the general science journal

Gravity-Light Energized Waves as the GLEW holding the Multiverse together: rethinking the composition and function of black holes, dark energy and dark matter.

Dr Roger Wood
Oxford Brookes University, UK

Abstract

The key proposal within the discussed theory is that the quantum particles of gravity (gravitons) move faster than the accepted speed of light photons. Gravity is asserted as the smallest of all particles (known, undiscovered and never to be discovered) within all quantum and cosmological theory. Gravity particles are constantly interacting with other fundamental particles in order to maintain balance and order within the Multiverse. When gravity travels at the speed of light, it is both carrying photons and taking them to a speed where they are neither visible nor detectable: gravitons and photons travel together as Gravity-Light Energized Waves (abbreviated to GLEW, pronounced glue). That is, non-detectable photons travel faster than the asserted mathematical speed of light, expressed as c. When GLEW streams decelerate to the point where photons are travelling at a velocity that light becomes detectable, this is the point at which the Gravity-Light Acceleration-Related Energy (GLARE) threshold velocity is achieved.

As every GLEW stream travels faster than the speed of detectable light, gravity is centralised as both the restorer of and maintainer of cosmological balance and order. Such balance is maintained by the movement of dark energy moving between black holes: in this way, black holes act as Thermodynamic Regulation Gateways (TRGs). Black holes, acting as TRGs, provide the mechanism by which gravity maintains multiverse-wide balance, with changes in the velocity of gravity being due to an inescapable imperative to maintain balance across the Multiverse. By sustaining balance, and, thus, both preventing and rectifying imbalances, gravity, therefore, must travel at different speeds within our Universe and the wider Multiverse.

In consequence. the ideas central to the discussed theory ultimately lead to the assertion that the Standard Model of physics needs to evolve and think again if we are to move forward with

developing our understanding of cosmological and quantum concepts that have, to date, eluded us. Therefore, modifications to the way we think about the gravitons and photons, together with the resultant movement and impact of light and gravity, are needed if we are to move forward with our understanding of the gravitational and allied thermodynamics processes that ensure the stability of the Multiverse.

Keywords:

Gravity-Light Energized Waves; Gravity-Light Acceleration-Related Energy; Thermodynamic Regulation Gateways; black holes; Hawking Radiation

Introduction

After centuries of discussion and ongoing debate, it is suggested that if we are to get even remotely close to formulating a unified theory of what gravity 'is' and, as a result, how the structure of the Universe, and the wider Multiverse, is influenced by gravity, mass, heat and light, we need to abandon some of the thinking that we cling to so dearly as given or immovable 'facts'. To paraphrase Einstein, we cannot hope to solve the puzzles that intrigue and elude us with the same thinking we used when we created them. If we are constantly unable to find answers to our questions, it suggests that we are never going to find the answers using the theories and models that we currently rely up. In short, we may need to rethink the ideas and measurements that we hold as constants and relook them by reconsidering what may not always be 'solvable' or proved by mathematics.

This novel theory of *Gravity-Light Energized Waves* (abbreviated to GLEW: pronounced as glue) outlined within this paper discusses a different view of the mechanics of gravity, including the curvature of light, black holes, dark matter and gravitational waves, without resorting to mathematical symbols. This theory has evolved the ideas of Newton, Einstein and Hawking. The ideas of both illuminated the 'what' of gravity when conducting their 'thought experiments'. However, the debate continues about the mechanics of 'how' gravity acts, together with the underlying 'why' relating to gravity behaves and influences as it does.

This new theory places gravity firmly at the centre of the key phenomena of our universe and the multiverse through dark matter, dark energy and black holes. There is clearly a predictability to the way that objects and light moves within the Universe, a predictability that has enabled

successes within space travel and the determination of the movement of objects such as comets and asteroids. Einstein famously stated that God does not play dice with the Universe. Instead, as asserted by Newton, there has to be a 'clockwork' logical predictability to the momentum of objects within the universe. However, this does not mean that the processes and products of the many universes that combine to form the Multiverse are stable and in a constant state of order. Instead, the gravitational constant, together with thermodynamic processes and the conservation of angular momentum, ensure that there is a constant correction from imbalance and disorder to balance and order. This process is perpetual and, from a measurement and detection perspective simultaneous. Gravitational and thermodynamic processes need to be considered across the Multiverse and between universes if they are to be fully understood in terms of their role in maintaining order and balance of heat, light and momentum, rather than at the 'localised' level of what is happening within the Earth's atmosphere. Gravity on Earth is nothing more than the outcome of what is happening far beyond our atmosphere!

Ultimately, the outlined theory of GLEW and GLARE builds upon prior 'thought experiments' by combining quantum mechanics, general relativity and (super) gravity, alongside, contained thermodynamic systems, (super) symmetry and breaking (super) symmetry through a number of simple premises about gravity and light. It does so by seeking to explain an inseparable relationship between gravity and light, the invisibility of light as dark energy and within dark matter, and both the variability and predictability of gravity within the boundaries of known galaxies, universes and black holes.

Summary of the GLEW Theory

One of the central principles of the theories of relativity was that the speed of light is constant. However, GLEW theory proposes that such a definition needs to be revisited and rethought; that is, that the perceived speed of light is only the speed at which light can be detected and is made visible. That is, that the speed that which light travels is *not* constant. When photons are travelling as part of a GLEW stream, they will be travelling at a speed faster than the asserted speed of *detectable* light. Whilst travelling at a velocity greater than the speed at which light can be seen and is detectable, bonds are sustained between the constituent GLEW particles: therefore, the bonds will be too strong for the photons' energy to break free from gravitons and,

therefore, are unable radiate as detectable ‘visible’ or ‘invisible’ light. Therefore, whilst light is detectable (and, possibly, visible) at *c*, the asserted speed of light, within this new theory it is proposed that light photons are bound to the GLEW particles and are therefore invisible / undetectable in that these do no radiate any form of EMR. Such undetectable light and the associated energy radiated and sustaining GLEW stream velocity is proposed as the constituents of dark matter concentrations and dark energy radiation. This is due to an infinite number of GLEW streams travelling in infinite planes and dimensions (further to the law of the conservation of angular momentum).

There are six key concepts central to the following discussion:

1. Gravity travels as streams of particles in all conceivable directions: there is no such thing as ‘up’ or ‘down’ for gravity. Such streams vary in their velocity (speed and direction);
2. Dark matter and dark energy are composed of *Gravity-Light Energized Waves* (GLEW) streams;
3. Concentrations of GLEW streams around areas of greater mass and associated increases in the curvature of the space-time (STC) fabric form *dark matter*
4. The velocity and spin of the GLEW particles within each GLEW stream varies, thereby producing *dark energy*. That is, *dark matter* consists of higher concentrations of GLEW streams, and, as a consequence, the levels of dark energy will be much higher than areas of the universe (multiverse) where there are lower GLEW stream concentrations;
5. Gravity, in the form of GLEW streams, causes space-time curvature before the release of photons as detectable light.
6. The faster the GLEW streams travel in relation to maintaining the balance, direction and movement of cosmological bodies, the greater will be the space-time curvature created and followed.
7. All objects within the Universe and multiverse travel in the direction of least resistance, including living and non-living objects on Earth. That is, when there is imbalance or unbalance, GLEW (hereafter known as GLEW: abbreviated form of gravity-light order streams) will seek to create balance by moving an object in the direction and velocity of least resistance so that balance may be maintained as quickly as possible.

The key principles of GLEW theory are that:

1. Gravitons and photons travel as duality, co-joined streams throughout the Universe and Multiverse. (These are labelled as *Gravity-Light Energized Wave* streams – abbreviated to GLEW: pronounced glue)
2. Dark matter consists of an immeasurable and undetectable number of GLEW streams.
3. GLEW streams travel at variable velocities as means of sustaining balance and order within and between universes (via black holes).
4. GLEW streams have a velocity and momentum greater than the speed at which light energy is released: that is, a velocity greater than *c* as the asserted speed of *detectable* light.
5. Dark energy consists of energy released from and perpetuating the velocity of GLEW streams.
6. When GLEW streams decelerate, they will reach a velocity at which photon energy is released as detectable EMR and / or visible light. When GLEW streams decelerate to the point where photons are travelling at a velocity that light becomes detectable, this is the point at which the *Gravity-Light Acceleration-Related Energy (GLARE)* threshold velocity is achieved. Therefore, dark matter and dark energy is transformed to light energy which is detectable (and, in some cases, visible).
7. Black holes act as gateways, or pores, between universes within the Multiverse. If we use an analogy of a refrigeration unit, where heat exchangers ensure a balance of hot and cold EMR, the movement of dark matter and dark energy through black holes acts as a thermodynamic exchange system between universes, ensuring the balance of cosmological thermodynamics. As such. black holes act as thermodynamic regulation gateways (abbreviated to TRG) as a means of creating thermal equilibrium between three or more universes.
8. To ensure thermodynamic balance, each universe is linked to several other universes by numerous black holes acting as TRGs. Therefore, universes are not isolated systems: dark energy moves both into and out of a universe through TRGs but in equilibrium as a means of conserving energy within a given universe.

9. Black holes are akin to the swirling whirlpools or the eddies of a river, creating ripples that we generate gravitational waves in the form of GLEW streams of varying velocities.
10. There are different sizes of black holes, each of which has a varying event horizon. Each black hole is a tear in the fabric between universes.
11. The size of an individual black hole and its event horizon varies with the number of GLEW streams passing through it. Depending upon the number of GLEW streams, the black hole and its event horizon can be larger on one side than on the other.
12. The formula for calculating the velocity of GLEW streams as they move through the universe, and between universes through black holes, is proposed as:

$$^{GLEW}E = \frac{^{GLEW}\mathbf{v}^{m}\mathbf{v}pV^{0}}{Gm^{1}m2/r^{2}}$$

Black holes maintain thermodynamic balance and order within the Multiverse

This novel theory of black holes as TRGs and of gravitons as the key transporter of photons within GLEW streams is an attempt to present a universal theory which successfully unifies theory, general relativity, 'string' theories, the 'symmetry' of the Universe, the Conservation of Angular Momentum law, and universal gravitation law. Such unity is explained by the presence and mechanics of the smallest possible particle but ones that we shall never be able to detect – the particles which combine to generate gravity.

All constituent universes within the Multiverse share a need to achieve and sustain balance and order. However, the movement and actions of other objects and matter creates imbalance and disorder. As a result, there is a need for simple, fast-acting processes which create the conditions for near-constant balance and stability. Our universe, other universes and our multiverse maintain balance (order) and minimise imbalance (disorder) through the combined mechanics and influence of gravity, light and thermodynamic-centric particles.

Central to this multiverse balance-imbalance theory are two key assertions. The first is that at the speed of detectable light, light and gravity travel together as duality streams. Travelling together enables the translation of *dark energy* (when the GLEW streams are travelling at a speed where photons cannot be detected but are still releasing dark energy) to *light energy (EMR)* as the streams decelerate to the accepted speed of light. Therefore, photons remain 'dark'

and undetectable when they are travelling faster than the current accepted *mathematical* speed of light. In other words, when gravity and light travel at a velocity greater than the *mathematical* speed of light, they are travelling too fast for the accompanying photon(s) to generate and release detectable light.

Although the speed of GLEW is, in the main, greater than the known speed of detectable light, a key tenet of this theory is that the speed of gravity streams is variable. When the duality-stream decelerates by just a single unit (not defined within this current version of the theory), such as when it encounters an object with mass (including gaseous atmospheres), photons are released as detectable light and heat (transforming from dark matter and dark energy to light matter and light energy).

Black Holes as Thermodynamic Regulation Gateways (TRGs)

The four *laws of thermodynamics* define fundamental physical quantities (temperature, energy, and entropy) that characterize thermodynamic systems at thermal equilibrium. The laws describe how these quantities energize and thwart a range of phenomena. The zeroth law of thermodynamics states that if two systems are in thermal equilibrium with a third system, they are in thermal equilibrium with each other. This law helps define the concept of temperature. It is, therefore, posited that black holes act as thermal regulation gateways between one universe and at least two other universes as a means of attaining thermal equilibrium between the three universes (Zeroth law).

The first law of thermodynamics affirms that when energy passes, as work, as heat, or with matter, into or out from a system, the system's internal energy changes in accord with the law of conservation of energy. That is, this first law, also known as Law of Conservation of Energy, states that energy cannot be created or destroyed in an isolated system. Therefore, it is argued that black holes act as pores known as thermodynamic regulation gateways (TRG), on the understanding that a universe is not an isolated system. This means that energy moves both into and out of a universe but in equilibrium as a means of conserving energy within a given universe (as per the First Law).

Upon considering the second law of thermodynamics, within a natural thermodynamic process, the sum of the entropies of the interacting thermodynamic systems increases. In other

words, the second law of thermodynamics states that the entropy of any isolated system always increases. This helps to understand black holes, as TRGs, as this means that the Universe (that we inhabit) and a multiverse are not isolated systems, in that each universe is linked to at least several other universes. Therefore, entropy may increase but it is balanced by the loss and arrival of new matter via the TRG.

Finally, it is stated within the third law of thermodynamics that the entropy of a system approaches a constant value as the temperature approaches absolute zero. The third law of thermodynamics states that the entropy of a system approaches a constant value as the temperature approaches absolute zero. The average temperature of the 'human' Universe is approximately 2.73 kelvins (−270.42 °C; −454.76 °F), based on measurements of cosmic microwave background radiation: that is, absolute zero! Black hole TRGs ensure that the Third Law is upheld and conserved, in that the entropy of a system at absolute zero is typically close to zero. Therefore, black holes ensure, via compliance with the Zeroth, First and Second law, that entropy is close to zero. That is, as black hole acts as TRGs, this means that universes are not isolated systems (First Law): instead they enable a thermal equilibrium between three or more universes (Zeroth Law) and balance entropy (Second Law) through the movement of matter to and from each universe as a means of maintaining absolute zero (Third Law).

In consequence, black holes, acting as TRGs, are thermodynamic regulators, with dark matter (DM) travelling in both directions within a single black hole gateway (pore). The balance of DM movement between two universes creates balance within each. The emergence of DM and dark energy (DE) from another universe into our Universe explains Hawking Radiation. In this case, Hawking Radiation would travel in both directions through each TRG: from the Universe into another universe, and, in exchange, from the same universe into the Universe. (N.B. The capital letter in the case of the Universe refers to the universe which humans currently inhabit!)

The boundaries of the Universe and all other universes within the Multiverse behave in the same way as we observe at the surface of water in, for example, a basin or a river. The Universe, as with all universes, is not a closed thermodynamic system, and would only be closed if it were not for the innumerable black holes in the fabric within the dark matter which is diffused within each universe. A key point is that the Hawking radiation and relativistic jets that are emitted from a black hole TRG consists of dark matter and dark energy that has travelled from an adjacent universe.

The recent images of a visible black hole accretion disc, within the Messier 87 galaxy (see, for example, https://www.eso.org/public/news/eso1907/) reveals that black holes are TRGs for other universes, where the velocity of emitted Hawking radiation decelerates due to the presence of dust and gas creating an 'atmosphere' which causes $GLEW_v^0$ to decelerate to, at least, $GLEW_v^{-1}$, thereby emitting $GLARE^{+n.}$ This is discussed more fully later in the paper.

GLEW streams consist of and create further dark energy and dark matter

At the heart of universal laws such as gravitation, the conservation of angular momentum, and thermodynamics, as well as theories of relativity, black holes and Hawking radiation, as we *perceive* and *understand* them to be, gravitons are the universal particle central to the gravity and the products of the momentum-velocity of gravity, especially dark matter and dark energy. Such a particle is present as gravity in such unimaginably large numbers that it creates the necessary levels of dark energy to travel faster than the asserted speed of detectable light and to be present in such large number as to be instantaneous in its presence and impact.

GLEW stream particles exist at instantaneous high densities and travel faster than light: by doing so, they *exist as both dark matter and dark energy*. The production and distribution of the density of dark matter is a means of creating balance and order within the surrounding dark energy. Therefore, gravity travels and instantaneously acts through its compositions as an innumerable series of GLEW streams. Although it is posited that GLEW streams travel faster than the known speed of light, this speed of GLEW streams is variable. When GLEW streams travel at their terminal velocity ($GLEW_v > c$), they are travelling too fast for the accompanying photon to release 'light' as detectable EMR. When the GLEW streams decelerate to the speed of light, such as when it encounters an object with mass (including gaseous atmospheres), the GLEW stream will be travelling just slow enough for photons to be released as detectable EMR in the form of visible or detectable light.

GLEW streams as the carrier of gravitons and photons

It is posited throughout this paper that GLEW streams consist of a series of undetectable individual GLEW particles. Each GLEW stream consists of graviton particles that are smaller

than any other detectable particle, as they would need to be to be able to pass through all mass within the Multiverse and its constituent universes. Therefore, GLEW particles are proposed as the smallest of all sub-atomic particles, in order that they may pass through all mass without being absorbed. Conversely, it is proposed that the calculable influential processes of *gravity stems from the smallest possible, and as yet undetectable, sub-atomic particles.* These are GLEW particles, or gravitons and photons.

The attraction between GLEW particles leads to the formation of constant streams of GLEW particles. Such GLEW particles amass in 'strings' otherwise known as GLEW streams. As stated, central to this theory is the assertion that GLEW particles and GLEW streams travel faster than the known speed of light. *The speed of individual GLEW streams, although greater than the known speed of light, are variable.* When GLEW streams travel at their terminal velocity, they are travelling too fast for the accompanying photon(s) to release detectable light. When the GLEW stream decelerates from its terminal velocity, such as when it encounters mass-rich objects (including gaseous atmospheres), photons are released and detectable light. Therefore, I suggest that GLEW streams (as *gravity-light duality streams*) are the 'unknown' constituents of dark matter, in the form of energy-rich streams of gravity particles that are travelling too fast to release photons.

All structures with mass contain a greater concentration of GLEW particles due to the mass-rich accumulation and attraction of GLEW streams into and through an object's mass. This leads to an increased gravitational 'attraction' due to the higher concentration of GLEW streams and, by default, their individual GLEW particles. That is, the larger the object and the closer the distance to another object, the greater will be the movement of the GLEW streams between the two objects. This supports the principles of Newton's inverse square law of gravitation. Such an accumulation of GLEW particles would assist in explaining why some areas of the Earth have weaker or stronger gravitational force than other areas.

Further to mass-energy equivalence, the GLEW particles conserve gravitational force as they are constantly moving within GLEW streams or within structures in the form of 'building GLEW particles'. This constant moving takes two forms. The first is, as Richard Feynman described it, 'jiggling', which means that kinetic, heat and mass energy are produced and consumed. The generation and release of such energy results in the 'spin' and 'momentum' of all GLEW particles. GLEW particles are perpetually in motion even when they are part of a much larger

structure, as they do not interact with any other quantum particle except photons. This perpetual spin results in each g-block attracting others in the proximity. That is, through the energy produced by the GLEW particles and the charge which each g-block possesses, there is a strong attraction between a single GLEW particle and the GLEW particles surrounding it. It also has a strong attraction for other GLEW particles as they are encountered.

A GLEW stream can exist in one of two forms: as a constant band of GLEW particles with photon(s) attached or as GLEW particles without a photon attached. As stated, within the GLEW stream. GLEW particles are constantly travelling both in the form of spinning and directional momentum / velocity. The GLEW particles do not all spin the same direction as each other: by spinning within different planes whilst tightly held in place, their directional spin balances each other and prevents imbalance within a GLEW stream. The speed of the spin and the speed of the GLEW stream momentum generates velocity greater than the known speed of light.

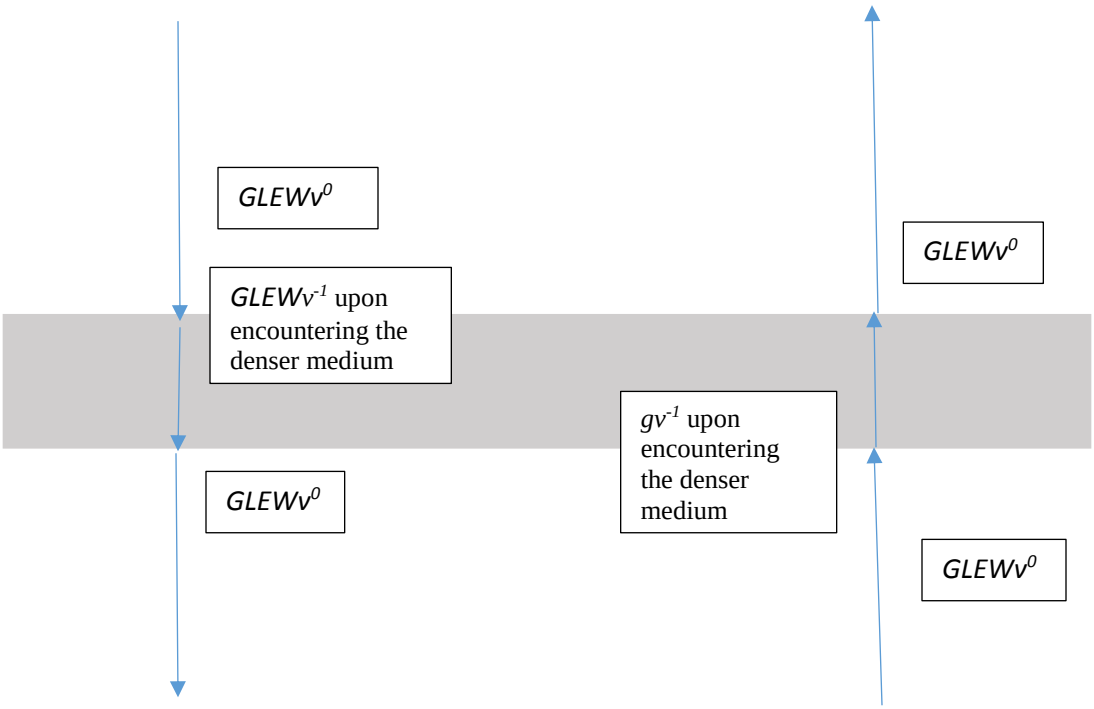
It is proposed that there is a constant stream of GLEW particles within a g-stream. The GLEW streams are analogous to the movement of water in a river, with each stream diverting and moving to fill gaps. The GLEW particles spin within the g-stream, which as a consequence causes each g-stream to spin. By spinning, the g-stream is constantly shifting the position of each of its GLEW particles in relation to each other, which in turn attracts other GLEW particles within a single g-stream and at the periphery of adjacent GLEW streams. This creates bonding within and between individual GLEW streams.

GLEW stream velocity variations are due to varying masses, atmospheres and dark matter concentration

Dark matter fills the spaces between stars, planets and other solid masses (comets, asteroids, etc.) within the universe. This dark matter consists of GLEW streams travelling in tandem with light at such a speed that the light remains bonded and unable to be released. Therefore, light, as photons, are not emitted and the medium is unseen as ‘dark matter’. When a gravity-light-order (GLEW) duality stream moves from a less dense to a denser medium (such as the atmosphere of a planet, the planet structure, a natural satellite such as a moon, or a medium such as water), the gravity-light duality stream decelerates until it is reduced to the speed at which light is visible / detectable. Therefore, upon encountering a medium that is denser than dark matter, light is released as photons and is detectable in the form of electromagnetic radiation. For clarification,

the 'medium' within Figure 1 is any mass-rich object other than dark matter. The emitted light is either absorbed or reflected. For example, when a GLEW stream enters a planet's atmosphere the speed of the stream decelerates to a velocity where light will be released as photons.

Figure 1 ***The changes in GLEW stream velocity***



Key $GLEWv^0$ Velocity of GLEW streams through and as dark matter
$GLEWv^{-1}$ Velocity of GLEW streams through mass denser than dark matter

Calculations explaining the variant velocity of GLEW streams

The formula for calculating the velocity of GLEW streams as they move through the universe, and between universes through black holes, is:

$$^{GLEW}_{E} = \frac{^{GLEW}\mathbf{v}^{m}\mathbf{v}pV^{0}}{Gm^{1}m2/r^{2}}$$

Where:

$GLEW_E$ = Energy that is simultaneously generated and released as the means of maintaining the balance that we know as gravity (G) and to perpetuate the momentum of GLEW streams.

$GLEW_V$ = the velocity of the GLEW stream, with $GLEW_V^0$ being the velocity at which stability (balance and order), as a threshold, is achieved.

v^m = the velocity of a mass (object)

pV^0 = the thermodynamic constant as defined within the four laws of thermodynamics

$\overline{G\ m^1m^2 / r^2}$ = the gravitational constant (Newton)

A key aspect of our understanding is that $GLEW_E$ is simultaneously generated and released as the means of maintaining the balance that we know as gravity (G) and to perpetuate the momentum of GLEW streams. That is, $GLEW_E$ is not stored but, instead, is released simultaneously upon its generation through $GLEW_v$.

This can be expressed as:

$$\mathbf{GLEW_E = GLEW_v = {}_mGLEW_v / G}$$

The release of detectable light, including as visible light, is only possible when GLEW streams decelerate (from $GLEW_v^0$ to a minimum of $GLEW_v^{0\text{-}n}$). At the velocity of $GLEW_v^{0\text{-}n}$, the GLEW stream will be travelling at *c*. At this velocity, detectable and visible light is released as Gravity-Light Acceleration-Related Energy (or *GLARE*). This can be expressed as:

Where light is neither detectable nor visible, then

$$\mathbf{GLEW_E^0 = GLEW_v^0 = > \mathit{c} = GLARE^0}$$

Where light is detectable, and potentially visible, then

$$\mathbf{GLEW_E^{-n} = GLEW_v^{-n} = \mathit{c} = GLARE^{+n}}$$

That is, $GLARE^{+n}$ = the radiation of detectable, and potentially visible, light

Therefore:

$$\frac{GLEW_E^n = GLEW_v^n = GLARE^{(+-)n}}{G}$$

That is:

1. No detectable light ($GLARE^0$) is generated when

$$\frac{GLEW_E^0 = GLEW_v^0 = GLARE^0}{G}$$

2. Detectable light ($GLARE^{+n}$) is generated when

$$\frac{GLEW_E^{-1} = GLEW_v^{-1} = GLARE^{+1}}{G}$$

3. GLARE is intensified with the further deceleration of GLEW streams, for example:

$$\frac{GLEW_E^{-2} = GLEW_v^{-2} = GLARE^{+2}}{G}$$

Based upon the universal gravitational constant (G), where the value of G is lower, then $GLEW_E$ and $GLEW_v$ will, conversely, be higher. Therefore, the presence of GLARE will be reduced or zero. Inversely, if G is higher, then $GLEW_E$ and $GLEW_v$ will be lower and the presence of GLARE will be higher.

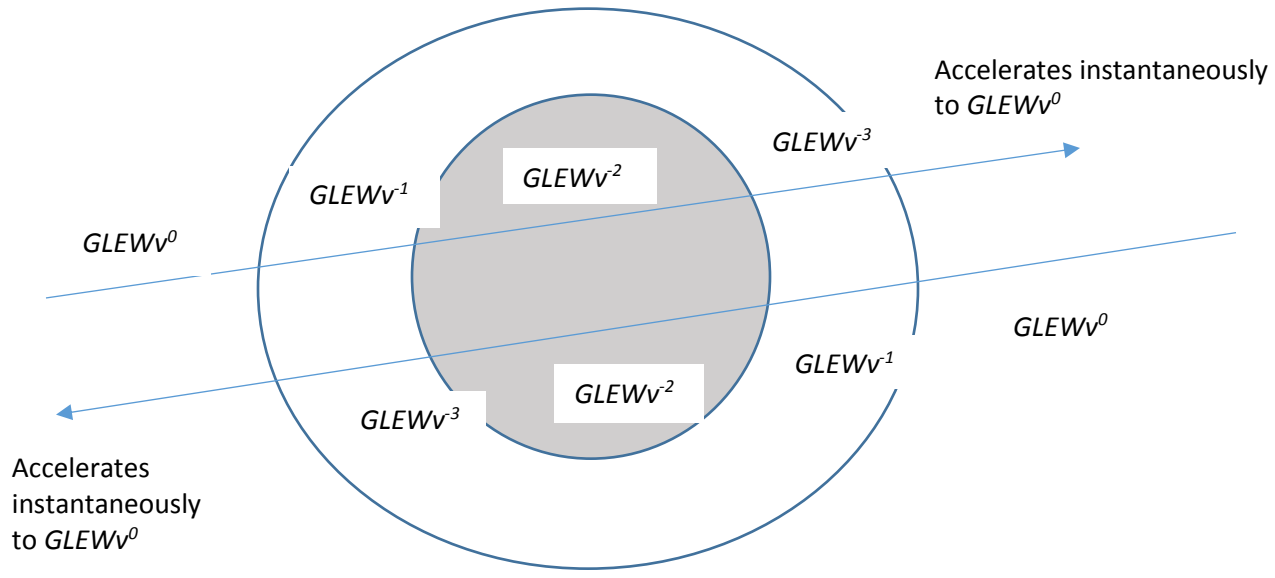
Whilst detectable light is emitted from photons which are, individually, either reflected or absorbed, by contrast, the GLEW particles, as a GLEW stream, continues to travel through the mass of the planet and emerge from the other side (see Figures 1 and 2). As the GLEW stream is 'released from the denser medium (denser than dark matter), the velocity of the GLEW stream instantaneously reverts to $GLEWv^0$ (The velocity of GLEW streams through and as both dark matter and dark energy).

GLEW streams travel instantaneously in all directions around and through objects of different densities and mass. The reason that the GLEW streams approach, enter and exit from objects in

an infinite number of different directions is due to attraction between the GLEW particles within the stream and the GLEW particles within the 'fixed' structure that the stream is travelling through. Clearly, for gravity to have a universal impact, the streams must enter and exit a structure in an infinite, inestimable number of directions. However, if GLEW streams are to inform our understanding of quantum mechanics and general relativity in terms of the curvature of the fabric of space, GLEW streams curve as they consist of and generate dark matter.

The curvature within the dark matter field is not due to the deceleration of the GLEW stream: a GLEW stream constantly travels at a speed greater than the speed at which light becomes detectable by available instruments. It is not within the remit of the present paper to propose what that speed might be, other than it has been expressed, for the sake of illustrating differing velocities, as $GLEWv^0$. The curvature of space is entirely due to the curvature of GLEW streams: they are the same entity in that the curvature of space is indicative of the curvature of an innumerable and unmeasurably large number of GLEW streams.

Figure 2 ***The changes in GLEW stream velocity ($GLEWv^n$) due to differing mass densities*** (see Key in Figure 1)



GLEW streams as integral to space-time curvature and black holes

It is acknowledged that the GLEW theory, and the principle of GLARE, is in the very early stages of its development. There is room for further development and modification. However, through collaboration with other researchers, I believe that it has the potential to develop as a means of explaining and understanding gravity combines quantum mechanics, general relativity and thermodynamics within contained universes and the whole multiverse. Most importantly, it may be used to further inform our understanding of black holes and gravity. The curving of the space-time fabric of the universe is due to the curvature of the GLEW streams, and changes in the length of the GLEW streams. It is proposed that whilst the speed of detectable light remains constant (as c), the speed of GLEW streams varies (expressed as GLEWv^n). However, the velocity of the GLEW streams (GLEWv^n) is never slower than but can be equal to the speed of detectable light (that is, GLEW$_v{}^n \geq c$). Where GLEW streams are travelling at a velocity greater than c, the structure of dark matter is gravity at its strongest ($GLEWv^0$), and therefore objects must travel faster in order to counteract the influences of gravitational streaming. As the GLEW streams (which have both mass and energy) encounter new mass-rich objects, such as stars and planets, the number of GLEW streams increases, moving towards the mass-rich object, thereby causing a curvature in the gravitational field. The increased density of GLEW streams attracts more GLEW streams, thereby leading to a greater detectable gravitational streaming (or pull / attraction). That is, that the greater the mass of GLEW streams, the greater the gravitational attract due to enhanced energy (on the basis of mass-energy equivalency). The acceleration and deceleration of GLEW streams results in the formation of gravitational waves, due to changes in velocity: this creates a ripple (or wave) in the movement of GLEW streams. This is due to individual and adjacent GLEW streams being able to expand and stretch, and to contract and shorten. This would lead to an overlap of gravitational influences and gravitational waves similar to the ripple effect when several stones are thrown into a lake in a fashion similar to ‘Newton’s rings’.

GLEW streams are the basis of the ‘curvature of the dark matter within the balloon shape of the Universe that we inhabit. That is, light curves because the gravity curves: such a curvature in the light that travels from a star is, of course, only detectable on Earth when the light is released upon the entry of the g-stream into the atmosphere. Within our own solar system, the large

gaseous planets, such as Jupiter and Saturn, have rocky centres with huge masses, surrounded by substantial gaseous atmospheres exert a large gravitational force. This is due to the large number of GLEW particles within the fixed structure of the mass of the planet itself and the atmosphere surrounding it. As GLEW streams travel as dark matter, the GLEW particles within the g-stream are attracted to the GLEW particles that form the structure (rock and atmosphere) of the planets. This causes a curvature in the path of the GLEW streams, which each react to the movement of the others. The duality between gravity and light would account for the curvature of light as it passes the, in this case, a planet or a star. Therefore, the curvature of space *is* the curve of GLEW streams as they are attracted towards GLEW streams that are exiting the planet or star. This space-time curvature will be based upon the mass of the object and explains where there are varying gravitational influences depending upon the concentration of GLEW particles within a particular medium, such as, for example, rocks.

A question for consideration: is our Universe contained within a black hole?

Within GLEW theory as it currently stands, GLEW particles form the composition and the energy that velocity of GLEW streams, an intriguing thought arises: that the universe we inhabit (and everything that constitutes that universe) is contained *inside a black hole*. That is, the reason that we believe that we have only found only one black hole (Cygnus X-1), at the time of writing, is that we are within Cygnus X-1 looking outwards to our own event horizon. Therefore, if we presume that we exist *within* a closed thermodynamic system where the expansion of the universe (in the form of the galaxies moving further away from each other) is due to an expansion in the size of the black hole. If we exist and are travelling *within* a black hole, we would, therefore, if we could see a black hole, not be looking into the black hole. Instead, we would be looking outwards to the event horizon. As the event horizon expands, due to a loss of mass (as proposed within the theory of Hawking heat radiation), the event horizon will become less visible. If our own galaxy, together with all other known galaxies, exist and travel within a black hole, this, in itself, may be regarded as a universe with an interior that is constantly expanding. This would, it is envisaged, be like the inside of an ever-expanding balloon that has expanded beyond the limits of our ability to see to the edge. In addition, the presence and movement of our own and other galaxies within a black hole may well be the reason that dark

matter is perceived as *dark*: that is, that the dark matter is the 'blackness' of the inside of a black hole. Therefore, if we are looking outwards towards the event horizon of the black hole that we are within, the analogy of a 'balloon' shape to the black hole would enable the curvature of space-time. As the event horizon expands, it is suggested that the mass of GLEW streams leaving the event horizon (i.e. the source of Hawking heat radiation) will eventually be greater than the mass of GLEW streams entering the black hole. This will lead to a point where the event horizon is no longer able to maintain its shape and will expand suddenly. This will result in a sudden expansion, leading to the reaction equivalent to the 'big bang': the event horizon will expand suddenly to the point where the contents of the black hole become enclosed within another, more expansive black hole.

As a black hole simultaneously loses and gains Hawking radiation, this takes the form of GLEW streams where gravity and light are travelling as GLEW streams. As the black hole interior expands, more GLEW particles (within associated GLEW streams) are absorbed into the black hole than are being released (known as Hawking radiation) from the black hole / universe that encloses it. As the black hole gains more gravitational mass, due to a greater influx of GLEW streams than radiated GLEW streams, the black hole expands to the point where it merges with the surrounding universe that contains it. This expansion of numerous event horizons at different points in the history of the Universe (as a whole), thereby leading to universes combining, each universe having once been the content of a previous black hole.
By drawing further upon the principles of black holes being TRGs, which emit Hawking radiation in both directions, if one accepts that our universe is actually the contents of a black hole and that we are looking not towards a black hole but indeed outwards from within a black hole, it can therefore be determined that each known universe is contained within a black hole. Each black hole, therefore, contains at least one universe. As stated previously, The recent images of a visible black hole accretion disc, within the Messier 87 galaxy, reveals that black holes are TRGs for other universes, where the velocity of emitted Hawking radiation decelerates due to the presence of dust and gas creating an 'atmosphere' which causes $GLEW_v^0$ to decelerate to, at least, $GLEW_v^{-1}$, thereby emitting $GLARE_v^{+n.}$

Therefore, let us presume that we are looking outwards towards the event horizon and in to another universe within another larger black hole that contains our own Universe / black hole. That is, each black hole is contained within a larger black hole, which is within an even larger

black hole, and so on and so forth. The principles of Hawking radiation suggest that black holes have a thermodynamic instability in that mass is released from the event horizon as heat radiation as opposed to detectable light. Therefore, it is proposed that the heat radiation and thermodynamic instability is due to the movement of GLEW streams from one black hole, via the event horizon, to the larger, encompassing black hole through a form of gravitational partition. This accretion of GLEW streams (and the resultant movement of gravity-light-heat) results in a gradual expansion in the event horizon almost like one sees in the neck of a balloon when the air is released. Eventually the balance of GLEW movement leads to an instability at the event horizon. This leads to the instability and expansion of the event horizon to the extent that the smaller universe within the black hole becomes subsumed in to the larger universe within another black hole. Therefore, each singularity expansion leads to the formation of a new universe that is much larger than its predecessor due to the merging of two universes: a result of the expansion and ultimate instability of the smaller universe's event horizon. As such, it is proposed that each singularity expansion leads to the creation of larger, merged universes: this expansion (whether gradual over billions of years or sudden and 'explosive') is due to Hawking radiation being released to the extent that an event horizon expands suddenly, leading to the immense sudden release and potential redirection of GLEW streams. If this is a sudden and violent episode in the expansion and merging of universes, this would have a catastrophic impact upon objects within both the smaller and larger merged universes.

The least catastrophic event would the gradual expansion of the event horizon, due to the reciprocal movement of GLEW streams across the event horizon, leading to the merging of the two black holes, i.e. the universe within the inner black hole gradually becomes part of the larger black hole due to the shell of the smaller black hole gradually receding. Therefore, the event horizon gradually expands to the point where it is no longer discernible and the universe it held in place becomes indistinguishable from the universe surrounding it. For such a theory to be plausible, a number of key assumptions need to be considered. The first is that each universe (and the black hole within which each universe is contained) is a self-contained thermodynamic entity called a closed thermodynamic system (CTS). Each CTS universe is ever-expanding within a rotating black hole with a shell. Each CTS expands due to the movement of GLEW streams. This expansion enables and is vital to the gravitational impact of the movement of the GLEW particles in that the GLEW streams are perpetually moving within the closed unit of the

black hole universe. This leads to the rotation and curvature of GLEW streams within orbits that would explain the movement of planets within the various solar systems and the curvature of space fabric, as well as the expansion of the universe. It is important to reiterate here that each universe is a closed thermodynamic system within an infinite series of systems.

The event horizon enables the movement of GLEW streams from the larger (surrounding) universe whilst GLEW streams (gravity and heat) radiate from the universe (via the event horizon) as the equivalent of Hawking radiation. As long as a balance is made between the movement of GLEW in and out – in terms of mass and energy – the gravitational balance with remain constant. The expansion of the universe (within the black hole) will lead to a point where the capacity of the universe is such that its shell can no longer contain all of the GLEW streams and their member GLEW particles. In consequence, radiation of GLEW streams out of the universe will be greater than the influx of such streams. This will lead to an expansion of the event horizon and the gradual loss of the outer shell of the black hole.

Each energy-rich, explosive expansion of a black hole would lead to a reaction similar to that of a singularity expanding to fill the known space within the Universe: that is, that one universe combines with another universe to become more mass rich. In turn, each becomes part of the same, but larger, closed thermodynamic system. Each of these 'singularity-equivalent' event horizon expansions is asserted as being the equivalent of a 'big bang' reaction, and involves both sudden expansion of the galaxies from one universe into the galaxies of another larger universe. As part of this expansion process, there is an increase in the velocity of the GLEW streams (to a velocity of $>GLEW_{v}^{+1}$) which should be detectable as gravitational super-waves. These are of a greater magnitude than detectable gravitational waves, the latter travelling at gv^{0}. Each gravitational super-wave represents the sudden expansion of a black hole event horizon, and the sudden, instantaneous rush of GLEW streams from one black hole in to a larger black hole. Both gravitational waves and gravitational super-waves are indicative of sudden changes in the velocity of GLEW streams, both, respectively, of the 'big bang' expansion of black hole event horizons and changes due to mass / density changes. These will be detectable in similar ways to one detects the ripples on the surface of a pond. Given that there may be any number of event horizons expanding at any one time, there will be a series of overlapping ripples of gravitational super-waves and waves (again, due to changes in GLEW stream velocity and associated oscillations).

A further key principle to take into account if such a model of universal gravitation is to be viable is that the GLEW streams are able to contract and stretch in different parts of the universe. Such contraction and expansion would enable the predictability of the orbits of mass-rich objects around each other, including planets around stars, stars around the spiral within their own galaxy, and the orbits of comets and constituents of asteroid showers. Such contraction and expansion of the GLEW particles within GLEW streams would explain why planets and stars have aphelia and perihelia. This change in length enables changes in distances between objects whilst keeping them bound within a system which has an almost 'clockwork' predictability.

The third principle is that there may be a different form of the black hole within the proposed form of black hole that forms the CTS that is a universe. This is not so much a hole leading to a universe but a series of areas of such GLEW particle concentration, due to the extremely high number of GLEW streams being pulled through due to mass-gravity attraction, that is necessary to ensure the sustained predictability of the orbits of mass-rich objects. In essence, these are dark voids within the universe that have strong gravitational fields and radiate large amounts of heat but do not release light due to the speed of the GLEW streams through the dark void (i.e. speeds of $GLEW_v^0$ and $GLEW_v^{+1}$). These dark voids of the highest concentration of GLEW streams act like tension points (almost like the tension points where several knots meet in a cargo net) around which the movement of GLEW streams takes place to enable orbital predictability within an expanding universe.

Conclusions

A number of concepts need to be revisited and rethought if we are to be able to understand the systems that maintain balance within our own Universe and the multiverse. This includes the understanding that dark matter, including non-detectable light, is capable at travelling at greater the asserted velocity of detectable light. For the model to work and the theory to be viable, dark matter needs to be capable of moving at faster than the speed of light. The speed of dark matter (DM) is such that, whilst dark energy (DE) may be generated and released, the velocity of DM is such that 'light' as a form of DE is generated but cannot be released at normal DM velocity. Therefore, on that basis, we need to rethink the 'speed of light' as being the 'speed at which light is detectable'.

In summary, for the discussed theory of GLEW to be accepted as a basis for enhancing our understanding of gravity, dark matter and black holes, we need to rethink our entrenched thinking regarding the speed of light, the mechanics of gravity and the forms that black holes take if the particles that constitute and govern them are of the smallest possible form: that is, GLEW particles. Clearly the GLEW theory is in its infancy and will be enriched by further details and ideas as part of its evolution. A key element is determining (or, at the very least) suggesting the range of the actual speeds at which GLEW particles and streams need to travel in order to generate dark matter and dark energy. It may be that GLEW particles have a *mass* that, individually, has a very limited gravitational influence in that only a small amount of energy is released by a single GLEW particle. However, if all matter is composed of GLEW at the very core of its structure, there will be implications in terms of the mass-energy equivalency. In addition, this may explain why GLEW stream velocity causes planets and stars to rotate and develop a typical spherical or oblate spherical shape based upon the principle that gravity pulls matter together but rotation throws it apart.

If the scientific world is accepting of the view that gravity is mass and mass is gravity, in that all GLEW particles have a mass-energy equivalency, and that GLEW particles travel faster than the asserted speed of light, a speed at which light as an energy form is neither released or detectable, then we are far better placed to unite quantum and general relativity theories. As with the similar proposal of related theories of gravity, only time and space will reveal.