely proportional to the square of the distance  $r$  between them.

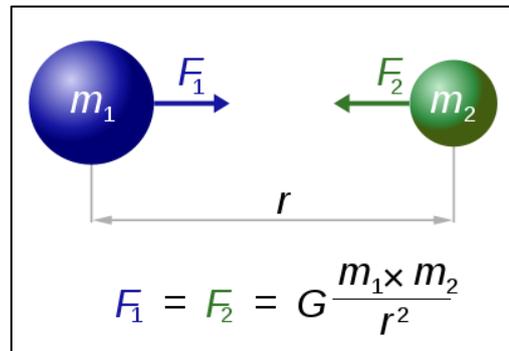


Figure 5 Law of Universal Gravitation

Two important aspect of this formula are:

- 1) The term  $r$ , because as a mass gets close to a Black Hole, the distance  $r$  moves towards zero. If we use our calculators to divide any number by zero, we finish up with a *data error message!*
- 2) The constant  $G$  is regarded as a fixed measured quantity with a defined limit of accuracy. This assumption can apply in regions close to our solar system, but may not be applicable near black hole regions where values for  $G$  appear to be vastly different.

Taking a closer look at what happens **just** before “ $r$ ” reaches zero. Assume we have a mass approaching the Black Hole from the right hand side in Figure 6, and the value of “ $r$ ” starts to reduce towards zero. As the mass approaches the Black Hole it has two choices, it can either shoot up and/or down the vertical axis.

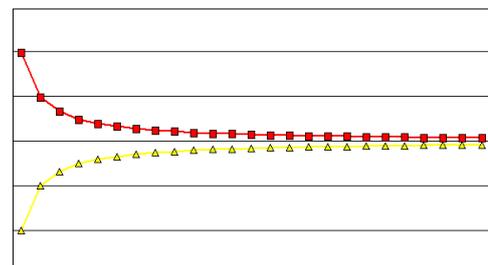


Figure 6 Graphical representation of an object approaching a Black Hole where the Law of Universal Gravitation becomes unstable and the object path becomes hyperbolic.

Theoretically, it can continue doing this until it reaches infinity in either direction, but never quite hitting either vertical axes. These curve shapes are described as hyperbolas, and the axes the curves approach are known as asymptotes.

Mathematicians Kruskal and Szekeres<sup>7</sup> determined that there are four possible hyperbolas associated with zero divisions, and summarised their findings in the diagram shown in Figure 7. It appears that getting ever closer to the asymptote axes associated with Black Holes is far from straight forward. At Black Holes, these axes are also described as event horizons.<sup>8</sup> Now, consider how close we can get to the axes, before things start to change dramatically.

#### 4 THE PLANCK CONSTANT

In 1900 Max Planck proposed that material travelling down a curve actually travels in small steps, rather than a continuous smooth progression. This revelation formed the basis for the theory of quantum mechanics.

The theory involves many technical considerations which are the foundations for a separate branch of academic study with many conundrums and many alternative views. For the purpose of this discussion we will concentrate on the founding principle that the dimension of the Plank Constant<sup>2</sup> is equivalent to the space between successive electron rings in an atomic structure, Figure 8.

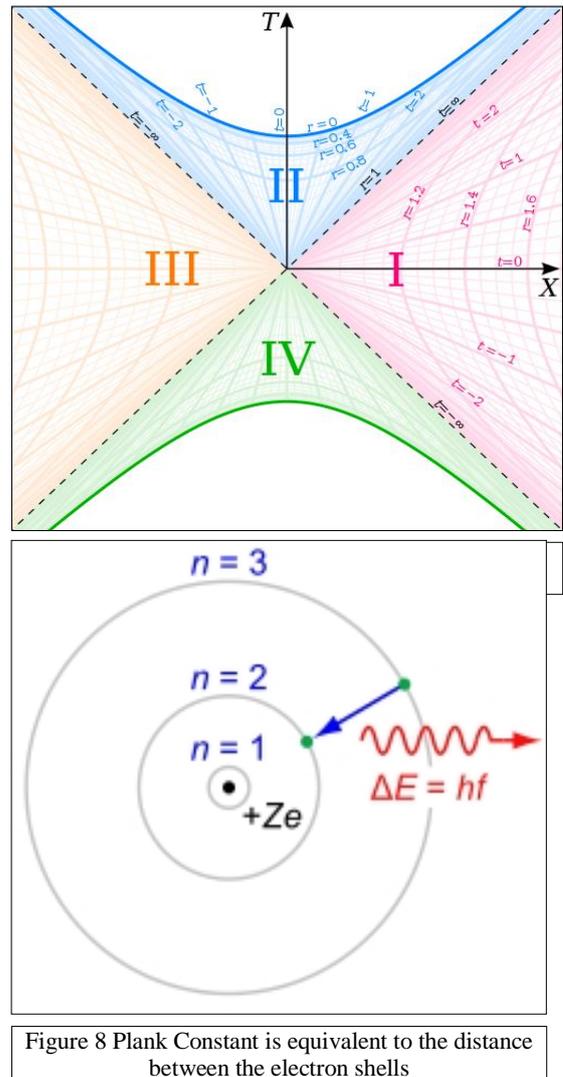


Figure 8 Plank Constant is equivalent to the distance between the electron shells

A molecule can be graphically represented Figure 9<sup>10</sup> as a central nucleus comprising some positively charged protons together with some neutrally charged neutrons. Orbiting around the nucleus are the negatively charged electrons.

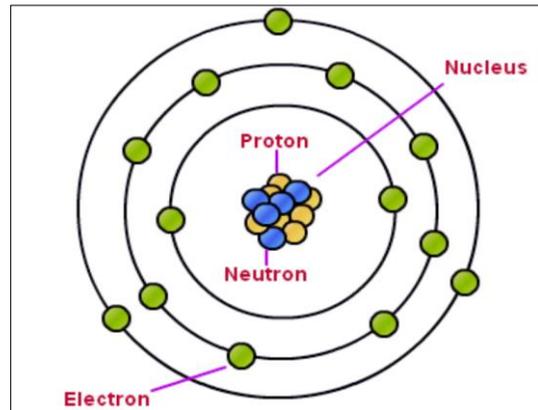


Figure 9 molecule with electrons orbiting around a central nucleus

As a molecule approaches a Black Hole, the outer extremities, or the electrons, are the first to be sheared away by the high gravitational forces present at the event horizon. The rings of negatively charged electrons progressively fall away in a series of steps in accordance with Planck's theory.

Eventually, the molecule only consists of positively charged protons and neutrons. The positively charge protons are very unstable as the similar charges repel each other, so the protons exit as cosmic radiation,<sup>11</sup> and sometimes as a light beam of photons, as seen by the Hubble Telescope in Figure 3.

Neutrons remain and are absorbed at the site. They serve to increase the mass of the structure, and hence the gravitational pull associated with the Black Hole.

## 5 INVERSE SQUARE LAW

In physics, an inverse-square law is any physical law stating that a specified physical quantity or intensity is inversely proportional to the square of the distance from the source of that physical quantity.

The equation and graphic form are as illustrated, in Figure 5 and Figure 10<sup>12</sup>. In basic terms this law means that items faraway look smaller than the same item seen up close.

At Black Holes, we have assumed the electrons stripped from the outside molecular shells are absorbed by the Black Hole.

Stripping electrons from a molecule shell is a very energy intensive activity, and much less than the gravitational force attracting an electron to a molecule.

It is reported that:<sup>13</sup>

*“the gravitational force can appear extremely weak compared with other fundamental forces. For example, the gravitational force (Fg) between an electron and proton one meter (d1) apart is approximately 10<sup>-67</sup> newton, while the electromagnetic force between the same two particles still 1 metre apart is approximately 10<sup>-28</sup> newton. Both these forces are weak when compared with the forces we are able to experience directly, but the electromagnetic force in this example is some 39 orders of magnitude*

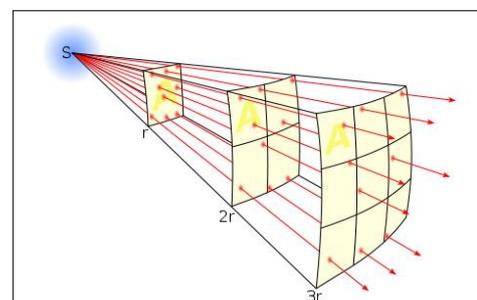


Figure 10 Graphical Representation of the Inverse Square Law

(i.e.  $10^{39}$ ) greater than the force of gravity—which is even greater than the ratio between the mass of a human and the mass of the Solar System!”

This information is useful for checking to see how far away a black hole would have to be from Earth if the cause of our gravity net turned out to be a black hole stripping electrons.

Now we can check to see if the gravitational attraction on Earth is related to the much stronger electromagnetic force at a black hole, but weakened by the inverse square law applied over a significant interstellar distance.

**Calculations show that the distance from Earth to the source of our gravity net would be 3,343 light years.**

This distance can be compared with what we know about the Milky Way regional black holes.

## 6 OUR MILKY WAY GALAXY

Earth is located in the Solar System on one of the outer arms of the Milky Way, Figure 11.<sup>14</sup>

One of the more imposing Black Holes in our region goes by the title of A0620-00/V616 Mon, (V616) described as

*“This binary system is located at a distance of approximately 3,000 light years, making the system the likely location of the nearest known Black Hole.”*<sup>15</sup>

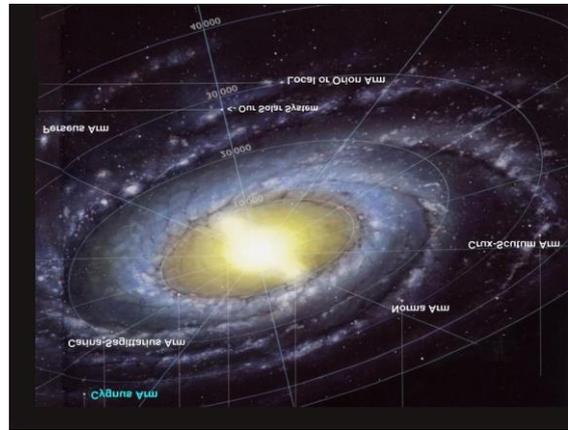
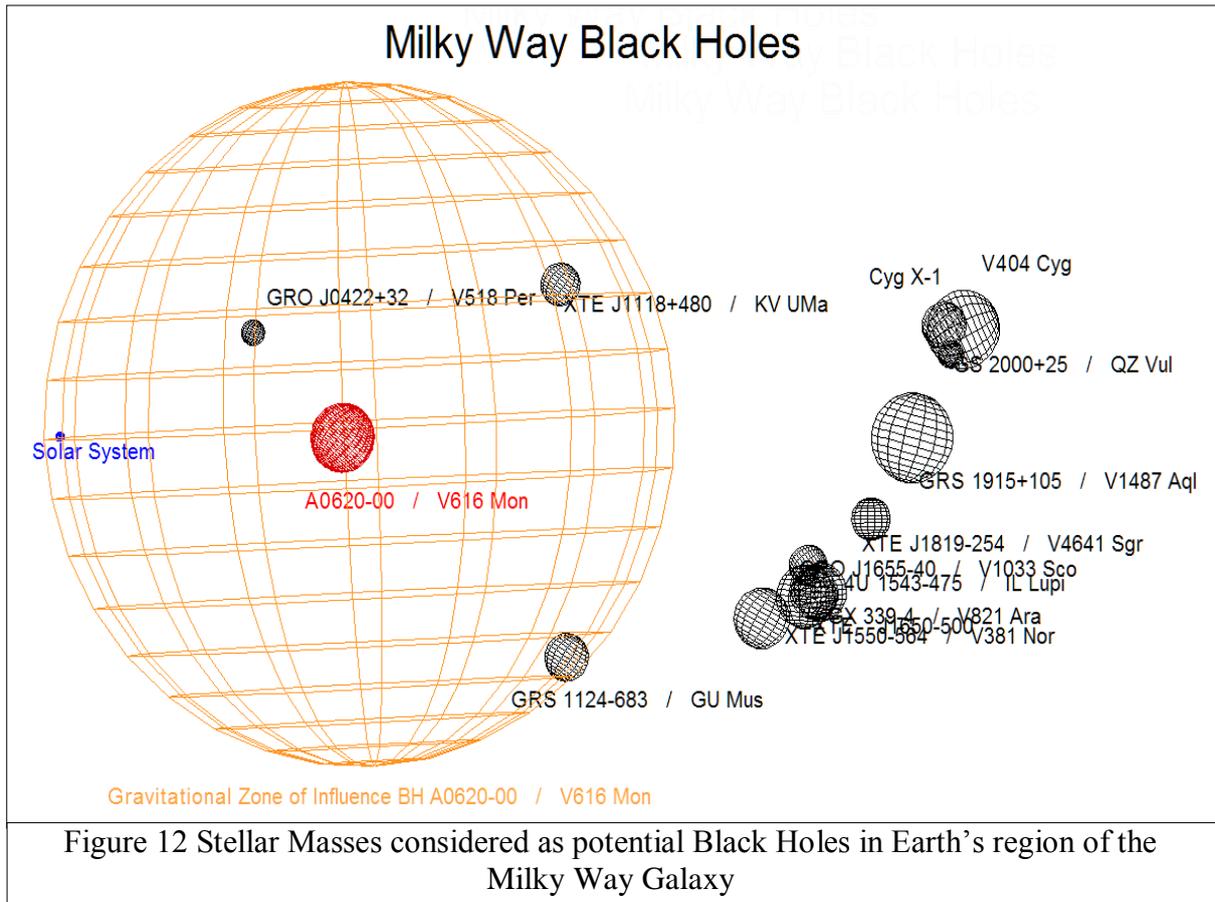


Figure 11 Pictorial representation of the Milky Way Galaxy

Other possible Milky Way Black Hole objects are shown in Figure 12,<sup>16</sup> and are depicted in estimated size as well as geographical relation to the Solar System, by converting polar astronomical units to Cartesian 3D units.

Several stellar mass black holes have been tentatively identified in our galaxy,<sup>17</sup> but the nearest structure with the clearest properties of a black hole is at V616.

Of note is the recent LIGO detection of gravitational waves previously discussed on page 7 of *GRAVISPHERES: What's the matter with Dark Matter?*<sup>18</sup> This provides substantial evidence supporting the existence of black holes.



#### Interim Conclusions:

- The size of the universe remains an unknown quantity, as does its age which may be due to continuously recycling matter with energy.
- Newton's universal law of gravitation appears to fail at black holes, and regions remote from our solar system.
- The Kruskal and Szekeres hyperbola diagram in combination with the Max Plank Constant appears to offer the best description of how matter degrades and converts at black holes.
- Application of the Inverse Square Law to an electron's electrostatic force and gravitational attraction shows that V616 is a strong candidate for being the source of Earth's gravitation.
- The LIGO findings add considerable evidence for the presence of black holes.

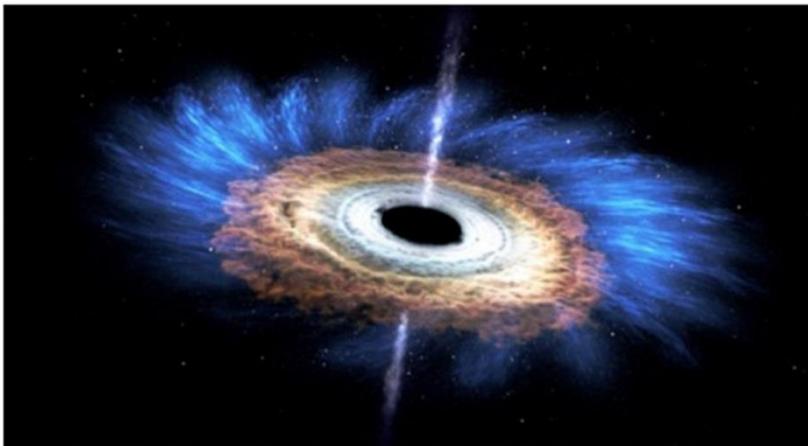
In Section Three we will look at Gravitation nets, is big G a constant or a variable? and the mysterious operation of black holes.

[Home](#) > [Current News](#) > A Constant Universe – Section Three

## A Constant Universe – Section Three

*Published on April 2, 2018*

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## 1 INTRODUCTION

Section Two concluded:

- The size of the universe remains an unknown quantity, as does its age which may be due to continuously recycling matter with energy.
- Newton's universal law of gravitation appears to fail at black holes, and regions remote from our solar system.
- The Kruskal and Szekeres hyperbola diagram in combination with the Max Plank Constant appears to offer the best description of how matter degrades and converts at black holes.
- Application of the Inverse Square Law to an electron's electrostatic force and gravitational attraction, shows that V616 is a strong candidate for being the source of Earth's gravitation.
- The LIGO findings add considerable evidence for the presence of black holes.

## 2 GRAVITATIONAL NET

Gravitation is frequently depicted as a net<sup>1</sup> (Figure 13) which constrains orbiting bodies to follow a stable path, and is generally considered as a force of attraction between two masses.

It may be more accurate to regard gravitation as a surface tension effect drawing two masses together, while the centrifugal force keeps them separated. Rhythmic variations between the two forces results in elliptical orbits.

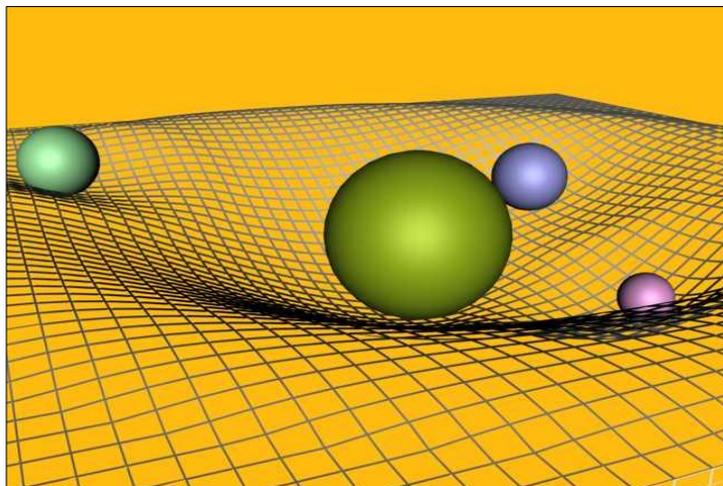


Figure 13 Depiction of Gravitational Net

The biggest black hole in the Milky Way is at its centre and named Sagittarius A <sup>19</sup> and is approximately 25,900 ly away from Earth. The Inverse Square Law tells us the effect on Earth's gravitation from this large source is only 1.4% as strong, because of the much greater distance.

### 3 IS BIG G A CONSTANT OR VARIABLE?

Big G has an interesting genesis starting from the work by Henry Cavendish.<sup>20</sup> As noted previously the comparison between the gravitational force of attraction between an electron and a proton, compared to that with the much stronger electromagnetic force between the same two objects, is 39 times greater, and if there is a connection between these two factors, the responsible black hole must lie some 3,343 light years (ly) away from Earth.

This seems a logical conclusion because we know that gravitational forces are very strong at black holes, but there is no suggestion as to how far that influence extends. If gravity is from an electromagnetic force, the influence should extend, to a waning extent, more or less indefinitely.

The value for G is quoted (at the Cavendish reference)

*"G = 6.693 × 10<sup>-11</sup> cubic meters per kilogram second squared, with a standard error of the mean of ±0.027 × 10<sup>-11</sup> and a systematic error of ±0.021 × 10<sup>-11</sup> cubic meters per kilogram second squared."*

The systemic error amounts to +/- 0.021/6.693 = 0.0031376. If we apply this limit of accuracy to the black hole distance, we find 0.0031376 x 3,343ly = +/-**10.49ly**.

The solar system Oort Cloud has a diameter 1.58ly (well inside the 10.49ly G accuracy limit). So G can only be regarded as constant over solar system scale distances.

When we consider our gravisphere type distances G increases, and gravity is regarded as a polar force with the positive end directed towards the Monoceros Nebula.

We expect that G at V616 surface has a value 39 times greater than on earth, or  $G = 6.693 \times 10^{28}$  cubic meters per kilogram second squared.

At these levels the concept of "dark matter" is not required to account for the missing gravity as postulated by [Cornell](#) for example.

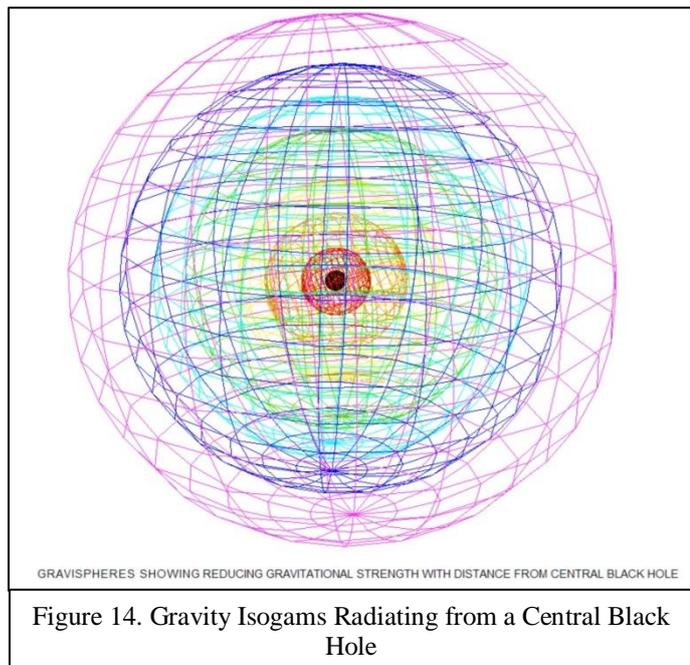
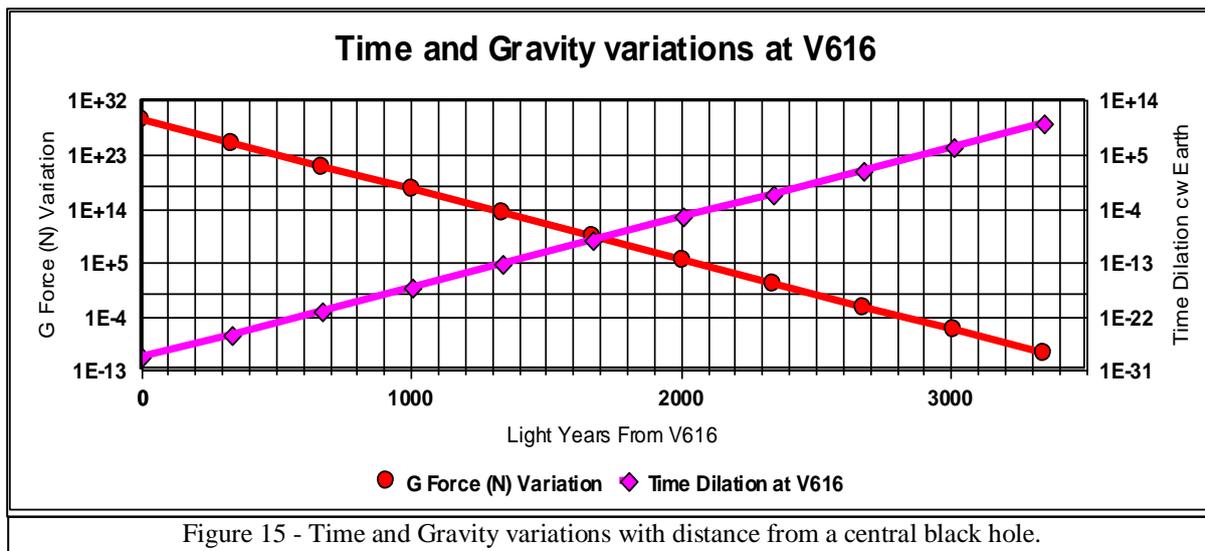


Figure 14<sup>21</sup> illustrates how gravity isogams may reduce with distance from the central black hole. Planetary systems operating within such a gravisphere will operate under Kepler's<sup>22</sup> laws of planetary motion, but in the case of Kepler's third law, at G values appropriate to that particular location in the Gravisphere.

These issues were previously considered in our [GRAVISPHERES](#) report where the gravity isogam function was defined mathematically as  $\text{Big } G = 6.56E + 28 * e^{(y*-2.69E-002)}$  with y being the distance from the black hole in light years. Graphically the relationship shows in Figure 15 with the time dilation factor included as a reciprocal of the isogam relationship.



#### 4 BLACK HOLE MYSTERIES

The Figure 6 Kruskal Szekeres (KS Diagram) reveals four regional components at a black hole. More detail is suggested for how the KS Diagram may operate at black holes, as shown in Figure 16.<sup>23</sup> Incoming mass entering a black hole approaches the first event horizon and starts to follow both sides of a hyperbolic path which initially strips off the electrons due to their peripheral positions around atoms.

These are followed by the protons which are immediately expelled from the Black Hole due to their positive charge. These particles form into cosmic rays as seen emerging from either ends of the Black Hole axis in some space photographs, including Figure 3 Hubble Telescope Image.

The neutrons have no electrical charge and remain within the black hole thereby adding to its mass.

The electrons move across to the second event horizon and emerge on the other side of the black hole at either end of the hyperbolic axis. Electrons emerging from the right hand side spin in a clockwise direction, and assume a positive charge - positrons. Electrons emerging from the left hand end have an anticlockwise spin with negative charge.

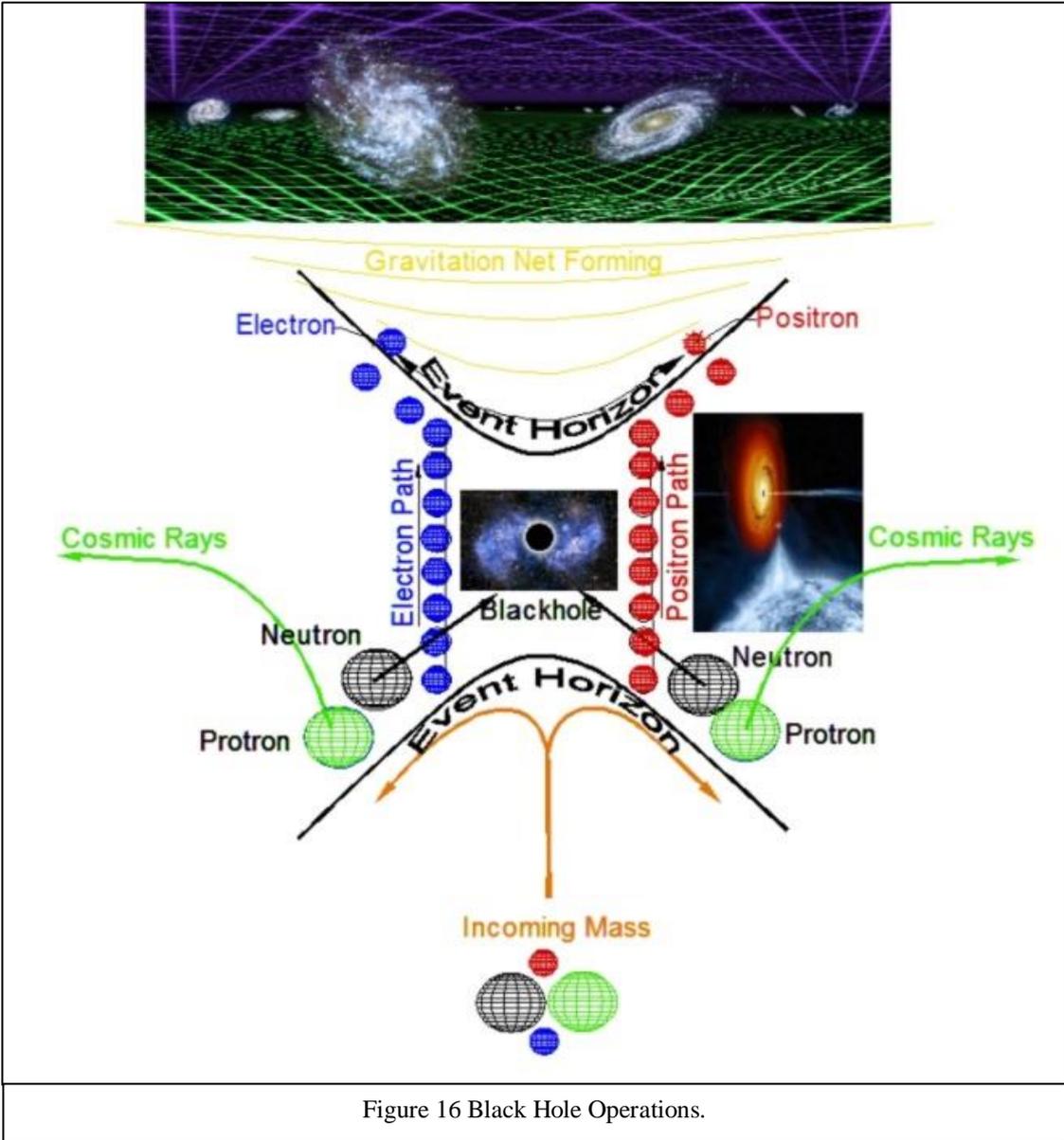


Figure 16 Black Hole Operations.

As the positrons and electrons move down the hyperbolic axis they associate to form a neutrally charged radiating gravitation net, which is stronger near the black hole and weaker with increasing distance, and following the inverse square law.

It is interesting to note the discovery of positrons in space: Physics Today<sup>24</sup> reports

*“An excess of positrons has been detected by the Alpha Magnetic Spectrometer (AMS), which collects cosmic rays from its perch on the International Space Station. Although cosmic rays are composed of many different types of particles, including positrons, the increase noted by the AMS could be an indication of the presence of dark matter”*,

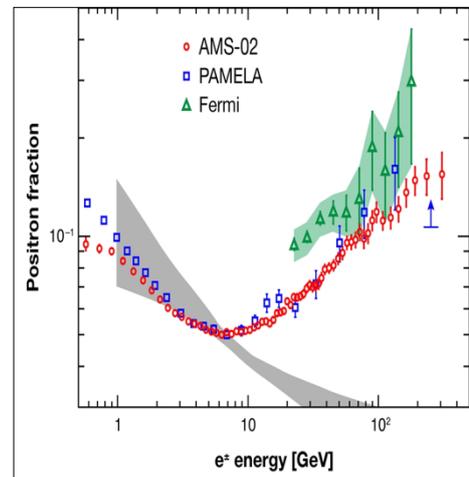


Figure 17: Positrons Galore

and as similarly shown in Figure 17.<sup>25</sup>

The inverse square law connection between our nearest black hole and Earth, suggests gravity nets have properties similar to wave action.

## 5 WAVES

Wave actions come in two distinct categories: Mechanical waves, and Electromagnetic waves. Mechanical waves are the easiest to conceive with sea waves being a good example of a common variety. Sea waves operate in a wide variety of physical forms, and it is worth reminding ourselves of some of these features.<sup>26</sup>

Of particular note is the impact waves have on shorelines and the obvious pressure that wave action exerts on some coast lines. This raises the question of what would happen if the coasts were not fixed, but free to move in space as black holes appear to.

We can imagine the effect wave action has on a raft floating in a pool with no motive power, other than an eccentric drive motor designed to make the raft bob up and down on the spot, creating a radiating wave pattern.

Imagine two such rafts in the pool, (Figure 18)<sup>27</sup> both rafts are affected by the wave action of the adjacent raft, forcing them to move apart. Similarly, several such floating rafts could all be expected to move away from each other.

Mechanical waves do not travel through the vacuum of space, due to a lack of a transporting medium. However, Electromagnetic Waves can travel through a vacuum.

It is interesting to see just how EM waves propagate through space, and to compare that action with mechanical waves.<sup>28</sup>

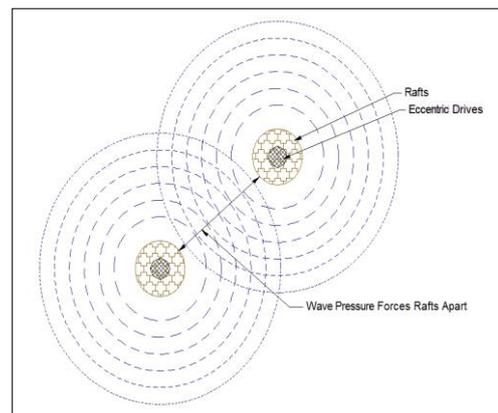


Figure 18 Two rafts moving apart due to interacting wave action.

This raises the question of whether electromagnetic waves can exert any pressure?

Wave pressure from electromagnetic waves can be quantified. It is a very small amount, but certainly does exist and is described as radiation pressure. Another way to describe this effect is to consider it as shown in Figure 19 Electromagnetic Momentum.<sup>29</sup>

This treatise refers to these waves as Electromagnetic Gravity Strings (EGS) Since EG emissions can exert pressure, and if they are formed at black holes, then black holes can move away from other black holes. In this way, EGS provides a mechanism to explain the Expanding Universe even though the rate of that expansion may have been over stated through doubtful application of the Doppler Effect.

EGS like so many other physical phenomena may have yin and yang components:

- Magnetic poles attract when the poles are dissimilar and repel when they are the same.
- Static electrical charges repel and unlike charges attract.

It appears possible EGS can repel other gravity waves, but also cause mass objects in their fields of influence to attract one another.

This provides an interesting combination of physical effects at Gravispheres. We have the attractive force of gravity between the massive black holes, then there is the repulsion effect of the electromagnetic momentum associated with EGS, and the surface of black holes are electrically charged with positrons providing a repelling force to any approaching black hole. It is reasonable to speculate that black holes also include some level of magnetic flux which might influence their association with other black holes.

The LIGO experiments prove that black holes do collide, so the combination of physical effects referred to must be a delicately balanced force matrix which is generally in balance, but can become unstable resulting in black holes with their gravispheres, either combining or moving apart.

How EGS radiations transmit is a challenging analysis. The Gravispheres Report<sup>30</sup> suggests mechanisms which cater for association over long distances, as well as instantaneous reaction not reliant on the speed of light. These issues are considered in that report at paragraphs 3. Matter Waves, and 4. Hawking Radiation.

### Interim Conclusions

- Electromagnetic repulsion force is weaker than the strongest gravitational attractive force, but electromagnetic force has a longer range.
- Gravitational force keeps gravispheres associated over short distances, while electromagnetic force keeps them separated over longer distances.
- The inverse square law connection between our nearest black hole and Earth, suggests gravity nets have properties similar to wave action.

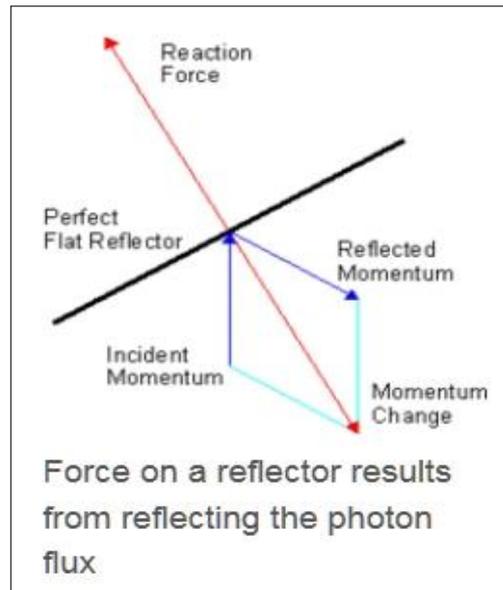


Figure 19 Electromagnetic Momentum.

- Gravitational forces are very strong at black holes, but there is no general suggestion as to how far that influence extends
- G can only be regarded as constant over solar system distance measurements. Inter galactic distances show G should be regarded as a variable polar force.
- Black holes can combine, or move apart, depending on the balance between attraction and repulsion forces.

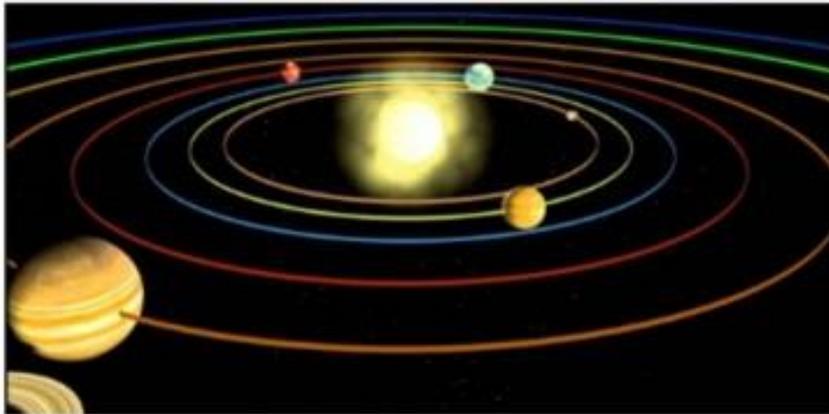
In Section Four we will review aspects of the GRAVISPHERES report,<sup>12</sup> and the effect gravispheres have on spiral galaxies, converting energy to mass, the difference between fixed and elastic links, as well as the effect this has on Earth's mass.

[Home](#) > [Current News](#) > A Constant Universe – Section Four

## A Constant Universe – Section Four

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## 1 INTRODUCTION

In Section Three we concluded:

- Electromagnetic repulsion force is weaker than the strongest gravitational attractive force, but electromagnetic force has a longer range.
- Gravitational force keeps gravispheres associated over short distances, while electromagnetic force keeps them separated over longer distances.
- The inverse square law connection between our nearest black hole and Earth, suggests gravity nets have properties similar to wave action.
- Gravitational forces are very strong at black holes, but there is no general suggestion as to how far that influence extends.
- G can only be regarded as constant over solar system distance measurements. Inter galactic distances show G should be regarded as a variable polar force.
- Black holes can combine, or move apart, depending on the balance between attraction and repulsion forces.

## 2 SPIRAL GALAXY STRUCTURE

The [GRAVISPHERES](#)<sup>31</sup> report noted the conundrum concerning dark matter. Basically, the problem stems from the fact that spiral galaxy formation does not follow the Kepler Laws of rotation which apply to planets in the solar system. This problem is graphically illustrated in Figure 20,<sup>32</sup> and can be generally, but not perfectly defined by comparing the rotation of a ship's propeller with the speed the planets orbit.

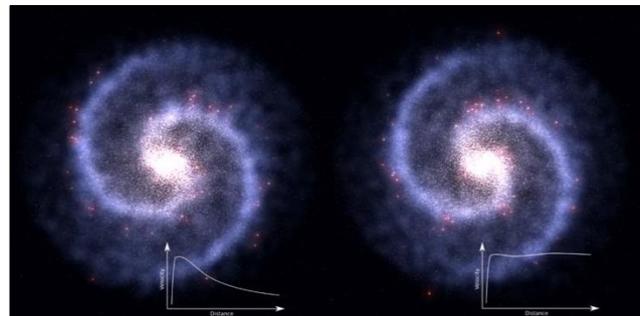


Figure 20 Dark Matter Problem Definition

In the case of the screw propeller as shown in Figure 21,<sup>33</sup> the blade tips rotate at the same speed as the hub driving the propeller.

The planets in our solar system rotate at much slower speeds as the diameter increases. Venus takes 224.65 earth days to go once around the sun, whereas Neptune takes 60,182 days to complete the same cycle. The solar system planets follow Kepler three laws of planetary motion,<sup>34</sup> the screw propeller follows what is described as a flat rotation curve.



Figure 21 Screw Propeller

### 3 SPIRAL GALAXIES AND GRAVISPHERES

Several gravispheres form a joined association at spiral galaxies, and operate more like a series of magnets attracted together, or the spokes of a wheel as shown in Figure 22.

In this situation the stars in the gravispheres are visible, but the gravispheres are not. Hence the stars appear to follow a different path to that expected from the classical interpretation of Kepler's laws.

Figure 22 indicates the larger central hub which includes a higher concentration of black holes. This leads to a steady absorption of the nearest black holes along the spiral arms, with the gradual elimination of the arms. The central hub eventually enlarges to form a globular star cluster.

There appears to be a preference for concentrating the initial galaxy development in the hub sections which leads to a pronounced bar formation evident at some galaxies (Figure 23).<sup>3536</sup>

Spiral galaxies are dynamic regions of activity and the arms appear to represent a fertile star formation zone where energy is converted to mass. Black holes form with their associated stars and gravispheres, which combine with the arm structures.

As discussed previously, there is an interesting combination of physical effects occurring at adjacent Gravispheeres. An attractive force of gravity between the massive black holes is present. There is a repulsion effect from the electromagnetic momentum associated with EGS. The surface of black holes is electrically charged with positrons providing a repelling force to any approaching black hole. It is reasonable to speculate that black holes also include some level of magnetic flux which might also influence their association with other black holes.

Consequently, the union between gravispheres appears tenuous as the Figure 20 simulation shows, and confirms the competing forces which draw gravispheres together, while also pushing them apart.

Gravispheeres appear to break away from the spiral arms as well as occasionally moving to attach to adjacent arms. This dynamic activity leads to several head-on collisions between black holes as recorded at the LIGO measuring stations.

The transfer of energy to mass in the universe and at star systems is an important component of 'A Constant Universe' treatise. The following paragraphs consider this aspect in more detail.

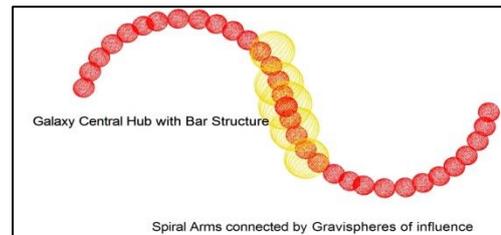


Figure 22 Galaxy Spiral Arms composed of Gravispheeres



Figure 23. NGC 1300 in infrared light.

## 4 CONVERTING HEAT ENERGY TO MASS

Albert Einstein showed that mass could convert to energy in his famous equation  $E = MC^2$  where E is energy, M is mass and C is the speed of light. The question now is does energy also convert to mass through:

$$M \Leftrightarrow E/C^2$$

Energy does convert to mass and is quantified as

“adding 25 kilowatt-hours (90 megajoules) of any form of energy to any object increases its mass by 1 microgram”<sup>37</sup>

Our Sun provides energy to the Earth which is estimated at around 3 kWh/day/m<sup>2</sup> (Figure 24)<sup>38</sup>. The semi surface Earth area is 255,032,236 Km<sup>2</sup>. So the solar energy received as radiation from the Sun and converted to mass on Earth is about 7,000 tonnes per annum.



Figure 24 - The Sun as a Source of Energy

## 5 CONVERTING COSMIC RAYS TO MASS

Some interesting research was conducted by Professor Henrik Svensmark, Danish National Space Institute, Copenhagen. His team are working on seeking an explanation for the formation of clouds on Earth. His preliminary work involved the use of a cloud chamber. They have reported<sup>39</sup>

*“The results concluded that the climate of Earth is decisively influenced by exploding stars and additionally: This mechanism literally turns the Earth’s thermostat upside down. This means that Cosmic rays produces aerosols in our atmosphere, which are necessary for the formation of clouds. Without these aerosols water vapour cannot condense into droplets and form clouds.”*

His work is recorded in a two part video series which, in part #1 @ 21.33 minutes, includes comment from Professor Richard Turco, University of California.

*“We became interested in how aerosols or very small particles are produced in the atmosphere in the first place. This is important because all clouds are formed on aerosol particles. We found the cosmic rays are capable of a significant modulating affect on aerosols in the lowest layer of the atmosphere We don’t understand at this point is exactly how and why they are formed.”*

This is interesting comment, because it appears the aerosols are formed by the action of the incoming cosmic rays - which we have previously noted contain a high proportion of protons, and can originate at black holes.

It is possible to form a Hydronium ion (Figure 25)<sup>40</sup> by adding a proton to a water molecule. This reference goes on

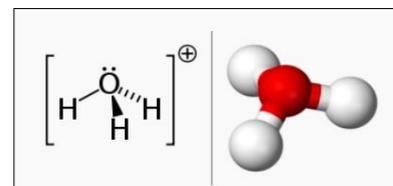


Figure 25 Hydronium Ion

to show hydronium may be bonded to three neighbouring water molecules, thereby forming an aerosol.

The basic mechanism would be for a cosmic ray to deliver a proton into a cloud, with an electron from EGS emissions, combining with a proton to form a hydrogen atom. The hydrogen can subsequently combine with oxygen to form a water molecule.

In this way water may form on Earth by direct influence from cosmic rays and gravity. This may explain where some of the water on Earth came from, and why the [hydrogen component](#) of water vapour which is lost to space at high altitudes, can be progressively replaced.

If a cosmic ray interacting with a gravity supplied electron can produce hydrogen, the next step would be to produce [helium](#) consisting of two electrons orbiting two protons and one or two neutrons - depending on the atomic form of helium.

This raises the question of where do the one or two neutrons come from? A process described as [Electron capture](#) occurs when an inner electron melds with a core proton.

Electron Capture further [described at](#) <sup>41</sup>

*“the process wherein the proton rich element absorbs the inner electron so that a proton is turned to the neutron. In this process a neutrino is emitted. It is the primary decay mode of the isotopic elements. It is the reverse phenomenon of the beta decay and hence sometimes named as inverse beta decay.”*

## 6 ENERGY FROM ELASTIC ORBITAL LINKS

Consider a crane Figure 26, suspending a load above the ground with the winch brake engaged. The load is not moving, so there is no work being done, even though the force of gravity is acting on the suspended load. Now consider the winch brake is released, but the electric motor driving the winch is powered sufficiently to stall the motor, and hold the load suspended above the ground. Still no work is being performed on the load, but the winch is consuming power, which is converted into heat. The difference in these two situations is that the crane with the brake applied represents a **fixed link** with the load, while the stalled motor alternative represents an **elastic link** with the load.



Figure 26 Crane Operation

An elastic link can be compared to a spring balance where the extended spring stores energy in the torsional stress of the spring coils and then is free to release that stress when the spring returns to normal. Similarly, the force of gravity represents an elastic link between the Sun and the Earth during sidereal rotation. In the process of following this elliptical path there is no immediately apparent mechanism for storing and then releasing energy. However, we can assume that the force of gravity is responsible for returning the Earth from its furthest point of apogee to the point of perigee, which expends energy. Once there the Earth will consume more energy in moving away from the Sun under the influence of centrifugal force. This energy appears to be stored as additional mass on the Earth. Calculation details of how this results in mass accumulation on earth are available at the Gravimass report.<sup>42</sup> The findings

show that earth accumulates mass at a calculated rate of 212,245 tonnes per year and that over the 4.5 billion year life of the Earth, the surface area has increased by 60%.

Heat and cosmic rays reporting as mass is logical, as discussed. However, where the EGS mass component reports to is challenging, but an important question. It seems that any mass object operating in an EGS sphere can attract mass to itself through the conversion of energy to mass. The reason this seems to be the case is because magma material from within the Earth appears to erupt as lava on the sea floor in ever increasing quantities, which leads to the “Expanding Earth” consideration.

The late Australian geology professor S. Warren Carey<sup>43</sup> inspired many to subscribe to the Expanding Earth theory which seems to fit well with the findings in *A Constant Universe* treatise.

## 7 THE EXPANDING EARTH<sup>44</sup>

This hypothesis is summarised in the referenced article as:

*The **expanding Earth** or **growing Earth hypothesis** asserts that the position and relative movement of **continents** is at least partially due to the volume of **Earth** increasing. Conversely, **geophysical global cooling** was the hypothesis that various features could be explained by Earth contracting.*

*Although it was suggested historically, since the recognition of **plate tectonics** in the 1970s, 20th century **scientific consensus** rejected any significant expansion or contraction of Earth.*

And:

*The expanding earth hypothesis had not developed a plausible and verifiable mechanism of action fully consistent with conventional physics based on the non-existence of aether.<sup>[10]</sup> During the 1960s, the theory of **plate tectonics**—initially based on the assumption that Earth's size remains constant, and relating the **subduction zones** to burying of lithosphere at a scale comparable to seafloor spreading<sup>[10]</sup>—became the accepted explanation in the Earth Sciences, despite the fact that there was absolutely no credible evidence that ocean plates of solid rock, generally more than 10km thick could ever bend to allow subduction under adjacent plates.*

*At present the majority of the scientific community does not support the Expanding Earth theory, and typically argues that geological evidence used in support of an expanding earth is better explained by plate tectonics:*

Despite these strong assertions several supporters have produced compelling video evidence to show Earth’s land masses can be sensibly shown to originate on a smaller earth including:

Neal Adams (noted graphic artist) - Science: 01 - Conspiracy: Earth is Growing! – YouTube<sup>45</sup>

James Maxwell - The Expanding Earth, Why is Our Planet Getting Bigger? [FULL VIDEO] – YouTube<sup>46</sup>

Information from John L. Casey<sup>47</sup> suggests that expanding Earth may be a spasmodic event associated with solar minimums, which is further evidenced by the periodic lava outflows at the Katla Volcano, Iceland, and discovered in the matching ridges on either side of the Mid Atlantic Ridge.

***Relationship of Katla Eruptions to Solar Minimums***

<b><i>Year of Eruption</i></b>	<b><i>Associated Solar Minimum</i></b>
920 AD	Mayan Minimum
1612 AD	Maunder Minimum
1823 AD	Dalton Minimum
TBD	Eddy Minimum (2014-2045)

## 8 TREATISE DEFINITIONS

- Universe: “The Universe is the location where all the activities in Space occur.”
- Constant Universe: “The Universe is in a continuing state of flux moving between various forms of energy and mass. It exists today as it always has, and always will.”
- Gravisphere: A zone of gravitational influence created by the operation of a centrally located "black hole".
- Black Hole: A location where gravity reaches a maximum level and mass is reduced to fundamental particles.
- Electromagnetic Gravity String (EGS): A radiating line of connection between a black hole and its surrounding gravisphere.
- Gravisphere Association: Two or more conjoined Gravispheres forming a cosmological structure.

### Interim Conclusions

- The rotation of spiral galaxies can be shown to conform to normal laws of physics if the visible stars prove to be contained within gravispheres.
- Dark matter is not required to explain the rotation of spiral galaxies where invisible gravispheres are involved.
- Heat energy from the Sun converts to extra mass on Earth.
- Cosmic rays from black holes and elsewhere, add mass to the Earth through the formation of water vapour.
- Electron capture adds other forms of mass, other than water to earth.
- Objects orbiting in an EGS field accumulate mass due to the operation of elastic links.
- There can be little doubt that Earth is accumulating mass. The question is how much and under what circumstances.
- An Expanding Earth is a plausible explanation for the many examples illustrated in the referenced videos and ‘*A Constant Universe*’ series.

The expanding earth proposals generally lack a plausible explanation of where the extra mass came from. They also suffer a lack of discussion on how the Moon separated from Earth, leading to gaps in the starting point.

This concludes *A Constant Universe* series. The series has generated several comments and acted as a stimulus for several innovative avenues of thought.

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