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## Theory of Everything - Unification

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# Theory of Everything – Unification

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## I. INTRODUCTION

Since 2018, I've presented six “Theory of Everything” related papers to the science environment [16,17,18,19,26,28]. This paper (seventh) is the TOE itself; this is the reason I decided not to give it any other name than itself.

General Relativity (GR) played a very important role in this discovery/unification. It can be said that without GR, I wouldn't have discovered the “TOE”. However, much credit goes to Albert Einstein and his concept, but not the equation. General Relativity was supposed to lead scientists/physicists right to the TOE. It shouldn't take up till this time for the TOE to be discovered. The TOE should have been discovered at most 10years later from that year in which GR was proposed because “GR” is the door to the “TOE”. What happened? Why did it take this long? This is as a result of deceit from the subject equation of GR  $[G_{\mu\nu} + g_{\mu\nu} \Lambda = 8\pi G/c^4(T_{\mu\nu})]$ , tricking upcoming scientists/physicists (from 1920 to now) into paying much attention to the subject equation for more solutions to unsolved problems in physics. The whole concept of GR which describes big masses distorting spacetime leading to curvature, resulting to gravity is perfectly correct. Predictions of GR actually came to reality, resulting into the acceptance of GR. Explaining the TOE doesn't require complications, resulting into the delay in arrival of the TOE. It turned out to be that the subject equation of GR is from an approach that describes the curvature of spacetime (movement of mass) resulting into the use of tensors which will require calculus, matrices etc., to solve. That approach will lead physicists to a dead end with no result, if used to seek for more answers in physics.

Again, explaining the universe does not require complications. Physics requires mathematics for validity but the fact is that a theory can be proposed with a complicated math or wrong math in some cases.

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I imagined that a theory like GR can never be wrong but I also said to myself; “GR is a correct theory because of its predictions that we now observe but why is the same theory not giving us more answers about some related unsolved problems in physics”?

I had to review the whole concept of GR and introduce a different approach to GR that lead the way straight to the TOE [26]. In the TOE, quantum mechanics was already waiting for GR to arrive so they can unify.

In this paper, with the six related papers of the TOE, I officially unite the major areas of physics. The fact that the aim of the TOE is to unite quantum mechanics with relativity means that all other areas of physics will be unified and solutions to all related unsolved problems will be revealed.

First, I present a brief detail on the creation of this Universe and how it was formed in Section (II). Section III presents relativity (Special and General) with a new approach from [26]. Section (IV) presents Quantum Mechanics alongside Electromagnetism. Section (V) is the official Unification. Section (VI) presents details on the next phase of physics. Section (VII) presents a major prove and further explanation of the TOE.

Language level in this paper is reduced to ease explanation.

## II. BRIEF DETAIL ON THE FORMATION OF THE UNIVERSE

The full information on the how the universe was formed is presented in [27] which is the blueprint of the universe, a summary of that will be presented in this section. The full blueprint can be purchased on Amazon. The universe is all about light and its solidified form. During creation, there were two lights used. The first is the superior light, the other is the inferior light. The Superior light exists with an attachment called “Space”. The reason for this attachment (space) is the fact that the inferior light fades and the superior light exist forever. Its straight, for the inferior light not to fade, it has to be merged with the superior light. To be merged, it has to proceed to the attachment (space) which exist inside the superior light.

Apart from that space, everything in the universe can be represented as the lights or a form of the lights as shown in Figure 1



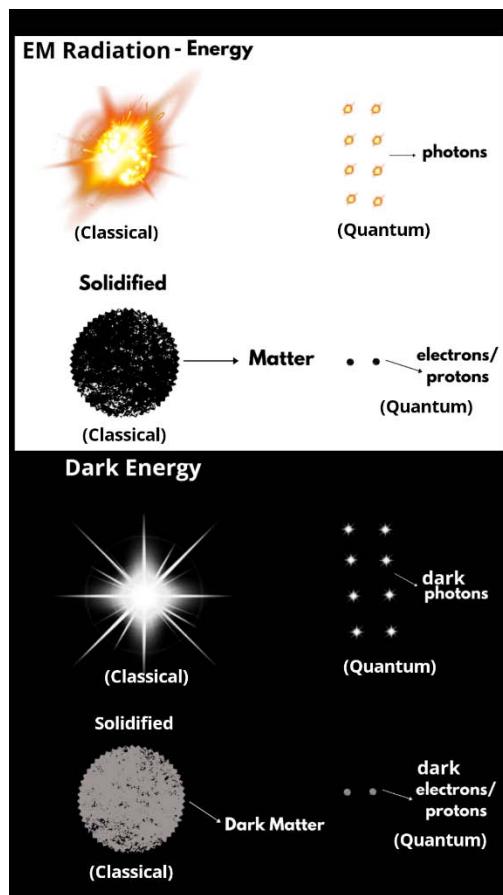


Figure 1

The Inferior Light and Superior Light are Energy and Dark -Energy respectively.

Energy (Inferior Light) was basically used to form planets/planetary bodies and stars. Planets cooled and solidified to form a combination of land and water basically. All these happened in an environment of the superior light with that space. Everything made from the inferior light was merged with the superior light which means energy took the form of dark energy.

However, both entities split later.

Have this in mind and proceed to section III.

### III. RELATIVITY (SPECIAL & GENERAL)

General theory of Relativity (GTR) is the latest description of gravitation in modern physics. It is a geometric theory of gravitation proposed and published by Albert Einstein in 1916 [2,4]. Special relativity is a theory describing the structure of spacetime.

Einstein also derived his field equations describing the relation between the geometry of a four-dimensional pseudo-Riemannian manifold representing spacetime, and the energy momentum in spacetime, this was different from the Newtonian concept in terms of the source. In Newtonian gravity, the source is mass. In GTR, mass is described as a general quantity known as the energy-momentum tensor. Newton's concept has since been suspended by Albert Einstein's Theory of

General Relativity, but it is still used as an approximation of the effects of gravity in most applications.

Newton described gravity as a force of attraction between two bodies; tugging between two bodies depends on how far apart the two bodies lie and how massive they are. As a small object of mass on the surface of the earth, the center of the earth will pull you toward it keeping you to the ground. However, GTR introduces empty space as an entity that has properties instead of nothing. GTR describes gravity as actually the result of a mass bending spacetime resulting into a curvature, the curvature of space-time then influences how mass-energy are spread. With this concept, GTR had predicted some observational evidence that we see today such as gravitational lensing, changes in the orbit of Mercury, Gravitational redshift, gravitational waves etc.

Introducing the field equation of GTR, the subject equation of GTR is given as;

$$G_{\mu\nu} + g_{\mu\nu}\Lambda = 8\pi G/c^4(T_{\mu\nu})$$

$g_{\mu\nu}$  - Metric tensor

$\Lambda$  - Cosmological constant

$G$  - Newton's gravitational constant

$G_{\mu\nu}$  - Einstein tensor

$c$  - Speed of light

$T_{\mu\nu}$  - Stress-energy tensor

In this part review, with the aim of not condemning any part of GTR but adding modifications with prove, some review points are presented for readers to access before introducing the new approach to GR.

These review points are as follows;

- 1) With the existence of the Newtonian concept of gravity and General Relativity, the nature of gravity is not yet understood completely. In terms of its quantum form.
- 2) The Newtonian constant ( $G$ ) is present in the field equation of GTR, this implies that at some point, the Newtonian concept of gravity is correct.
- 3) Why do we have gravitational waves as ripples in spacetime predicted by GTR, but its theory has not emphasized on the fact that gravity is not just a consequence of spacetime curvature.
- 4) In the view of the nature of space inside a planet. Why does mass/energy curve spacetime at the outer space while an object of mass inside a planet will fall freely which GTR claims to move along a geodesic.
- 5) Why is the nature of space inside a planet different from that of the outer space?

Based on this review points, the alternative approach to GTR introduced in this paper will be based around these 5 points and backed up by the discovery of gravitational waves.

Einstein field equation describes the geometry of spacetime, and its curvature caused by mass/energy.

Einstein equation involves matrices, calculus, tensors etc.

In this review for an alternative approach, the geometry of spacetime or spacetime curvature is not needed, the modifications do not involve matrices or calculus. Therefore, we eliminate the tensors and scalar curvature in the field equation. Thus, there is need for the Newtonian constant ( $G$ ) and the speed of light ( $c$ ). The discovery and detection of gravitational waves plays an important role in developing this new approach.

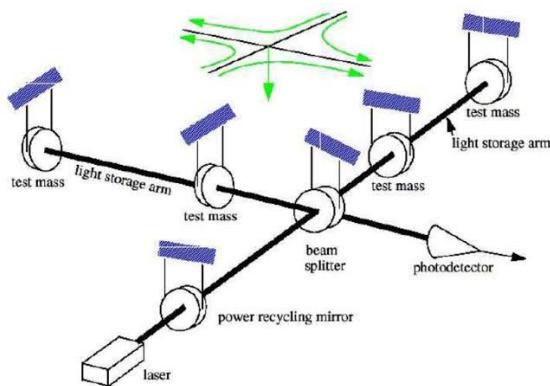
#### a) Gravitational Waves

Some review points from the detection and discovery of gravitational waves must be presented to aid this new concept.

LIGO (Laser Interferometer Gravitational-Wave Observatory) is a large-scale physics experiment to detect cosmic gravitational waves. With the aim of detecting gravitational waves by laser interferometry, two observatories were built in United States at Hanford site, Washington and Livingston, Louisiana[9].

Four years ago, the LIGO and Virgo collaborations announced the first observation of gravitational waves (GW150914) matching the predictions of GTR.

The flickering distortions of spacetime called gravitational waves are not easy but tricky to detect, and only managed to detect in recent years.



**Figure 2:** Basic schematic of LIGO's interferometer with an incoming gravitational wave depicted as arriving from directly above the detector

The LIGO's two four-kilometer-long arms is in L-shape, as a wave passes through, one arm is stretched and the other is shortened. Lasers moving up and down the arms will measure the change in length indicating that a gravitational wave has passed through.

Points used from the detection of gravitational waves from LIGO in [3,9,10,21];

- 1) The velocity, acceleration, trajectories of object changes as ripples in spacetime propagate.

- 2) You can't see the effects of gravitational waves but can measure how they affect an object as they pass through.
- 3) As a gravitational wave travels through space-time, it causes it to stretch in one direction and compress in the other.
- 4) Gravitational wave causes any object that occupies that region of spacetime to stretch and compress as it passes.

*The Question is, what exactly is the root of gravitational wave?*

Gravitational waves are emitted by accelerated masses. They propagate at the speed of light and are transverse waves much as electromagnetic waves, but rather than exerting forces on charges, they distort the space perpendicular to the direction along which they propagate, alternatively stretching space in the east-west direction while simultaneously compressing space in the north-south direction (Rainer Weiss, Nobel Lecture, Rev Mod Phys 90(4), 040501, 2018) [21].

A major instance of a wave is Light (EMR). There was a debate on the movement of Electromagnetic radiation. This was either as a wave or a particle. But at the end of the 19<sup>th</sup> century, Albert Einstein revived it as a dual nature (as both a particle and a wave)[12]. However, the waves as particles combined, comes from a source.

In terms of gravitational waves, based on this new approach, gravitational waves can exist as both a particle and a wave. These particles or waves propagate from a source known as spacetime. Gravitational waves only emerge when distortion takes place on spacetime due to pressure either by a mass or energy. It is a fact that gravitational waves prove that gravity is not only as a result of spacetime curvature but also as a result of distortion of spacetime by mass/energy.

A major review point is presented from the observations from the LIGO observations on gravitational waves from[9, 21]. The major point is; "When gravitational waves travel, it causes spacetime to stretch in one direction and compress in the other".

#### b) New Alternative Approach to General Theory of Relativity

This new approach to GTR is based on the statement "Where there is gravity to some extent, the nature of spacetime in that area is free" and "In an area where there is little or no gravity, the nature of spacetime is thick". Thus, the amount of thickness of spacetime in an area depends on the level of gravity in that area.

Keep the above statement in mind to understand this new approach with proves.

With this major point, the new approach to GTR can be presented. An aspect of cosmology which is the stretching/expansion of spacetime hasn't been given much attention over the years.

Physics and cosmology welcome the idea that more space can come into existence by expansion. Hubble space telescope observations of very distant supernovae showed that a long time ago, the universe was expanding slowly than its rate today. The nature of spacetime at the outer-space is observed to be very thick and a better illustration of its expansion is like the expansion of an elastic rubber, if two points are marked apart on an elastic rubber, the distance between the two points increases by stretching (expansion) the elastic rubber, stretching the elastic rubber increases the length of the elastic rubber itself and reduces its thickness depending on how far the elastic rubber is stretched. This simple illustration is the idea behind the observational discovery of the expansion of the universe. The summary of the illustration implies that although the elastic rubber is stretched or expanded, there was a default length and thickness of the elastic rubber just before it was stretched. Using this illustration in cosmology, the universe is expanding which means the distance between two points will increase over time, the elastic rubber in this case is spacetime.

It'll be magical if more space of the same nature just seems to appear instead of emerging from its initial form. There is only one default nature of spacetime, it is the nature of spacetime before cosmic inflation. Spacetime exist with two major properties known as gravity and a positive energy. The same way, there are two ways that spacetime can be stretched/expanded; naturally by the effect of its positive energy and by provoking spacetime to unleashing gravity by the application of pressure/stress through mass/energy on spacetime. Gravity then in turn stretches the spacetime in the same direction from the pressure/stress. This is the exact effect of the waves of gravity (gravitational waves) on spacetime.

This definition of gravity describes its actual nature as an effect of distortion and curvature of spacetime. Hence, deep explanation and prove is needed.

The discovery and detection of gravitational wave[3,9] is an experimental/observational prove. Thus, proving of this new concept mathematically is needed. To prove this concept mathematically, the nature of spacetime before cosmic inflation must be present mathematically. An attempt to discover the nature of spacetime before cosmic inflation will result into an illustration.

In this alternative approach, spacetime has only one true nature as a very thick or stiff entity. "One way to say it is, the stiffness (Young's modulus) of space at a distortion frequency of 100Hz is  $10^{20}$  larger than steel"(Rainer Weiss. Nobel Lecture, Rev Mod Phys 90(4), 040501, 2018)[21]. Any other nature of spacetime besides the default nature is a stretched spacetime. The nature of spacetime on earth is observed to very free because spacetime initially on earth on the point of

creation was the default nature but was stretched to a very free space.

An illustration (with figure 3,4&5) describes how spacetime inside planetary bodies were stretched.

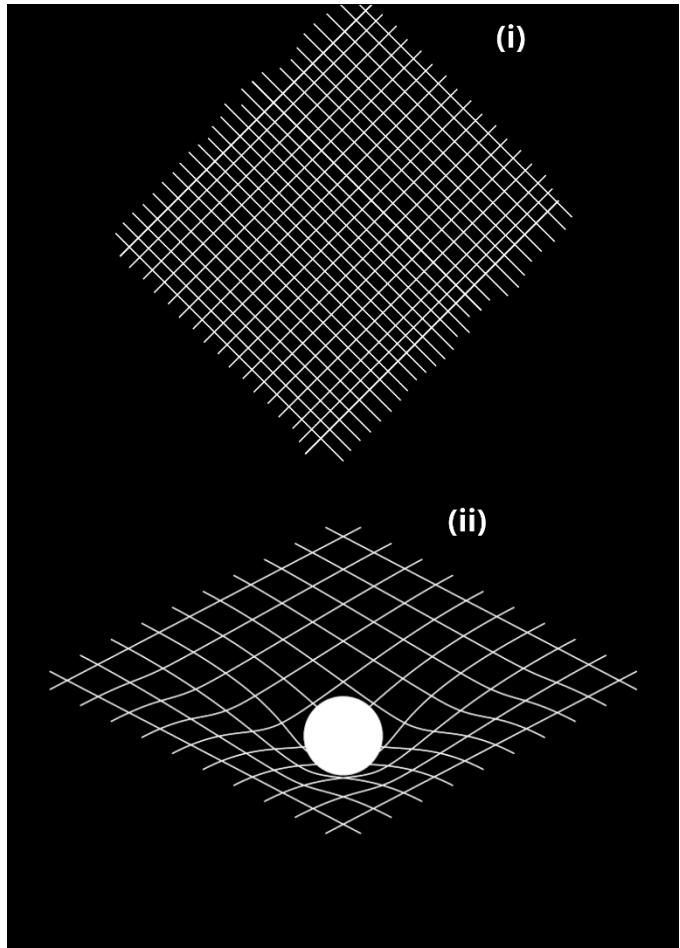


Figure 3

The image (i) in Figure 3 will represent the default nature of spacetime. (ii) shows a spherical body exerting pressure on the default nature of spacetime.

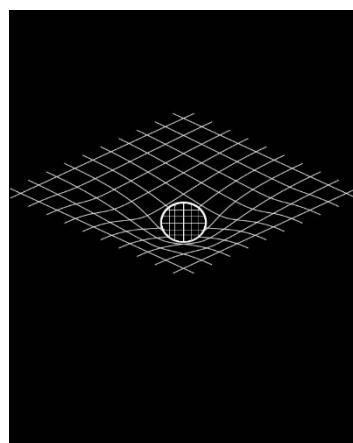


Figure 4

At the point of creation of the universe, the default nature of spacetime was everywhere, these

planets or planetary bodies that exerted pressure on the default spacetime also contained the same default spacetime inside them (shown in figure 4).

Distortion means that a referred thing or entity has gone out of shape. From figure 4, it is seen that a

spherical body exerting pressure on the default spacetime creates curvature of spacetime, the fact that a curvature emerges means that a distortion due to pressure has taken place. Thus, resulting to gravity.

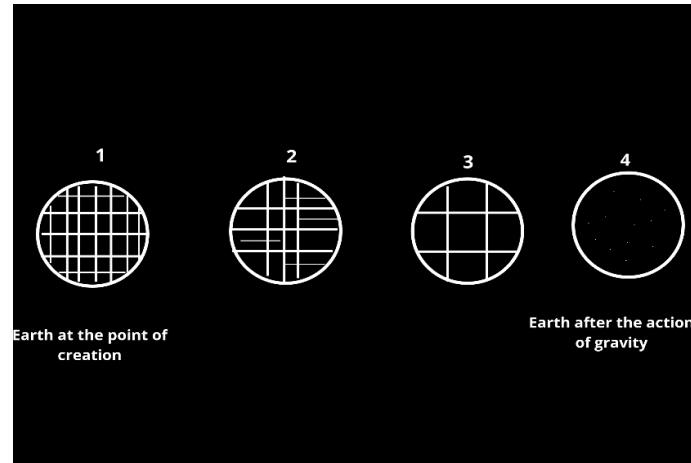


Figure 5

There are many bodies/planets that exerted pressure on the default spacetime at the outer space during the point of creation. Using earth as an example, figure 5 shows the stretching of the default nature of spacetime inside earth by the effects of gravity the moment it was found to exert pressure. In figure 5, 1 represents earth containing the default spacetime, 2 & 3 in figure 5 shows the stretching of the default spacetime process, 4 shows the final nature.

The only way more space can come into existence is by stretching (expansion). This can be done either by gravity or spacetime energy fluid. Just like an elastic rubber instance, stretching of spacetime results into a reduction in thickness. Unfortunately, an instrument or device that can measure the thickness of spacetime at different areas doesn't exist. However, a mathematical prove of this concept which I'll present will also help.

General Theory of Relativity suspended the application of the Newtonian gravity concept. Have Physics asked this question; Why can we use the Newtonian concept to find the mass of a body applying pressure on spacetime with a given acceleration due to gravity but not GTR. This is simply because equations of GTR are more complex, explaining basically about curvature which requires the use of tensors and leaving the details for distortion. Why don't we use a simpler approach to solve problems about our universe? Solutions to problems about our universe are looking at us, but we choose to go deep with no result.

At the outer space, we have a thick spacetime nature, but the discovery of the expansion of the universe means that although the nature of spacetime is still thick and might not be noticed but it is a stretched version of the default nature.

However, here's the clue. A contained stretched spacetime cannot be reversed back to its default nature. Hence, this implies that the present nature of spacetime inside earth and other planets exerting pressure on spacetime has been stretched a long time ago by the effects of gravity. These planets with these stretched natures of spacetime just rotate about at the outer space and the effect of gravity goes unnoticed because the stretching has been done a long time ago (once it was found to exert pressure).

The bigger the mass, the higher the pressure exerted on spacetime, the more stretched the spacetime inside that object/planet of mass is, involving the area of the planet.

### c) Mathematical Test for New Approach

Since the stretching inside a planet has been done a long time ago, this implies that we can find the value of the default nature of spacetime before or at cosmic inflation.

The parameters needed to find the default nature of spacetime are;

Mass of a body applying pressure (planet) ( $M$ )

Radius of a body applying pressure(planet) ( $r$ )

Value of stretched spacetime inside the body applying pressure (planet) ( $s_{stretched}$ )

Default nature of spacetime in which the bodies are applying pressure on ( $s_{default}$ )

There's still one more problem, to get the default nature of spacetime, we must get the value of a stretched spacetime inside a planet applying pressure. GTR addressed object in free fall as moving along a geodesic. In Newtonian concept, all object in free fall accelerates towards the center with the same speed. In

this alternative approach to GTR, the nature of the stretched spacetime inside a planet is the main reason why objects of different masses in free fall accelerate towards the center with the same speed. Thus, the value of the nature of stretched spacetime inside a planet is  $(1/g)$  i.e. the inverse of acceleration due to gravity of a planet.

Parameters for earth will be used for first trial to test for the default nature of spacetime.

Presenting parameters for earth from [13];

$g$  for earth:  $9.8 \text{ ms}^2$

Mass of earth:  $5.97 \times 10^{24} \text{ kg}$

Radius of earth:  $6.38 \times 10^6 \text{ m}$

$s_{\text{stretched}}$  of earth  $(1/g)$ :  $1/9.8 = 0.102$

$S_{\text{default}}$ ?

I formed a formula with these four parameters for a planet. Spacetime is of one nature ( $S_{\text{default}}$ ). At cosmic inflation, it was initially everywhere and inside a planet also. Since it was everywhere, the aim is to find out if stretching of the default spacetime occurs on the line of pressure. Automatically, all planets exert pressure on spacetime due to their mass. The technique from this formula is that the value of the  $S_{\text{default}}$  will be reduced to a lower value to signify that stretching(expansion) has been done. Spacetime inside a planet is based on its area, we are dealing with spherical planets, the radius will be squared ( $r^2$ ). Representing the area,  $r^2$  will be multiplied by  $S_{\text{default}}$ . Since the mass exerts the pressure, a division sign must be between  $S_{\text{default}}$  multiplied by  $r^2$  and the mass, this will result into a stretched value of spacetime. The planet is on the line of pressure.

$$(S_{\text{default}} \times r^2) / M = s_{\text{stretched}}$$

Thus, the value of  $S_{\text{default}}$  is the unknown, the formula will now be;

$$S_{\text{default}} = (s_{\text{stretched}} \times M) / r^2$$

Using the values for earth, we have

$$S_{\text{default}} = 0.102 \times 5.87 \times 10^{24} / (6.4 \times 10^6)^2$$

$$S_{\text{default}} = 1.50 \times 10^{10}$$

Since all planets exerts pressure on spacetime, parameters for more three planets must be used to confirm this value.

Presenting parameters for mars from [13];

$g$  for mars:  $3.72 \text{ ms}^2$

Mass of mars:  $6.46 \times 10^{23} \text{ kg}$

Radius of mars:  $3.39 \times 10^6 \text{ m}$

$s_{\text{stretched}}$  of mars:  $(1/g) = 1/3.72 = 0.268$

$S_{\text{default}}$ ?

Using values for mars, we have

$$S_{\text{default}} = (s_{\text{stretched}} \times M) / r^2$$

$$S_{\text{default}} = 0.268 \times 6.46 \times 10^{23} / (3.39 \times 10^6)^2$$

$$S_{\text{default}} = 1.50 \times 10^{10}$$

Presenting parameters for Neptune from [13];

$g$  for Neptune:  $13.3 \text{ ms}^2$

Mass of Neptune:  $1.03 \times 10^{26} \text{ kg}$

radius of Neptune:  $2.27 \times 10^7 \text{ m}$

$s_{\text{stretched}}$  of Neptune  $(1/g)$ :  $0.075$

$S_{\text{default}}$ ?

Using values for Neptune, we have

$$S_{\text{default}} = (s_{\text{stretched}} \times M) / r^2$$

$$S_{\text{default}} = 0.075 \times 1.03 \times 10^{26} / (2.27 \times 10^7)^2$$

$$S_{\text{default}} = 1.50 \times 10^{10}$$

The last test will be with parameters for sun from [13];

$g$  for sun:  $274 \text{ ms}^2$

Mass of Sun:  $1.989 \times 10^{30} \text{ kg}$

radius of Sun:  $6.96 \times 10^8 \text{ m}$

$s_{\text{stretched}}$  of Sun  $(1/g)$ :  $0.00364$

$S_{\text{default}}$ ?

Using values for Sun, we have

$$S_{\text{default}} = s_{\text{stretched}} \times M / r^2$$

$$S_{\text{default}} = 0.00364 \times 1.989 \times 10^{30} / (6.96 \times 10^8)^2$$

$$S_{\text{default}} = 1.50 \times 10^{10}$$

The result of this mathematical test with the parameters for three planets and the sun shows that with this concept of stretching by the waves/effect of gravity, the value of the default nature of spacetime before cosmic inflation is approximately  $(1.50 \times 10^{10})$  as a constant. Hence, with the value of the default nature of spacetime as  $1.50 \times 10^{10}$ , the value of the nature of stretched spacetime in any planetary body can be calculated.

From the mathematical results, earth at the point of creation contained the default nature of spacetime  $(1.50 \times 10^{10})$ , once earth exerted pressure on the same default spacetime (figure 4) at the outer space, this value  $(1.50 \times 10^{10})$  of spacetime was reduced (stretched) to  $0.102$  by the effect of gravity (line of pressure). This value  $(0.102)$  signifies a very free space.

Parameters for different planets and planetary bodies can be applied to get this default nature of spacetime before cosmic inflation. This is to prove this new concept of stretched spacetime by effect of gravity. With these results, it is revealed that when a given mass and radius of a spherical planet exert pressure on the default nature of spacetime, the default nature of spacetime at the line of pressure (inside the planet) stretches.

Note: The unit of  $S_{\text{default}}$  is supposed to be  $\text{m}^3 \cdot \text{kg}^1 \cdot \text{s}^2$  and the unit of  $s_{\text{stretched}}$  is  $\text{ms}^{-2}$ , but approved unit will be decided in future. For non-spherical planets or planetary bodies, the area of the body will be replaced with  $r^2$ .

GTR defines gravity as a result of curvature of spacetime, this curvature explains a smaller planet's

rotation around a bigger planet, and the attraction of the smaller planet to the big one. GTR and the Newtonian gravitational concept does not specifically explain why objects are attracted to their planet's center. It is known that gravity is the reason why an object on the surface of a planet is attracted to its center but there's no specific reason and it is not curvature. For example, imagine a planet contains a very thick spacetime just like the default nature, the curvature outside will enable the attraction of an object to it, but once that object gets inside the planet, the object will float. Therefore, it cannot move downwards talk less of reaching the center. However, planet formation during the big bang is not known, only our creator can say but the only way the lands of planet earth and everything beneath the lands does not fall through is due to the presence of the

default spacetime at the core of earth. The same applies to other planet and this is the reason why objects are attracted to the center and proves the fact that only the default nature of spacetime existed. When an object on the surface of a planet is attracted, once it gets inside the planet, it falls through the stretched spacetime to the center, this is a way of the stretched spacetime indicating that the original spacetime is around leading the object to it. Therefore, during planet formation at the point of creation of the universe, it could be there was a hot fluid around the core of planets were the default spacetime can be found. Hence, the stretching of the default spacetime inside a planet due to line of pressure is done in a way that the default nature around the core of the planet will be untouched. Figure 6 and Figure 7 shows an illustration.

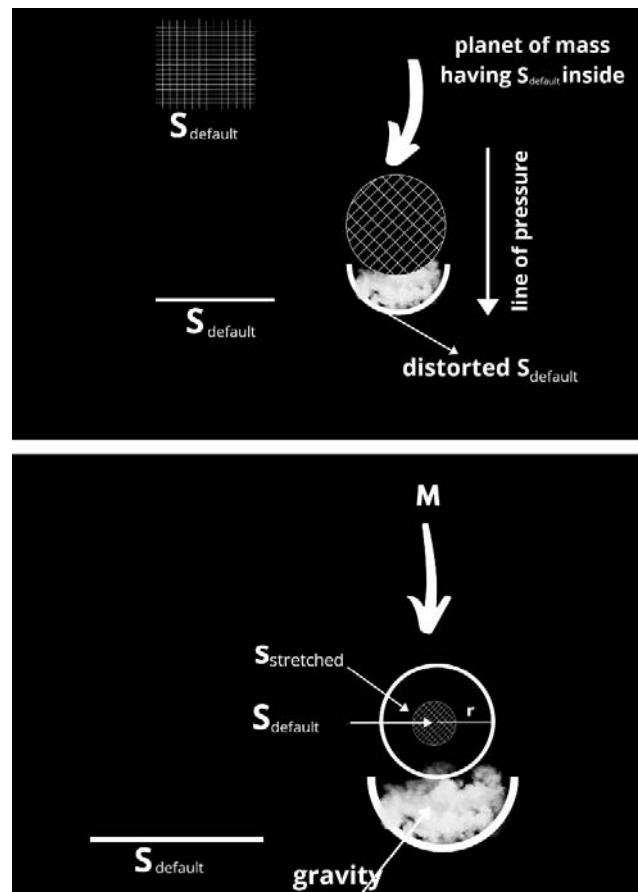


Figure 6

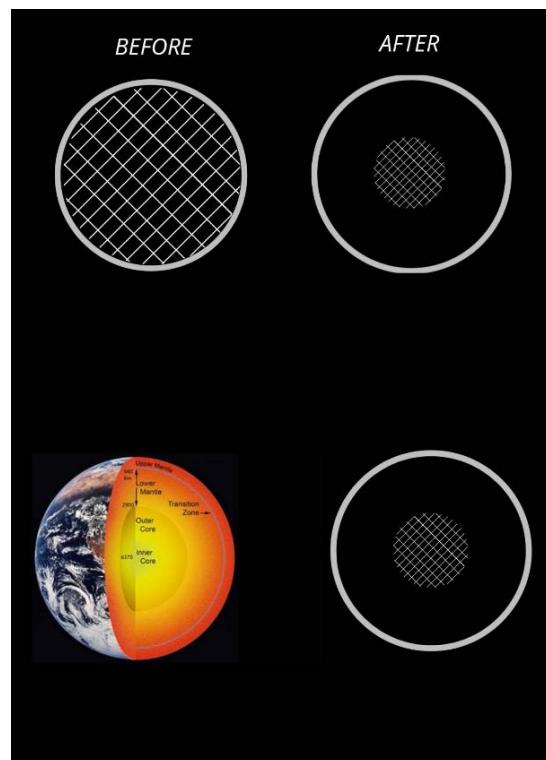


Figure 7

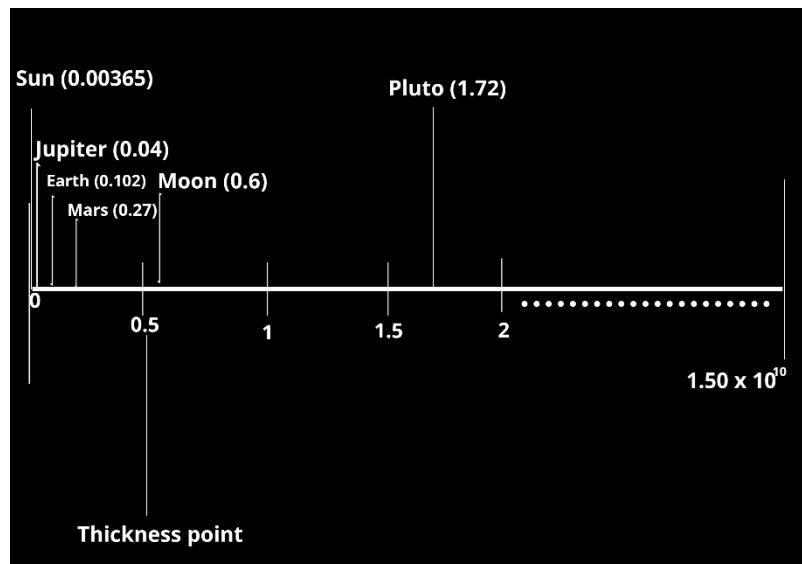


Figure 8

The mass of a planet will determine the pressure that'll be applied. As shown in Figure 8, the Sun and Jupiter are bigger masses than earth and mars. Also, earth and mars are also bigger masses than the moon and Pluto. Figure 8 shows the difference between the nature of spacetime in different planets. Between the planets, the nature of spacetime decreases as the mass increases. An object inside a planet will start feeling slight thickness from a spacetime nature of 0.5. The thickness increases as the value increases from 0.5. The expansion of the universe has been proven from

observations, therefore the current nature of spacetime at the outer space is not the default nature but its value is not reduced far from  $1.50 \times 10^{10}$ . Hence, its value still describes a nature of spacetime thick enough to hold the planets from falling. The values of the nature of spacetime for planets in our solar system is shown in [16].

A question can be asked this way; If the effect of gravity stretches the spacetime towards the line of pressure. Currently, why doesn't the effect of gravity keep stretching the spacetime inside rotating planets on

the outer space? The answer to this question will bring about an understanding in quantum gravity. Thus, if we name the gravitational effect that comes from the default spacetime, a default gravitational effect. This default gravitational effect can only stretch the default spacetime. Since the default spacetime initially inside the planets has been stretched to a new nature, a corresponding gravitational effect similar to the new nature will only be authorized to stretch the new nature further. This means, no matter how free the nature of space is, just like in earth, an object particle in free fall can cause a distortion on the slightest little particle of spacetime which will bring about a slight (little) gravitational effect (Quantum Gravity). The gravity sequence continues. Generally, the concept of stretching of the default nature of spacetime which is very thick, exist mainly because of the presence of humans and creatures which will be inside these planets. Humans will not be able to interact properly in an environment of a thick spacetime. Therefore, once a planet exerts pressure, the effect of gravity automatically stretches the default spacetime inside that planet, to reduce its thickness so as to accommodate humans and to enable smooth interaction.

#### d) Time (Special Relativity)

The concept of time as related to space is mainly about the thickness of spacetime. This is the

knowledge Albert Einstein was trying to pass to the world with his concept. The reason it wasn't yet understood properly is because the different natures of spacetime were not identified then. Now that I've presented the different natures, time can now be explained as per Albert Einstein's description. An alternative approach on time as related to space was introduced in [17]. Time is basically the comparison between different natures of spacetime in different areas. With the help of Albert Einstein's time dilation, I introduced a real concept of time in [17] with this new approach to GR.

As we know, time is not rotation and revolution of the earth around the sun. There is nothing like "The time in United States is ahead of the time in Cuba".

The nature of spacetime on earth is the same in all areas resulting into all areas having the same time. It is due to the rotation and revolution of the earth around the sun that enables some areas to experience morning (light) and some areas to experience night (darkness). However, in a situation like in another planet, we can't say that time is the same because actually it takes a longer time for objects in free fall to reach the ground on other planets than on earth. With the values of  $S_{\text{stretched}}$  for different planets, I introduce a real concept of time.

Table 1

Body	$S_{\text{stretched}}$ for planets	$P_E = S_{\text{stretched}}(\text{planet})/S_{\text{stretched}}(\text{Earth})$
Sun	0.00365	0.035805
Mercury	0.27855	2.732489
Venus	0.11274	1.105944
Earth	0.10194	1
Moon	0.61728	6.055327
Mars	0.26525	2.602021
Jupiter	0.03854	0.378066
Saturn	0.09025	0.885325
Uranus	0.09372	0.919364
Neptune	0.07107	0.697175

Table 2

Body	$P_E$	Time(t) [t/ $P_E$ ]
Sun	0.035805	t/0.035805
Mercury	2.732489	t/2.732489
Venus	1.105944	t/1.105944
Earth	1	t/1
Moon	6.055327	t/6.055327
Mars	2.602021	t/2.602021
Jupiter	0.378066	t/0.378066
Saturn	0.885325	t/0.885325
Uranus	0.919364	t/0.919364
Neptune	0.697175	t/0.697175

The tables (1 & 2) show the values of the nature of spacetime in different planets alongside the time constant ( $P_E$ ). To solve a problem on time in another planet,  $t$  in the related formulae will be replaced with  $t/P_E$  as table 2 shows.

#### e) Mathematical test (Time)

Solving a simple problem which involves motion, for example;

An object moves with a speed of 20m/s through a distance of 3000m. How long will it take the object to reach its destination from a starting point, if the event was recorded in each of the following planets: Earth, Mars and Venus.

Solution;

We use equation;  $v=d/t$

$v$  – velocity

$d$  – distance

$t$  - time

From the example above,  $d=3000m$ ,  $v=20m/s$ ,  $t = ?$

For Earth, we have  $t_{1/1} = d/v$ ,  $3000/20 = 150\text{sec}$

For Mars, we have  $t_{1/2.602021} = d/v$ ,  $3000/20 = 150\text{sec} \times 2.602021 = 390.30\text{sec}$

For Venus, we have  $t_{1/1.105944} = d/v$ ,  $3000/20 = 150\text{sec}$   
 $150\text{sec} \times 1.105944 = 165\text{sec}$ .

From the test, it is seen that the same situation on planets with lower gravity than earth like Mars and Venus, takes a longer time than the same situation on earth which has a higher gravitational effect than the other two.

This is the result of the statement “Gravity affects Time”

The idea of the Experiment of putting twin babies on different planets (from A. Einstein) resulting into the baby on the planet with gravity to some extent, aging faster than its twin in a planet with little or no gravity is from this simple calculation.

To know the differences in time between planets, since we only know the situation on earth, it can be used to determine for other planets. We simply relate to the situation of seconds to minutes to hours, on Earth.

Similarly, for time, to calculate the exact time on another planet, we simply take the value of a minute for earth,

Therefore, one minute is equivalent to 60sec.

To find the time in Venus, we have  $t/P_E$  which is  $60/1.105944$ , we have 54sec. therefore, regardless of how we mark the rotation and revolution of a planet to determine time, we can say that time in Venus in (minutes) is 6secs slower or behind earth's time. As we say 60sec makes 1minute on Earth, we then say 54sec makes 1minute in Venus. Days is actually a concept from the rotation of earth around the sun but we can use 54sec per minute and use it to relate with the total

number of earth days it takes Venus to rotate around the sun as compared to earth, this will then be the time on Venus as per its rotation and revolution around the sun. However, related to time in space, seconds might not be the exact unit for this but the bottom line is that; if seconds is used as the unit of time as per the difference in the natures of spacetime (the time in Venus moving in (seconds) as related to space is 6sec slower than earth's time moving in seconds).

However, I know that seconds emerges from rotation and revolution but real time (space) should not be in seconds. Whatever unit that will be decided in future, after calculating just as i calculated for Venus, the approved unit should be inserted i.e. time (space) in Venus is 6(unit) behind earth's time. Time in other planets can be determined through this concept of differences in the nature of gravity and spacetime between planets. This time theory will be relevant when humans start migrating to other planets.

To calculate  $g$  for another planet, we can simply take  $g$  for earth which is 9.8 and divide it by  $P_E$  of the particular planet. E.g. for Venus we have  $9.8/1.105944$ , we have 8.86m/s. This is how we truly know that gravity is related to Space and Time.

Time must always be defined with space (spacetime).

#### f) Expansion of the universe

The expansion of the universe is the increase in distance between any two given parts of the observable universe with time. Spacetime is the geometry of the universe. Expansion of the universe means “Expansion of spacetime” and expansion of spacetime is the stretching of spacetime. In this new concept, the two causes of the stretching of spacetime were presented. One of the causes have been discussed, its problem has been eliminated by getting the value of the default nature of spacetime before cosmic inflation.

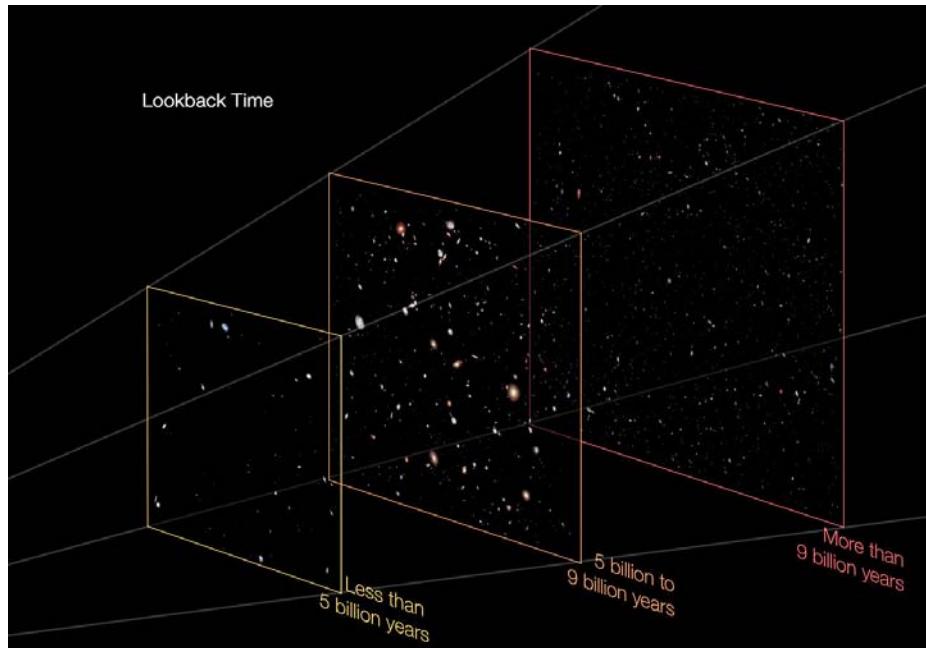
The acceleration/expansion of the universe was discovered in 1998 by the supernovae cosmology project and the High-z supernovae search team, both with the use of type Ia supernovae to measure the acceleration[7,23].

The method in this project involved a type Ia supernovae with the brightness of a standard candle. This kind of supernova is an explosion of an old compact star like the sun, it emits light as a whole galaxy. As objects go further away, they appear dimmer, we can now use the observed brightness to measure the distances. Nobel laureates Saul Perlmutter and Adam Riess of the U.S and Brian Schmidt of Australia contributed to the discovery that the universe is expanding and speeding up. With the help of the best telescopes in the world, their team found over 40 distant supernovae whose light was weaker than expected indicating that the expansion of the universe was accelerating.

You could take the brightness of a supernova as an indicator of how far away it is; the fainter it is, the further away it is from us and hence its light has taken more time to reach us. So, with the fainter supernovae, you are looking farther and farther back in time. You can also use the colors of the spectral features of a supernova; a supernova would look blue if it were seen nearby, but when you see it very far away, it looks red. How red it gets tells you how much the Universe has stretched since the supernova exploded, because while the light is travelling to us, its wavelength stretches by the exact same proportion as the Universe stretches (Saul Perlmutter. Nobel Lecture. Rev. Mod. Phys. 88,1127 2012)[24].

*Major review points from the discovery project from [7,23];*

- 1) Objects in the universe are moving away from one another at an accelerated rate
- g) *Major Evidence of the Expansion of the universe*



**Figure 9:** Hubble eXtreme Deep Field, the photo was assembled by combining NASA/ESA Hubble Space Telescope observations taken of a patch of sky within the original Hubble Ultra Deep Field

One of the major evidences of the expansion of the universe is the galaxy clusters decrease in density[25]. Figure 9 shows the decrease in cluster density from less than 5 billion years to more than 9 billion years. This is a prove that spacetime is also losing its thickness as it expands. If more space of the same nature would magically appear, it wouldn't have to affect the density of galaxy clusters rather it will only add to the increase in area of the universe. The only way the density of galaxy cluster will be affected is if the spacetime around them stretches (expands) which will also result in reduction in thickness to enable the bodies to move apart.

- 2) The accelerated expansion of the universe is thought to have begun since the early stage of the universe.
- 3) With GTR, an accelerated expansion can be accounted for by a positive value of the cosmological constant, equivalent to the presence of a positive vacuum energy known as dark energy.
- 4) The finding has led to the now widely accepted theory of dark energy. Our finding that the universe was presently accelerating, immediately suggested a profound conclusion. The Universe's cosmic energy budget is dominated by a type of smooth distributed "dark energy" (Adam.G.Riess. Nobel Lecture. Rev. Mod. Phys. 84,1165)[1].

From these observations, the presence of the other cause (dark energy) of the stretching of spacetime has been revealed. I now proceed to reveal the nature of dark energy.

#### h) *Dark Energy*

In cosmology, dark energy is described as an unknown form of energy that affects the universe on a large scale.

The major evidence of dark energy's existence was through the expansion of the universe discovered from supernovae measurement.

It is known that dark energy contributes 68% of the total observable energy in the universe.

Dark Energy is thought to be very homogenous and not very dense and is known to interact through any of the fundamental forces other than gravity.

Dark energy was discovered in 1998 by two teams of astronomers who measured light coming from exploding stars. The striking result was that distant supernovae were dimmer than they would be in a universe that was slowing down. It was thought that dark energy was the cause of an accelerated universe. This acceleration is thought to have begun about 5 billion years ago. Although the first discovery of the effect of dark energy was in 1929 by Edwin Hubble when he

noticed that the further a galaxy is from the earth, the faster it is moving away from us.

Major concluding points from the discovery of dark energy [1,6,7,23,24,25];

- 1) It is a positive vacuum energy.
- 2) Dark energy causes the expansion (stretching) of space which is also the expansion of the universe.

Earlier in this paper, we discovered mathematically the value of the default nature of spacetime (the thickest form).

This concept provides a mathematical prove of the relationship between spacetime and dark energy with the illustration shown in figure 10

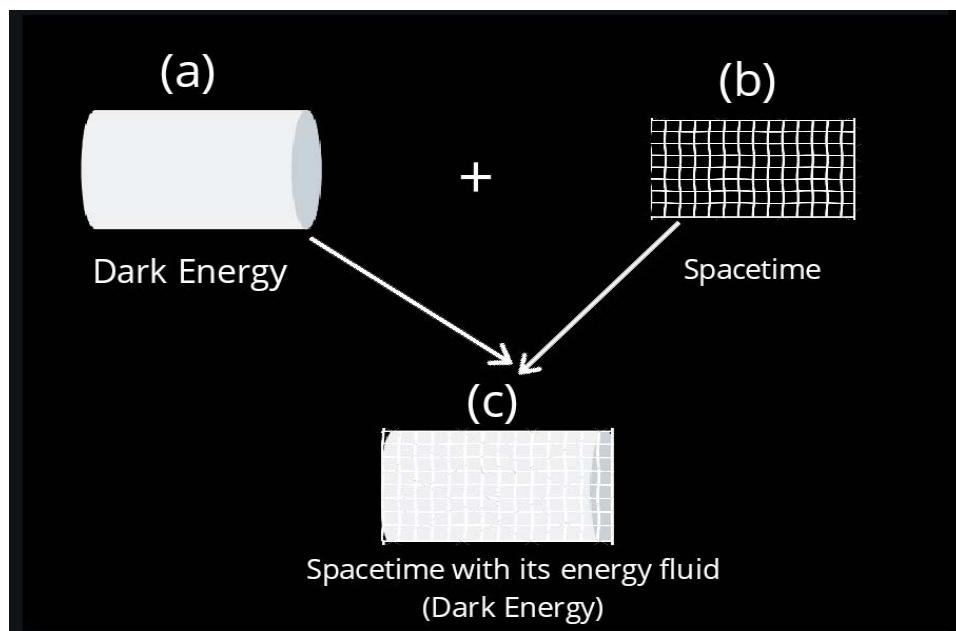


Figure 10

In figure 10, if (a) is the energy fluid of spacetime (dark energy) and (b) is spacetime itself, a combination of both is shown as (c); this is how spacetime exists. Dark energy exists with spacetime. If there is a default spacetime which existed before cosmic inflation, this means there is a default amount of dark energy that existed with the default spacetime.

If dark energy is presented as  $E_d$  and the value of the default nature of spacetime is  $S_{\text{default}} = 1.50 \times 10^{10}$ . Thus, one thing is certain, dark energy must move with the speed of light (c). I formed an equation;  $E_d = S \times c$ , relating dark energy with spacetime. Inserting the related parameters, the value of dark energy as related to the default spacetime before cosmic inflation is  $4.5 \times 10^{18}$  as a constant. However, this is the default value of dark energy associated with a default spacetime. The nature of spacetime at the outer space has been stretched/expanded. Therefore, the value ( $4.5 \times 10^{18}$ ) as dark energy of a huge amount is now spread smoothly around the universe due to the expansion/stretching of spacetime at the outer space. The unit associated with

that value describes a huge amount of dark energy that was very dense. Expansion of spacetime will then enable dark energy to spread smoothly around the universe. Dark energy at a particular area could be high and low in another area. Values could differ but the default value at cosmic inflation is presented as  $(4.5 \times 10^{18})$  of a high energy unit.

#### IV. QUANTUM MECHANICS – ELECTROMAGNETISM

Quantum Mechanics (QM) is a fundamental theory that describes the properties of nature on an atomic scale. While QM describes in atomic scale, classical physics which is now explained with GR, describes properties of nature on a macroscopic (bigger) scale. This results in QM and GR being the twin major pillars of physics. Quantum Mechanics has a root i.e. it started from somewhere. All microscopic and submicroscopic particles originated from somewhere which I'll display in this section. Although the smallest

particle of an object can still be split further, there's an approved scale for QM as related to the TOE.

*NB:* It doesn't mean that the approved state cannot be split further.

In physics, electromagnetic radiation (EMR) refers to the waves (photons) of the electromagnetic field, propagating through space. It includes radio waves, infrared, visible light, microwaves, ultraviolet, X-rays, and gamma.

Electromagnetic radiation consists of electromagnetic waves, which are synchronized oscillations of electric and magnetic.

Electromagnetic waves do travel at the speed of light (c). The position of an electromagnetic wave within the electromagnetic spectrum can be characterized by either its frequency or oscillation of its wavelength. In quantum mechanics, an alternative way of viewing EMR is that it consists of photons. The energy of an individual photon is quantized and is greater for photons of higher frequency. This relationship is given by Planck's equation  $E=hc$  where E is the energy per photon,  $\nu$  is the frequency of the photon  $a$   $h$  is Planck's constant.

There can be other sources of the waves of EMR, but the natural source is from the stars. In this paper, the stars as the source of EMR is the description. Therefore, the term "EMR" or "EM radiation" further mentioned in this paper is defined as the whole energy picture from a star as figure 11 shows

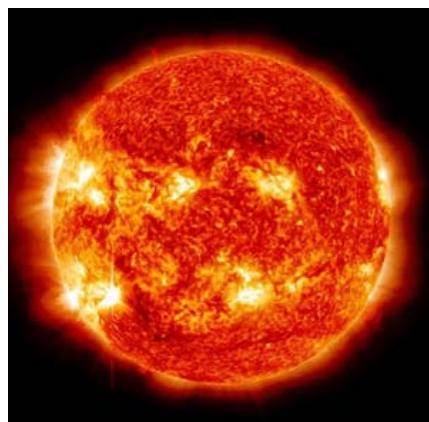


Figure 11

Planets in different solar systems rotate around their star. These stars are the source of light to the planets in their related solar system. However, these planets have a layer that do absorb harmful rays from their star. This layer called the ozone layer was discovered in 1913 by French Physicists Henri Buisson and Charles Fabry. The ozone layer found in the region of stratosphere contains high concentration of ozone ( $O_3$ ). The average ozone concentration in Earth's atmosphere as a whole is about 0.3 parts per million. Measurements showed that with the presence of the ozone layer, there was no radiation below a wavelength of about 310nm at the ultraviolet end of the spectrum.

The ozone layer absorbs 97 to 99 percent of the Sun's medium frequency ultraviolet light (from about 200nm to 310nm wavelength) which otherwise would damage exposed life.

The thickness of the ozone layer varies. It can be thinner near the equator and thicker at other parts of the planet.

EMR from the stars are the closest to dark energy because they are the only natural source of energy existing. At the outer space where the effect of dark energy is observed is the same environment where the death of a star happens.

Major points from observations of EMR[5].

- 1) Electromagnetic waves do travel at the speed of light
- 2) The position of an electromagnetic wave within the electromagnetic spectrum can be characterized by either its frequency or its wavelength.
- 3) Relationship between energy per photon and its frequency is given by  $E=hc$ .

It is known that EM radiation propagate/move in particles (photons) as illustrated in figure 12

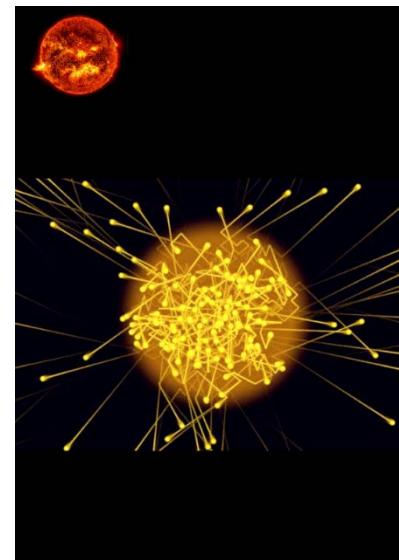


Figure 12

Using the sun (star) as an example for this explanation; radiation from the sun is known as sunlight, it is a mixture of electromagnetic waves. EM waves or rays ranging from gamma to radio waves of spectrum are produced by the sun, these rays are characterized by their frequency. For example; Gamma rays are produced from fusion at the core, getting to the surface of the sun, they are absorbed by the solar plasma and re-emitted to lower frequencies. Reaching the surface of the earth, the frequency will be within the range of infrared to UV in the spectrum. Therefore, a photon from a sun making its journey to the surface of the earth can be a gamma ray photon or an ultraviolet ray photon or the nature of any rays of the spectrum but there's a

relationship between quantum mechanics and classical mechanics. To a dinosaur, humans appear like ants. To ants, humans appear like dinosaurs. This relationship with both mechanics is the fact that the whole energy picture of the sun is a photon at a very large view. This implies that; although the sun can emit different types of photon of the EM spectrum, all these different emitted photons all came from a source.

### a) Pack Photons (p-rays)

In this concept, as related to the stars, a term called "Pack Photons" is introduced.

A pack photon represents the whole energy picture of a star in quantum state. Stars consist of a mixture of all EM rays and can emit photons of different rays but all these photons have an origin. The sun can't emit a separate photon as a UV photon and then emit another as an X-ray photon. No, it doesn't happen that way. This is what happens; A pack photon represents the whole energy picture from a star as photon. Therefore, a pack photon is the highest energy photon from the spectrum. A pack photon (p-rays) which is a mixture of all particles of the spectrum is the default nature of these photons, it can be reduced to a gamma ray photon, from gamma ray to an x-ray photon, and so on. It is the peak of the Electromagnetic spectrum. The stars are the only bodies that possess electromagnetic radiation in full scale with all mixtures of the spectrum. Thus, the stars produce pack photons.

The idea behind this pack photons is backed up with the measurement of the fine structure constant. The fine structure constant  $\alpha$ , is a dimensional constant that characterizes the strength of the electromagnetic interaction between charged particles. It also describes the tendency of an electron to absorb a photon.

Providing a clue to an observational prove of this new theoretical concept of EMR will be done mathematically.

The default energy of a photon from the Inferior Light is given as  $E$

Electromagnetic waves move with the speed of light (c)

The relationship between an energy of a photon (E) and its frequency (f) is (h)

The medium through which the photons propagate is defined with (k)

Speed of light (c) =  $3 \times 10^8$ m/s

Planck constant (h) =  $6.582 \times 10^{-16}$ eV.s

Coulomb constant (k) =  $8.9 \times 10^9$ N.m<sup>2</sup>.C<sup>-2</sup>

In this new concept, I formed an equation as the energy of a pack photon, given as  $E_{\text{packphoton}} = k/hc$

$E_{\text{packphoton}} = 4.5 \times 10^{16}$  with no unit for the mean time.

Thus, the energy of a pack photon is given as  $4.5 \times 10^{16}$ . Before initiating the idea of a pack photon, this value was found to also have a meaning in quantum mechanics in this way, the value of a pack photon

together with the value of the charge of an electron or elementary charge ( $1.60 \times 10^{-19}$ C) gives the exact or approximate value of the measurement of the fine structure constant i.e.  $4.5 \times 10^{16} \times 1.60 \times 10^{-19} = 0.0072$ .

The fine structure constant  $\alpha$ , is a dimensional constant that characterizes the strength of electromagnetic interaction between charged elementary particles, a precise determination of  $\alpha$  allows for a test of the standard Model of particle physics.

Parker et al used matter-wave interferometry with a cloud of cesium atoms to make the most accurate measurement of  $\alpha$  to date.

Using the recoil frequency of cesium-133 atoms in a matter-wave interferometer, we recorded the most accurate measurement of the fine structure constant to date:  $\alpha = 1/137.035990046(27)$  at  $2.0 \times 10^{-10}$  accuracy. (Richard. H. Parker et al. Measurement of the fine structure constant as a test of the Model 2018 Vol. 360 Issue 6385, pp 191-195)[22].

The inferior light (Electromagnetic Radiation) consists of photons with an energy of  $4.5 \times 10^{16}$  as a pack-photon i.e. each photons of the inferior light has an energy of  $4.5 \times 10^{16}$ . The stars (matter) at the point of creation, absorbed the same inferior light that solidified to form it, the stars now possess the inferior light. The stars in its matter form, absorbed the inferior light (Electromagnetic Radiation) to give the picture we now see as the stars as shown in figure 13

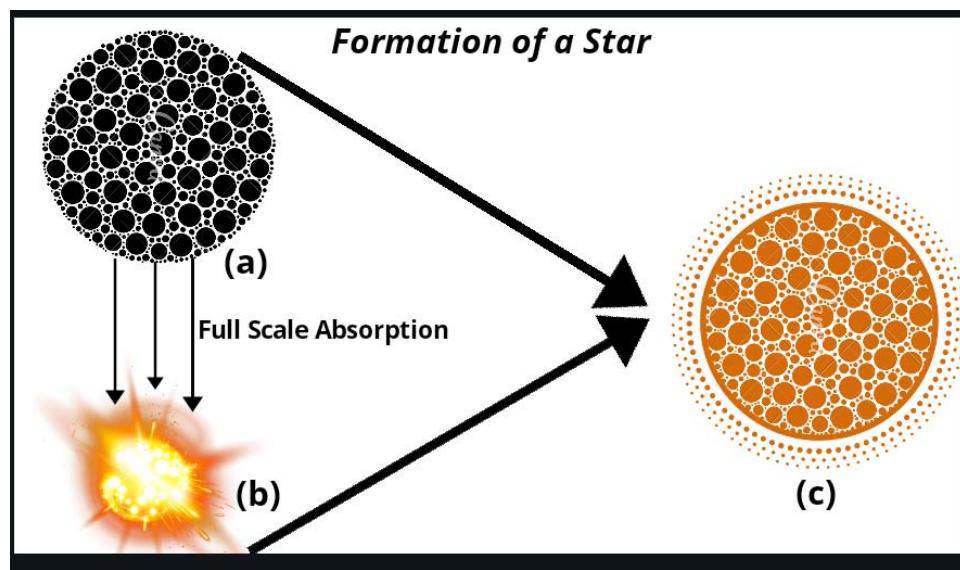


Figure 13

In figure 13, (a) is just like any other planet that was formed, (b) is the inferior light itself. Although stars were formed by the inferior light, instead of cooling to form a normal planet; they proceeded to absorb the same inferior light that formed it to give to picture (c) which is a star.

Each electron absorbed a corresponding photon from the inferior light. Thus, the energy value from each photon from the stars will be 0.0072 ( $7.2 \times 10^{-3}$ ). This will now be the new energy value of a pack photon (Figure 14)

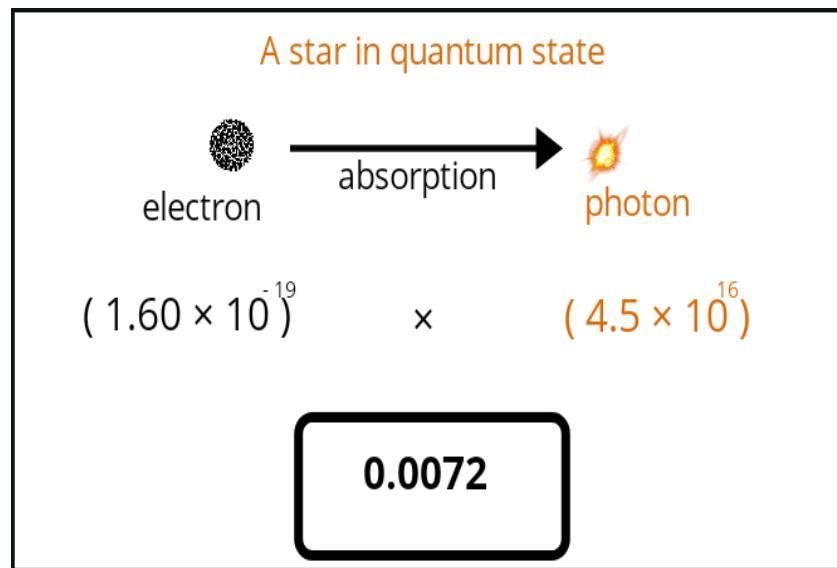


Figure 14

Just after the point of absorption during creation, the energy value of a photon from the stars will be measured as 0.0072 but as time passes, a shuffle happens.

The stars produce their energy from nuclear fusion. Using our closest star (Sun), the energy produced by the sun is from nuclear fusion done at its heart (core). The journey of a photon from the sun's core away from its surface to any planet passes through a complicated process. After the creation of stars, all

absorbed photons of the inferior light by the electrons are drawn at the core of a star and re-emitted still with an energy value of 0.0072. However, a shuffle happens just outside the core, these photons with an energy of 0.0072 are shuffled by other parts of the sun and re-emitted in lower frequencies. This is what led to the characterization of the rays of the spectrum according to their frequency and wavelength. This concept of shuffle will lead to the term "Reduction of Pack-Photons".

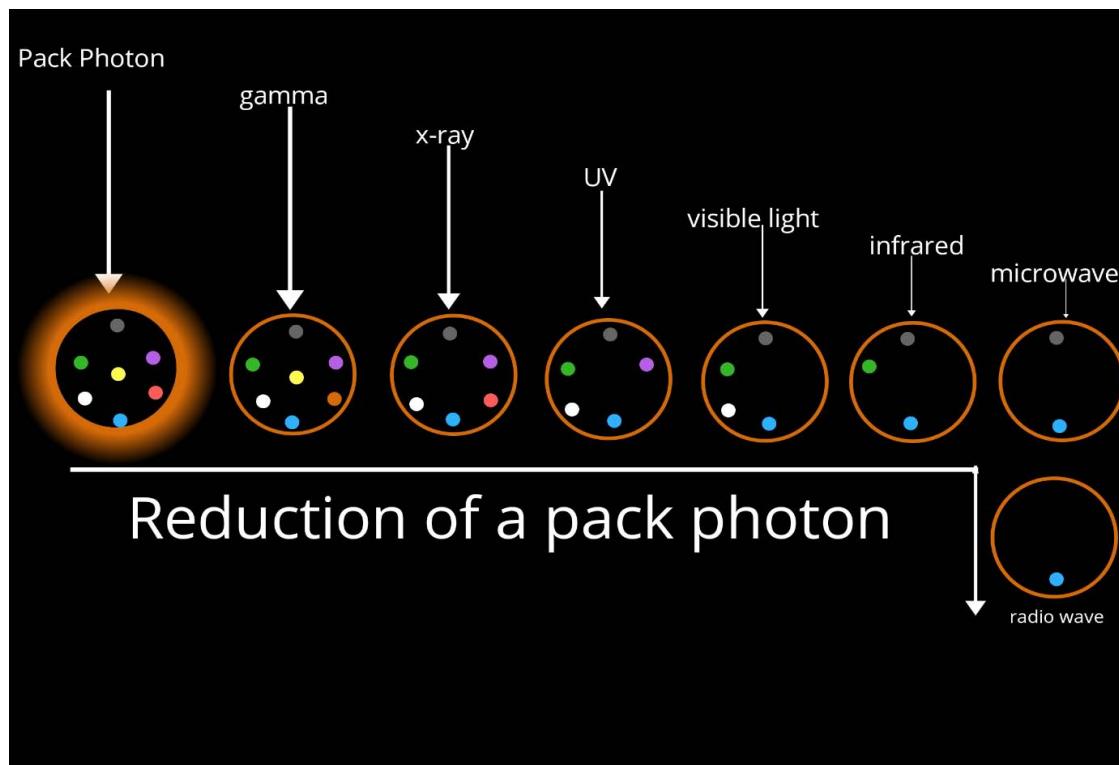


Figure 15

Gamma ray, X-ray, UV photons etc., are all reduced version of a Pack- Photon. A Pack-Photon is the peak of the spectrum with highest frequency and the lowest wavelength. Figure 15 shows the reduction of a pack photon. UV piece (purple), Infrared piece (green), X-ray piece (red), Gamma ray piece (yellow), radio wave piece (blue) microwave piece (black) and visible light piece (white). A Pack -Photon is the default. It can be reduced to gamma, from gamma to x-ray, from x-ray to UV and so on. The sequence continues. From figure 15, an x-ray photon does not have the gamma piece (yellow) on it. Also, in a UV light photon, the x-ray piece (red) is absent, and so on. The sequence continues up to radio wave. Instead of the idea that other photons (rays) of the spectrum are emitted on their own from the sun, rather all photons are emitted from the core of the sun as pack photons but can be absorbed by other parts of the sun and re-emitted in lower frequencies that can find their way to anywhere outside. However, pack-photons are only emitted at the core of a star which we can't see but these pack-photons are only being able to escape shuffling by other parts of the sun to the surface in its complete form, once in a long period (occasionally). Any photon we see today from the sun was once a pack-photon.

The Electromagnetic spectrum was discovered long ago, the concept of pack photon is just being introduced in this paper (2020). This means, there's an EM radiation form higher than the normal gamma rays, if it has been observed, observers might just categorize it as a form of gamma ray. A pack-photon might have

been seen/observed but described as a gamma ray photon just because gamma rays are the highest currently in the spectrum. Thus, calculations will help differentiate.

#### b) Mathematical Test

In some of my previous papers, I included the unit for the value  $4.5 \times 10^{16}$  as joule (J), in some, I didn't include a unit. The Physics community will be responsible for the decision of the unit once it is discovered. I'll just do my calculations without a unit to avoid complications. The value  $4.5 \times 10^{16}$  as the energy of a Pack-Photon from the inferior light may not be in joules, it could be in eV or a unit that doesn't exist, and we can never prove or measure that value because the inferior light itself was been absorbed by the stars which are classical forms of matter. The value of a Pack-Photon changes to 0.0072. This value (0.0072) is preferred to be in joules but I proceed to get the frequency and wavelength of a pack-photon.

#### Frequency

The Equation ( $E=hf$ ) is the relationship between the energy of a photon( $E$ ) with its frequency ( $f$ ).  $h$  is the planck constant.

If the value (0.0072) is assumed to be in joules. The reduced planck constant in joules/sec ( $1.054 \times 10^{-34}$ ) is used. The frequency of a pack photon is

$$f = E/h. f = 0.0072/(1.054 \times 10^{-34})$$

$$f = 6.83 \times 10^{31}(\text{Hz})$$

*Wavelength*

The wavelength ( $\lambda$ ) of a photon is given as  $\lambda = c/f$ , where  $c$  is the speed of light ( $3 \times 10^8$ ) and  $f$  is the frequency.

Therefore, the wavelength of a pack photon is  $(3 \times 10^8)/(6.83 \times 10^{31})$ .

$$\lambda = 4.39 \times 10^{-24} \text{ (m)}$$

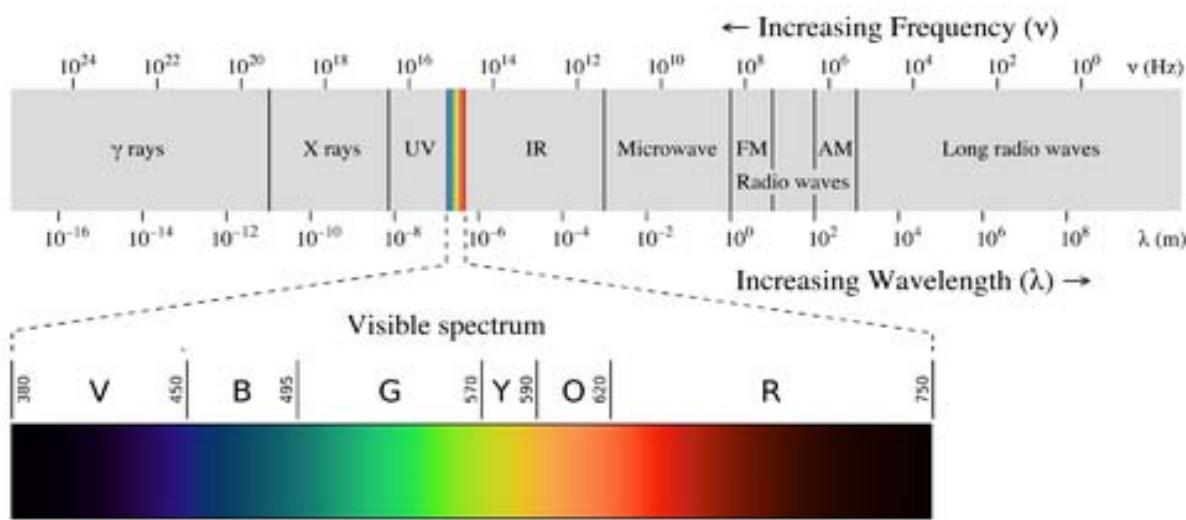


Figure 16

If we compare the details of the highest energy (gamma ray) of the spectrum from figure 16 with the details for a pack – photon, it is seen that a pack - photon is higher than a gamma ray.

Figure 16 shows the electromagnetic spectrum; gamma ray has a frequency (Hz) of  $10^{20} - 10^{24}$  and a wavelength (m) of  $10^{-16} - 10^{-12}$ . A photon higher than a gamma ray photon will have a frequency of  $> 10^{24}$  and a wavelength of  $< 10^{-16}$ . However, from the mathematical test, the frequency of a pack photon is of  $10^{31}$  which is  $> 10^{24}$  and the wavelength is of  $10^{-24}$  which is  $< 10^{-16}$ . Thus, the mathematical test/prove is complete and the details for a pack-photon should be the peak of the spectrum. Hence, the spectrum needs an update after an observational prove.

I hereby present an updated version of the Electromagnetic Spectrum to the Science Community, shown in Figure 17.

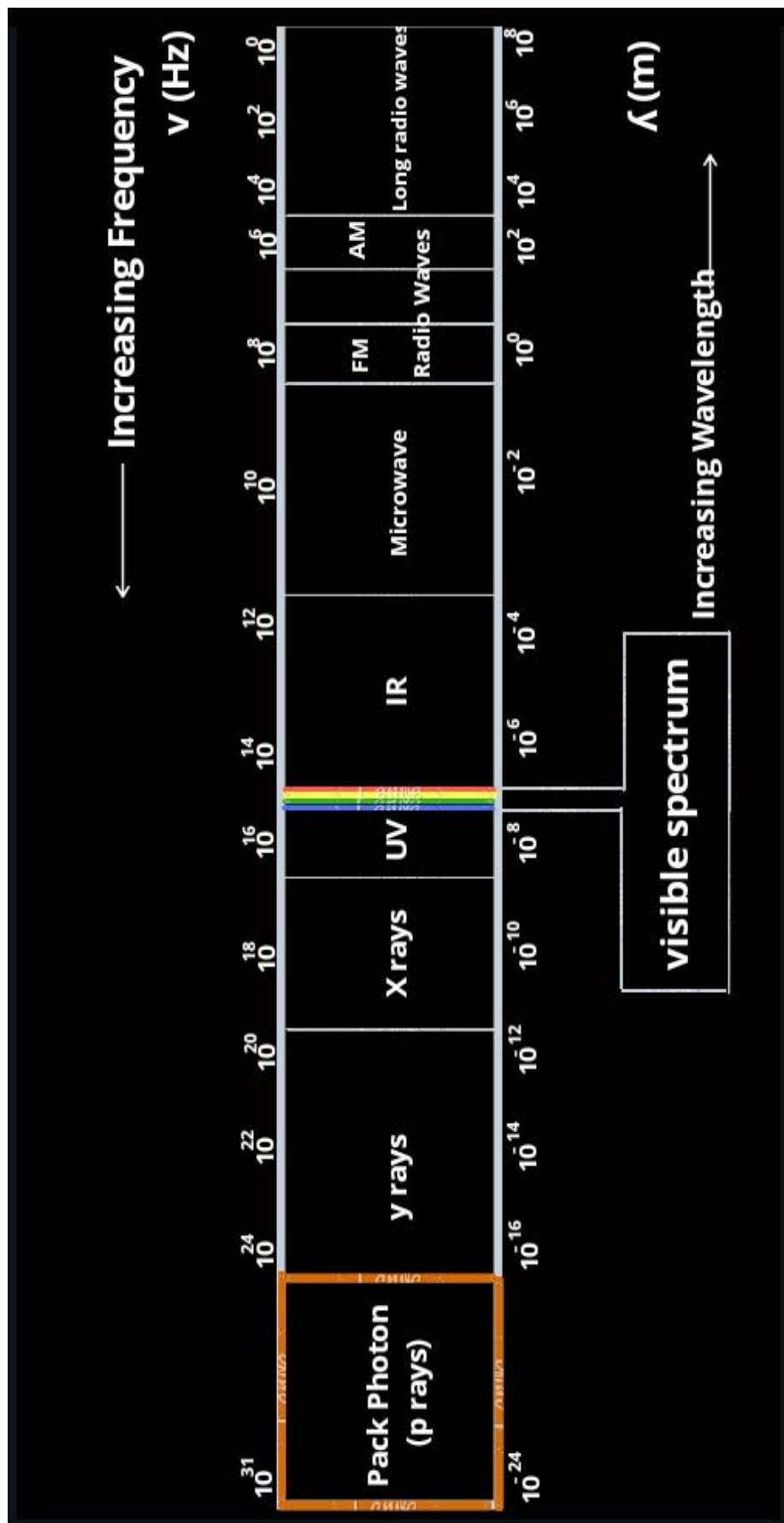


Figure 17

c) *A Clue on Observational prove*

Due to the shuffling that occurs as explained, a pack photon in its complete state or close to its complete state is observed at the surface of a star once in a while (occasionally). I can't say the exact period it can be emitted but I know all things/process are not perfect, there are days/periods that a pack-photon will

escape shuffling and be emitted to the surface of the sun in its complete form. However, it's almost impossible for a pack-photon to find its way to earth as its complete nature rather its reduced version is seen on earth which are other forms of the spectrum. The pack photons are emitted right from the core of the sun. Figure 18 is an illustration.

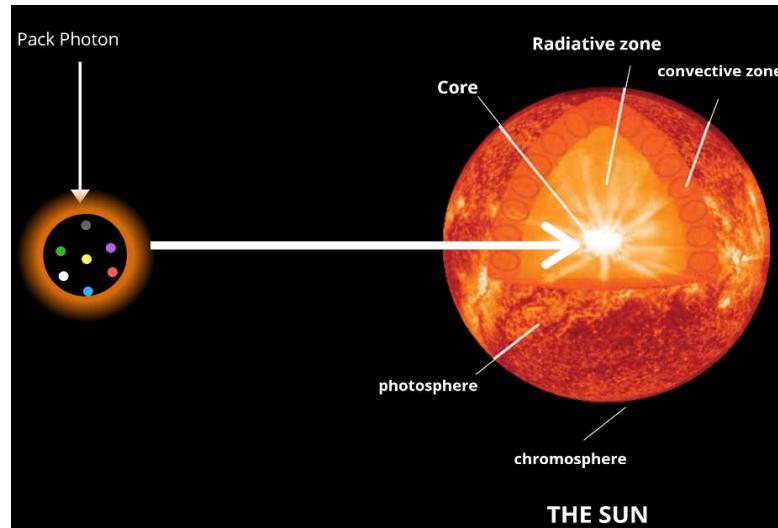


Figure 18

If a pack-photon manages to escape shuffling, the closest position to be observed and noticed would be from the position of the sun's equator. This observation can be done by the help of telescopes, satellites or a photon detector at the outer space. The pack-photon maybe difficult to detect, but its discovery and confirmation of values will lead to the concluding acceptance of the "Theory of Everything".

All these years, we wouldn't know that there is something like p-rays because they are emitted at the core of a star which we can't observe and they are shuffled to lower frequency just outside the core. Therefore, we can't observe them. However, it is possible that some must have escaped shuffling over the years and appeared at the surface and we wouldn't know.

A pack photon might have been seen/observed and described as a gamma ray photon. Any form of photon/ray with a frequency (Hz) higher than  $10^{24}$  should be regarded as a pack-photon (p-rays) i.e. a pack photon will have a frequency (Hz) of  $10^{24}$ -  $10^{31}$ . The help of the organizations with telescopes and satellites or photon detectors at the outer space are needed to prove this concept, especially the solar parker probe which was launched recently to study our closest star (sun). The detection can only be done at the outer space.

There's not a complete pack photon on earth except one manages to escape through the ozone layer.

**Note:** In this paper, when the term EM radiation or EMR is mentioned, it is referred to as a higher (classical) form of a pack photon i.e. the whole energy picture from the sun (star).

## V. UNIFICATION

This section is the official unification of QM and GR.

The Universe is about two lights which are Energy and Dark Energy. The solidification of these lights is what we know as matter and dark-matter.

These two lights are supposed to be merged together i.e. everything made from energy is supposed to be merged with dark energy. If they are merged, we should see the things around us as dark energy or a form of dark energy.

Its straight, the original form of the universe is with both lights merged, but presently both lights are not merged but rather they exist as two separate entities, resulting into the observation of only energy while dark energy remains invisible.

However, the above fact will bring about a twin equation which will unite QM and GR.

To get the equation of the universe and unite both QM and GR, the unification of both lights will be displayed.

I present the related constants for Unification

Speed of light (c) =  $3 \times 10^8$ m/s

Planck constant (h) =  $6.6 \times 10^{-34}$ eV.s



Coulomb constant ( $k$ ) =  $8.9 \times 10^9 \text{ N.m}^2.\text{C}^{-2}$

$S_{\text{default}} = 1.50 \times 10^{10}$  represented as  $S$

$P_c$  will represent the current value of the universe and  $P_o$  will represent the original value of the universe. The original value of the universe signifies that both dimensions (Superior and Inferior) are merged. The current value signifies the current state of the universe as both dimensions are not merged.

To understand this unification, all that I've explained from Section III has to be understood properly. What we refer to as dark energy was described ( $S \times c$ ) and what we refer to as energy originates from p-rays (pack-photon [ $k/hc$ ]). They are the default dark energy and default energy.

#### a) Equation Derivation for Unification

First Equation Derivation;

$$(\text{Superior Light})/(\text{Inferior Light}) = P_c \dots \dots \dots (1)$$

$$(\text{Dark Energy})/(\text{Energy}) = P_c \dots \dots \dots (2)$$

$$(S \times c)/(k/hc) = P_c \dots \dots \dots (3)$$

$$(S \times c^2 \times h)/(k) = P_c \dots \dots \dots (4)$$

$$Sc^2h/k = P_c \dots \dots \dots (5)$$

The above equation (5) will have a duplicate which will represent when both lights are merged. Merging means that energy will become the form and value of dark energy.

Second Equation Derivation (Energy becomes Dark Energy);

$$(\text{Superior Light})/(\text{Inferior Light} \times 100) = P_o \dots \dots \dots (6)$$

$$(\text{Dark Energy})/(\text{Energy} \times 100) = P_o \dots \dots \dots (7)$$

$$(S \times c)/(k/hc \times 100) = P_o \dots \dots \dots (8)$$

$$(S \times c^2 \times h)/(k \times 100) = P_o \dots \dots \dots (9)$$

$$Sc^2h/k \times 100 = P_o \dots \dots \dots (10)$$

#### b) Mathematical Test

We have two equations;

$$1.) \quad Sc^2h/k = P_c$$

$$2.) \quad Sc^2h/(k \times 100) = P_o$$

Test with the first equation;

$$Sc^2h/k = P_c$$

Inserting Parameters

$$[(1.50 \times 10^{10}) \times (3 \times 10^8)^2 \times (6.6 \times 10^{-16})]/(8.9 \times 10^9) = P_c$$

$$P_c = 100.$$

Test with the second equation;

$$Sc^2h/(k \times 100) = P_o$$

Inserting Parameters

$$[1.50 \times 10^{10} \times (3 \times 10^8)^2 \times (6.6 \times 10^{-16})]/[(8.9 \times 10^9) \times (100)] = P_o$$

$$P_o = 1.$$

From the test, it is seen that  $P_o$  and  $P_c$  are constants as 1 and 100 respectively. When both light dimensions merge, they become one as the value (1) -  $P_o$  which is the original value of the universe signifying unity, but presently, both light dimensions are not merged and differ by 100 as  $P_c$ .

The value  $P_o$  as 1 can also be given as  $Sc^2h/(kP_c) = P_o$

However, both twin equations are the unification of GR and QM illustrated with figure 19

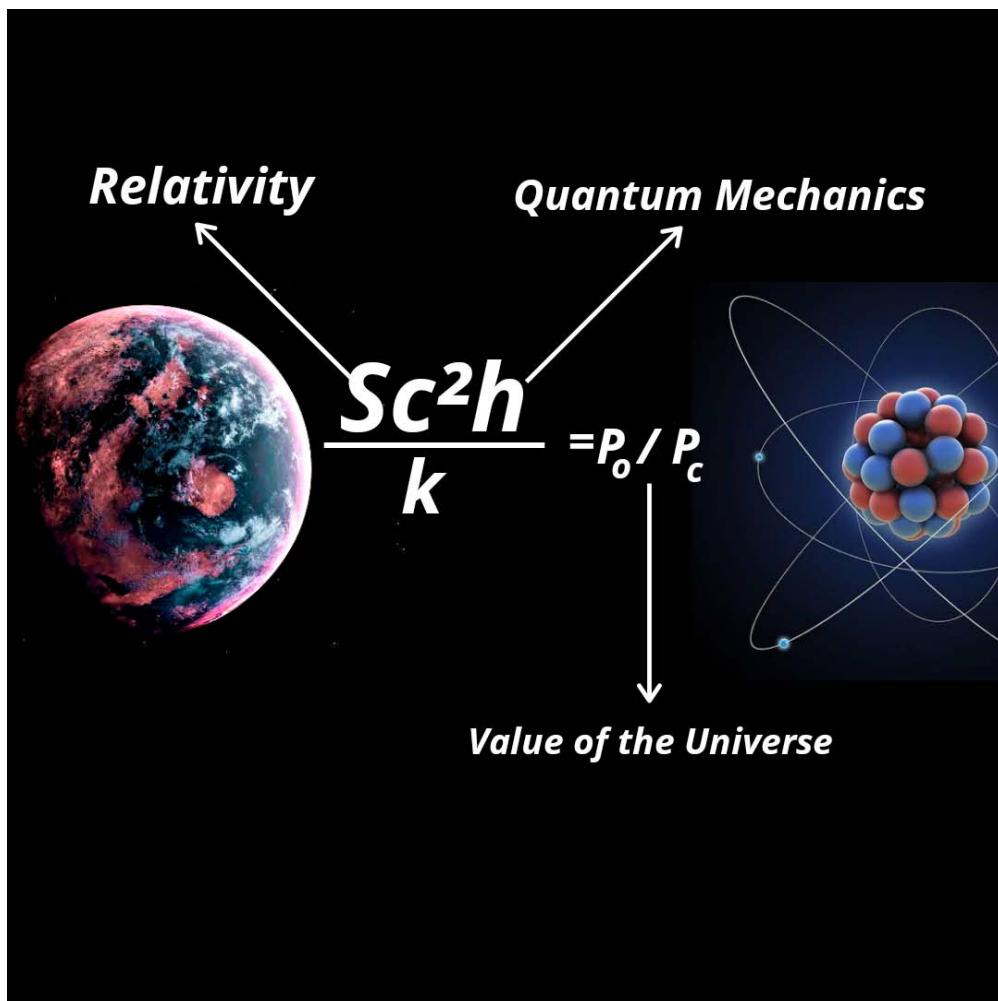


Figure 19

The meaning of the Unification/Equation is; In the Universe, objects can be macroscopic or microscopic (big or small) and they can move in space with different speeds but a peak speed of the (speed of light) at certain positions. The break-down of the equation will unleash the nature of the objects as either a nature of one light (matter) or the other light (dark-matter) alongside spacetime. The last stage reveals the both lights as their self. If the lights are unified, the value of the universe is 1, if the lights separate, the value of the universe changes to 100.

This equation can be derived in many ways, I only presented the major derivation.

From the new approach in section 3, S which is  $S_{\text{default}}$  is the constant that represents relativity.  $h$  (planck constant) is the major constant in quantum mechanics. Thus, both twin pillars of physics are hereby unified with the above equation shown in figure 19.

The major fact is that both lights can be merged, bringing back the original form of the universe. When both lights are merged, there will be nothing like energy rather only dark energy will exist(energy will become the form of dark energy).

## VI. NEXT PHASE

This section introduces the physics of the dark dimension. The properties of nature in this visible dimension is similar to the dark dimension. They are both twin dimensions. Therefore, the way we calculate for an entity or the way we represent an entity, has a similar representation in the dark dimension.



		The Universe		
		Dark Dimension	100	Visible Dimension
1)	The Superior Light( $E_d$ )= $S \times c = [1.50 \times 10^{10} \times 3 \times 10^8]$ $E_d = 4.5 \times 10^{18}$ (Dark Energy) (Higher; Quantum state)			The Inferior Light( $E$ ) = $k/hc = 9 \times 10^9/[6.63 \times 10^{-36} \times 3 \times 10^8]$ $E = 4.5 \times 10^{16}$ (Energy) (Quantum state)
2.)	The superior light ( $E_d$ ) = $M_d \times c^2$ $E_d = 50 \times (3 \times 10^8)^2 \dots \dots E_d = 4.5 \times 10^{18}$ (Higher State)			The Inferior Light ( $E$ ) = $M \times c^2$ NB; The energy and mass of matter should be inserted into this equation, they are not constant (Higher State)
3.)	The Solidified form of the Superior Light (dark Matter) $M_d(50) = S/c = 1.50 \times 10^{10}/3 \times 10^8 \dots \dots$ (Higher; Quantum State)			The Solidified form of Inferior Light (Matter) Electron( $e$ ) = $1.60 \times 10^{-19} \dots \dots$ (Quantum State)
4.)	The Solidified form of the Superior Light $M_d(50) = E_d/c^2 \dots \dots$ (Higher State)			The Solidified form of the Inferior Light $M = E/c^2 \dots \dots$ (Higher State)
5.)	Visibility value of the Superior Light dimension $K_s = (1.388)$	100	Visibility value of the Inferior Light dimension $K_p = 138.8$	
6.)	Absorption of the superior light by its solidified form $M_d \times E_d = 50 \times (4.5 \times 10^{18}) = 2.25 \times 10^{20}$ (Light Mode S) (Quantum State)	100	The tendency of the solidified form of the superior light to absorb the inferior light $M_d \times E = (50 \times 4.5 \times 10^{16}) = 2.25 \times 10^{18} \dots \dots$ (Quantum State)	
7.)	Absorption of the superior light by its solidified form $[M_d \times c]^2 = [50 \times 3 \times 10^8]^2 = 2.25 \times 10^{20}$ (Light mode S) (Higher State)		Absorption of the inferior light by its solidified form [ $M \times c$ ] <sup>2</sup> . ... This is how to calculate the energy of a star by its mass....(Light Mode P) (Higher State)	
8.)	The tendency of the solidified form of the inferior light to light to absorb the superior light.... $e \times E_d = 1.60 \times 10^{-19} \times 4.5 \times 10^{18} = 0.72$ (Quantum State)	100	Absorption of inferior light by its solidified form $e \times E = 1.60 \times 10^{-19} \times 4.5 \times 10^{16} = 0.0072$ (Light Mode P) (Quantum state)	
9.)	To solve the tendency issue; we use its fellow as an attachment.			
	$e \longrightarrow M_d \quad E_d$ $1.60 \times 10^{-19} \times 50 \times 4.5 \times 10^{18} = 36$ (Quantum State)	100	$M_d \quad e \longrightarrow E$ $50 \times 1.60 \times 10^{-19} \times 4.5 \times 10^{16} = 0.36$ (Quantum State)	
	Absorption of the superior light by the solidified form of the Inferior light.		Absorption of the inferior light by the solidified form of the superior light	
10.)	The (Higher state) of the previous will be $M \times [M_d \times c]^2$ i.e $M \times [2.25 \times 10^{20}]^2$		The (Higher state) will be $M_d \times [M \times c]^2$ i.e $50 \times [M \times (3 \times 10^8)]^2$	

In the above illustration, the value of dark energy is for both quantum and higher. The reason is; A photon from dark energy will have the same value as the default dark energy itself but in a smaller unit similar to a pack-photon of the Inferior Light.

The fact that the default dark energy value is gotten as  $4.5 \times 10^{18}$ , a pack-photon (quantum) from the inferior light with value ( $4.5 \times 10^{16}$ ) implies that merging is possible and was done at creation as per (quantum to higher). However, a photon to photon (quantum to quantum) merging is the main point; Although the default dark energy value is  $4.5 \times 10^{18}$  as a big energy unit, a photon from dark energy will also have the value  $4.5 \times 10^{18}$  which will have the same unit as a pack-photon representing energy.

Matter can become negative (Anti-matter) from a positive state but its default state is positive. That shouldn't be forgotten.

In standard cosmology, the universe is made up of Energy (radiation), matter, dark energy, and dark matter. Albert Einstein made it clear that matter and energy (radiation) are two forms of the same thing ( $E=Mc^2$ )[12]. With the new concept in this paper, dark energy and energy (radiation) where one body during the big bang. Hence, dark energy and dark matter are two forms of the same thing illustrated in Figure 1. With the help of ( $E= Mc^2$ ), if the value of dark energy is ( $4.5 \times 10^{18}$ ), replacing matter and energy with dark matter and dark energy with the equation ( $E=Mc^2$ ), the resulting value of dark matter will be "50". The description of this number as dark matter is not yet clear but the value "50"(100/2) divides the current value of the universe (100), signifies that there are two major dimensions in the universe presently, a dimension of dark matter and dark energy and a dimension of matter and energy (radiation).

The Physics of the dark dimension should have emerged a long time ago. However, this arrival of the TOE will result into the introduction of dark physics. From the above illustration, it is seen that similar calculations between both dimensions differ by 100 ( $P_o$ ). Until both dimensions merge into one, we can have just one description ( $P_o$ ).

## VII. A MAJOR PROVE OF THE THEORY OF EVERYTHING

Energy (Inferior Light) was basically used to form planets/planetary bodies and stars. Planets cooled and solidified to form a combination of land and water, air in some. So, it's basically land and water. From the land with the presence of water, vegetations grew. Animals and humans were made from the dusts of the lands. Natural Resources from the lands is been explored by man to produce more advanced types of matter. In some cases, solidification happened in the

presence of air which produced some rocky resources, and water to produce some liquid resources.

Thus, its basically land and water. From the blueprint of the universe, it is said that particles of dark energy (Superior Light) exist in water i.e. water is 99% of Inferior Light (matter) and 1% of the Superior Light (dark matter).

The inferior light that formed the planets can still be seen on the stars. Its color is orange-like and the Superior Light is white-like. If you want to see the inferior light, just look up at the sun. However, lets see if we can get any detail from land and water.



Figure 20



Figure 21



Figure 22

In figure[20,21&22], it is seen that there's a similarity between the light in 20 and the lands in 21 & 22 (red earth sand). This is to prove that the inferior light solidified into planets and the stars absorbed the same light after cooling.

Its only as a result of being present in this time that we see white sands in some places because the sand were actually brought from rivers for certain purposes. At the early days, white sand cannot be seen on normal roads and paths except close to the rivers/oceans and beneath.



Figure 23



Figure 24

The fact is that white sand is associated with water (figure 23 & 24). Even the water at the atmosphere (clouds) are white in nature. There is only a thing like red-earth sand, white sand was formed after enough particles of the superior light in water has accumulated on the red sand after solidification process (creation). i.e. red sand changes to white sand in the presence of enough water after series of accumulation for a very long time. Thus, creating a whole new sand as white sand with a different nature.

This is just one of the major prove of the Theory of Everything.

Here is a brief explanation on the reality of TOE after all discussions;

There's a term called black hole evaporation. This describes the fact that black holes that do not gain mass through other means are expected to shrink and alternatively vanish. The bottom line is that all black holes do vanish and where do their radiation or burst go?

In standard cosmology, there are four entities that makes up the universe, they are energy (radiation), matter, dark matter, dark energy. A star is in possession of EMR in full scale, the death of a star leads to a black hole on spacetime producing Hawking radiation[8]. The whole concept of black hole evaporation/Hawking radiation is a prediction without observational/verified proof. It can only be observed that black holes evaporate after some time, but conclusions have not been made as to what causes the evaporation.

Let's face the reality, radiations (EMR) from black holes do not vanish in space just like that unless it

is regarded as magical and magic is of the superior dimension. There exists a reason why a death star will tear spacetime to create a black hole, which will be understood at the end of this section.

With this unification, I choose to educate the world on the big bang of the universe. The Scientific and Physics environment and every other person must follow the reality that; due to merging, dark energy and radiation (EMR) were the same thing at some point at the creation of the universe and these two together form a major light which set-up the creation.

The combination of these two (dark energy and energy) can be termed "Omni" – The highest energy form but it is simply energy (EM radiation) becoming the form of dark energy. Dark energy is superior to EM radiation from their values. Thus, if these two are combined, EM radiation becomes dark energy and they both exist as one light. Otherwise, if these two are split, EM radiation takes its own form and dark energy remains as its. Hence, when a black hole is formed and vanishes later, its radiation goes back to form one body with dark energy as "Omni" – the light used during the big bang. Although this is done in space, dark energy and space cannot be seen but it's effects can be observed or felt resulting into the fact that human eyes or observations can't see the re-uniting of EM radiation back to dark energy through black holes rather we can only feel or observe a radiation that just vanishes in space (Black hole evaporation).

However, dark energy is the energy fluid of spacetime. Hence, if dark energy and spacetime are one body, then it means that spacetime, dark energy and energy (radiation) were one body at the point of the big bang. These are the three entities used in the creation of the universe.

The explanation behind Albert Einstein's famous equation ( $E = mc^2$ ) is the fact the solidification of EM radiation formed the planets which is a classical (bigger) state of matter i.e. If all matter in this universe are traced to their natural source, it will result to EM radiation. This makes matter and EM radiation two forms of the same thing. Dark matter is a form of matter that is known to not interact with light just like dark energy. There is no doubt that dark matter and dark energy are also two forms of the same thing, dark energy and EM radiation were also the same thing at a point during the creation of the universe. Since dark energy is superior to EM radiation, the question of how the big bang happened sums up to one thing; the creation of the universe was done with spacetime and its energy fluid (dark energy).

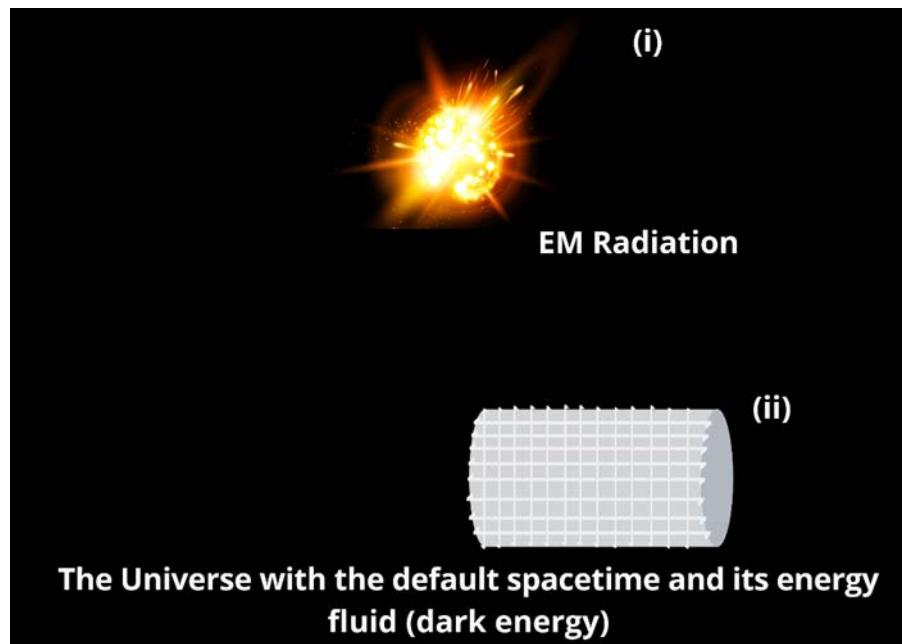


Figure 25

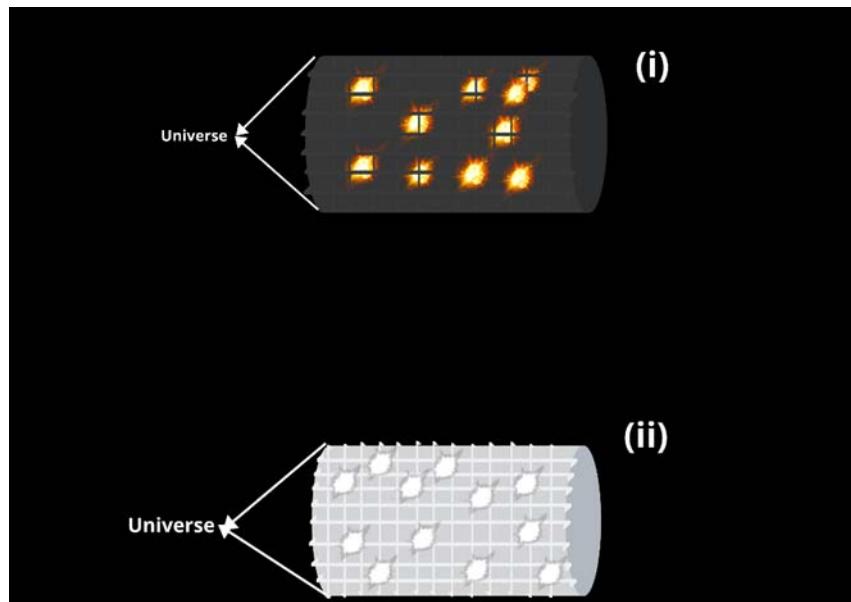


Figure 26

During the creation of the universe, spacetime was used everywhere as the entire geometry and structure of the universe i.e. the universe itself is the default spacetime along with its energy fluid just like (ii) in Figure 25, this also implies that dark energy was also everywhere. The solidification of EM radiation formed all planetary bodies we see at the outer space. However, 13 billion years ago at the point of creation, although these bodies were formed with EM radiation, if a human existed then, he/she would not see or observe these bodies as EM radiation or a form of EM radiation, rather he/she will observe these bodies as dark energy or a form of dark energy.

Using (i) in Figure 25 as EM radiation and (ii) in Figure 25 as the universe with the default spacetime and its energy fluid. In Figure 26, (ii) explains the situation at the creation of the universe. Although there were EM radiations and forms of EM radiation, they didn't exist as EM radiation rather they existed as dark energy or forms of dark energy. This reason is because dark energy is superior to EM radiation and both entities were merged at the point of creation.

The things made from EM radiation (matter) have a property of fading after a certain period and on the other hand, dark energy has an opposite property to that. Although, at the creation of the universe, an

explosion was done with EM radiation in an environment of spacetime and dark energy. To ensure a universe where things will not have to fade, EM radiation has to become dark energy due its unique property of being unable to fade.

Everything that involves matter and the way it behaves is Physics, but some things do happen that we consider as magic simply because we don't see what happens on the other side. 50% of physics involving matter has only been studied, the other 50% of physics that involves the unseen is yet to be studied. It's straight, dark energy is not invisible or unknown, one of the brothers is no longer in unity with the other, proceeding to create a whole new dimension that is not dark energy dimension as described in (i), Figure 26. One dimension existed at the point of creation (dark energy dimension). Since the splitting created a new dimension, the superior dimension (dark energy) will be invisible to EM radiation dimension. Therefore all things matter will not be able to see and observe the other.

In (i) (Figure 26), it is seen that a dimension of EM radiation has been formed and it no longer takes the form of dark energy as (ii) (Figure 26) shows, resulting into dark energy dimension being invisible. Thus, EM radiation and its forms will not be able to see, observe or interact with dark energy. Furthermore, it is spacetime that leads any free EM radiation at the outer space, back to dark energy through the help of a black hole. Dark energy is not meant to stretch or expand spacetime (universe). This is just like the statement; Spacetime separates both dimensions, "Dark energy lost his twin brother long ago and is in search for all of it", thereby stretching spacetime as an attempt to reunite with it. On the other hand, EMR from a death star tears spacetime at one end as an attempt to re-unite with dark energy, signifying the fact that energy cannot be destroyed. As long as dark energy doesn't reunite with all of its lost twin brother, dark energy will continue to stretch the nature of spacetime at the outer space until it eventually gets to a free nature of spacetime like the one on earth and we all know what that means. Planets will crash with one other, the EM radiation from stars will consume several planets, this is exactly how the universe will end. The existing EM radiation from stars will consume planets thereby increasing its mass, when all existing matter are consumed by the existing EM radiations, the universe will be left with just EM radiations i.e. just like the EM radiations exploded long ago, scattering at different places, they'll all come back together this time and proceed to re-unite with dark energy.

However, what caused the splitting of EM radiation from dark energy is biblically revealed to be as a result of a mistake from the first man. The reason for the invisibility of the dark dimension is due to this; After the splitting of both dimensions, there were no forms of dark energy that possessed the same dark energy itself, in full scale. When matter absorbs energy in full scale, it

contributes to the visibility of the Inferior Dimension. On the other hand, when dark matter absorbs dark energy in full scale, it contributes to the visibility of the Superior Dimension. The Stars did it for the Inferior dimension, which makes it visible but a similar situation has not been done for the Superior dimension. Figure 27 is an illustration.

Superior Dimension	Inferior Dimension
Dark Energy ✓	Energy ✓
Dark Matter ✓	Matter ✓
dark matter absorbing dark energy in full scale (?)✗	Matter absorbing Energy in full scale (Stars) ✓

Figure 27

The absence of dark matter forms that possess dark energy is the reason why the Superior dimension is invisible. This situation is easy to understand with the blueprint of the Universe.

The theoretical concept of merging exists from the similarity between the value of a pack photon and dark energy of a default spacetime. The presence of 4.5 in both values represents the fact that EM radiation can always reunite with dark energy i.e. take the form of dark energy but presently both entities differ by 100.

(i) in Figure 26 represents an unstable universe while (ii) in Figure 26 represents a stable universe.

Einstein told the world that energy and matter are two forms of the same thing. It has been understood now. The inferior light which is the original form of energy itself was solidified to form the planets that are matter and also contains other forms of matter. Thus, the same matter can be reversed back to energy. The fine structure constant also proves that; Although a photon can become an electron, when an electron absorbs a photon from the inferior light, it becomes a photon again.

Trace more parts of science to this "Theory of Everything" and more unsolved problems and secrets will be revealed.

## VIII. CONCLUSION

All theories and equations except Relativity and some known constants in this paper are novel and proposed by Prince Jessii.

This theory is the TOE itself and I'm presenting it to the science environment/community. There is no other TOE outside this. Also, from another angle/view other than physics, to know everything about your universe, simply purchase the blueprint of the Universe from ref [27]. Another major prove of this theory will be the discovery of a pack-photon (p-rays) from the sun which can be done by the help of NASA. The world awaits the discovery.

### ACKNOWLEDGEMENT

We have come this far in physics with the TOE and some physicists/scientists have somehow contributed to the TOE with their theories, constants and observations in one way or the other without knowing they contributed. It is thanks to all of them.

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