Hybrid Time Theory: Cosmology and Quantum Gravity (II)

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Abstract: In following on from "The Scientific Principles of Space, Time, and Perception" [18], the idea of a pan-theory of time and space shall be further explored, namely that a "real" pan-theory can only be reached by the human perceptive ability successfully navigating the idea of space through time, understanding how all of space, time, mass, and energy works together, based on real-data. To achieve that in pure theory a set of successful patterns of data derivation that have been proven experimentally through real means need identifying, yet derivations in this case via a fundamental property of definition of perception as a logos of reality, here as a logos of space and time. This paper is also the second part to paper 17, "Hybrid Time Theory: Cosmology and Quantum Gravity (I)", where further definition and scope will be provided to the ideas of space, time, mass, and energy and their collective association as inertia.

1.   Introduction

In following on from "The Scientific Principles of Space, Time, and Perception" [18] here the idea of a pan-theory of time and space shall be further explored, following on from the idea that a "real" pan-theory can only be reached by human perception in successfully navigating the idea of space through time, understanding how all of space, time, mass, and energy works together, based on real-data. To

achieve that in pure theory a set of successful patterns of data derivation that have been proven experimentally through real means need identifying, yet derivations in this case via a fundamental property of definition of perception as a logos of reality, here as a logos of space and time. A key feature to this process is that understanding nature is to first trust it, to trust what it presents to our perception, and thus more fundamentally to know our perception, to accept what feature of our perception can capture as "real data" in the here and now to formulate a "real" time and space pan-theory. This paper presents such a case.

This paper is also the second part to paper 17, "Hybrid Time Theory: Cosmology and Quantum Gravity (I)"; here, further definition and scope will be provided to the ideas of space, time, mass, and energy and their collective association as inertia. From paper 17 ([17]: p21-24), the following were requested for this second part:

> *The results attained on activation of the energy source (RF) for 30 seconds yielded a result within the bounds of the Hybrid Time theory, despite the amount of thrust produced was considered as insignificant; it is considered that owing to the placement of the bulkheads holding the aerial in place the thrust "around" the solenoid from that associated EM resonance (destructive interference) field would have cancelled out any overall thrust, and thus a new aerial design and associated bulkhead structure deemed necessary (to be taken up by the second part of this paper, "Hybrid Time Theory: Cosmology and Quantum Gravity (II)").*
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> *……*
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> *The next step for research would point to harnessing this pressurised heat energy central to the EM resonance (destructive interference) core region, and to ideally contain and extract it, as perhaps a new process of energy storage and release, together with better isolating the QG component. This shall be the focus for the second part of this named paper, "Hybrid Time Theory: Cosmology and Quantum Gravity (II)", where the nature of the QG effect in EM resonance (destructive interference) as a process of **localising** gravitational force is explained.*
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> *…..*
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> *Although the analogous phi-quantum version of the Standard Model was presented in paper 4 [4], Phi-Quantum Wave-Function Crystal Dynamics, where the idea of the generation of mass from light is explained in the context of the proposed asymmetries of time and space and collective symmetry of the phi-quantum wave-function, together with particle-pairings and associated spins, in light of the results in this paper, namely the apparent localised pressure effects of gravitational force in the event of an EM resonance (destructive interference) field, the theory from that paper [4] will be fully accounted for in the second part to this paper, Hybrid Time Theory: Cosmology and Quantum Gravity (II), detailing the precise nature of time, space, symmetry, asymmetry, light, mass, and energy, all in regard to explaining the primary localisation of gravitational forces in nature, the primary feature of gravity in nature, and more specifically, in cosmology, and how such can be demonstrated in the laboratory, and what re-calibration of dimensions (size, mass, distance) of cosmological objects relative to this solar system and each other is thence required.*

The new aerial design and associated bulkhead shall be presented in chapter 6. In reaching chapter 6, first the idea of physics and its associated contemporary philosophies will be presented (chapter 2) and why philosophy and science is not the best mix when it comes to determining what is

"real'". In chapter 2, the ideas of dark matter (DM), dark energy (DE), and aether shall be presented and how they are limiting the intellectual and *real* development of physics theory and research respectively, presenting the case of needing to dispel false notions in physics theory, notions that have no real-data basis, and worse still, can never have any real-data basis. Following this, in chapter 3 the idea of "inertia" and "spacetime" shall be dissected to highlight those two concepts also are in breach of being overtly "philosophical" in their association. Following this in chapter 4, a solution is presented in the form of a more realistic definition of time and space, and it's relation to energy and mass, leading to the derivation of "c" (speed limit of energy and mass in space) and why "c" *is* limited the way it is. There, the idea of the Lorentz factor as the basic "1" transformation to uphold physical symmetries is discussed, providing insight into all the transformation equations successfully reached using the new algorithm for time when applied to space. Following this in chapter 5, an adjustment to the metric of cosmology is forwarded based on this new scaling system for time and space. Finally in chapter 6, an experiment is presented to demonstrate the nature of quantum gravity as associated to this new algorithm definition for time and space and it's replacement of the definition of "inertia", as a demonstration of the nature of the quantum gravity (QG) effect in EM destructive interference resonance (DIR), all of such as a process of **defining** gravitational force, accounting for the precise nature of time, space, symmetry, asymmetry, light, mass, and energy, explaining the primary localisation of gravitational forces in nature, the primary feature of gravity in nature, and more specifically, in cosmology, and therefore what re-calibration of dimensions (size, mass, distance) of cosmological objects relative to this solar system and each other is required. The paper therefore shall be structured as follows:

1. Introduction
2. Physics and its Philosophies
3. Dissecting Inertia, Spacetime, and Cosmology
4. The Golden Ratio Algorithm: Time, Space, Energy, and Mass
5. Recalibrating Cosmology
6. Experiment-5
7. Conclusion

2. Physics and its Philosophies

The idea of measuring physics using *ideas* of consciousness and not just using consciousness alone (obviously) has been from the beginning of the study of physical objects; the likes of Plato, Socrates, Pythagoras, and so on, the pioneers of such musings on the potential hidden nature of objects, all measured the nature of human consciousness while measuring reality. In fact, it could be argued that the *study* of philosophy was and still is the necessary bridge itself between observation and calculation in a time when scientific development was and perhaps still is at its earliest stages. *Philosophy* as according to Merriam Webster [19]:

Definition of *philosophy*:

1a(1):   all learning exclusive of technical precepts and practical arts

1a(2):   the sciences and liberal arts exclusive of medicine, law, and theology; a Doctor of Philosophy

1a(3):   the 4-year college course of a major seminary

1b(1):   *(archaic)* PHYSICAL SCIENCE

1b(2):   ETHICS

1c: a discipline comprising as its core logic, aesthetics, ethics, metaphysics, and epistemology

2a: pursuit of wisdom

2b: a search for a general understanding of values and reality by chiefly speculative rather than observational means

2c: an analysis of the grounds of and concepts expressing fundamental beliefs

3a: a system of philosophical concepts

3b: a theory underlying or regarding a sphere of activity or thought; the *philosophy* of war

In an archaic sense, philosophy was a physical science, yet today the physical sciences are presented in a more fact-driven manner (an argument and logic presented in the previous paper, "Scientific Principles of Space, Time, and Perception" [18]). Physics though does still venture into unknowns, things that do not represent concrete facts, yet rather things that are speculative as opposed to observational, things more akin to philosophical musings. Here the case in point is dark matter (DM), dark energy (DE), and the entire premise of the big bang, all speculative, yet all largely forming the basis for cosmology theory, all being granted prescience as the "great beginning" (big bang) and "result" (DM and DE) of all things observational. Physics essentially by such a mechanism, such upholding of tenets, has become a fundamental philosophy in its own discipline, creating for itself mythological structures that are absent of real data, or rather, either cannot be proven in the here and now in this local reality or are so far in the past or future that they can never be properly proven other than by a process of logical default, of philosophy, even blind faith. As a solution, the idea of an algorithm for time based on human temporal perception was presented in the first paper [1] as a way to capture the "reality" of space and time with such a theme given further working in the most recent paper [18]. Ultimately though, what the papers request is for one to choose what is real, to choose data from the here and now, using the notions of memory and forewarning we all have, to be directed to what is real, to "trust" what is real "is" in fact real, and more than that, to "keep it real". The question must now be asked, "how is space and time ***real***?" Are space and time physical quantities? Indeed. There is only one way to address this issue, and that is by trusting real data and its relevance to the concepts of space and time.

The previous paper [18] highlighted the need to dispel all abstract notions, to return physics to the "here and now", and to achieve this one needs a sense of understanding towards the idea of "what" in fact the idea of the "here and now" is as a concept of time, as opposed to the idea of time-past and time-future ruling the process. So, it was proposed from paper 1 [1] that an algorithm for time is required

to capture real data in the here and now, while still acknowledging the human facility of temporal perception in regard to time-past (t_B) and time-future (t_A), and doing this by creating an algorithm that presented mathematically the concept of "1" in the here and now (t_N) in regard to that time-algorithm, and then developing the geometry of space and time central to that "1" determination for time-now (t_N). This was presented in paper 1 ([1]: p4-5) initially, then paper 2 ([2]: p3-12) as the development of a wave-function for time (PQWF) in the here and now (t_N) and those required geometries with space. In paper 3 ([3]: p2-5) the idea of consciousness, of perception, of the here and now (t_N) was given greater emphasis with the suggestion that consciousness would represent the nexus, of meeting the idea, of "observation" with "calculation", namely the time-algorithm having a task in the here and now to calculate a "reality" within which all the calculations are upheld, and thus not just a concept of consciousness being laid down, yet the notion of "symmetries" of laws of time-now (t_N) that must be upheld in a pan-space reality using that algorithm for time in any region of that pan-space reality. From paper 3 [3] developed paper 4 ([4]: p5-15) to explain how the basic geometrical construct of time-now (t_N) with space as a wave-function (PQWF) would develop into an atomic structure. There, an <u>analogue</u> for the <u>standard model</u> of the atom was derived including all required elementary particles using this new process of time and space definition. Following this, paper 5 ([5]: p4-11) developed the idea of time, time-now (t_N), through this mechanism as a process of energy, time "as" energy according to the golden ratio algorithm for time, and so related the idea of energy to time's flow. Paper 6 ([6]: p3-4, p9-11) then developed the idea of this energy relationship of time bringing to attention the idea of a general platform of space in regard to time as energy, and how the idea of consciousness in time-now (t_N) would juxtapose there. In short, papers 1-6 [1]-[6], presented the key basis for the new algorithm for time, centralising both time and real-time (here and now) perception appraisal of reality to the here and now (t_N). The next 12 papers [7]-[18] had the task of demonstrating how all those features of this new appraisal for time would derive all the known equations and constants for energy, mass, light, field forces, constants, and so on, everything physics regards as a process of upholding "real data". Papers 15-18 [15]-[18] reached the new level of the "Hybrid Time Model" for time, suggesting that there are two processes in play for time, one entropic as the release of energy, the other enthalpic as the containment of energy. Although this was presented in a basic format in papers 4 [4] and 5 [5], the Hybrid Time theoretical model made use of Euler's constant to identify this process more accurately. One acute feature through the papers was how to best explain, fundamentally so, the relationship between time, space, energy, and mass. Although paper 4 [4] derived the process for the development of mass from a wave-function (PQWF), and paper 5 [5] compared the idea of time with energy using the PQWF, there was still no fundamental definition for the basic components of space, time, mass, and energy in play. The problem it seemed was another component that assumed to be "all" of space, time, mass, and energy, and that component is "inertia". To properly understand the relationship between space, time, mass, and energy, the idea of "inertia" therefore needs to be dissected.

3.   Dissecting Inertia, Spacetime, and Cosmology

Dissecting the concept of "inertia" to arrive at a more fundamental definition for spacetime, is to arrive at the split definition for the concepts of space, time, mass, and energy. Indeed, inertia is the most fundamental ingredient to all physical equations, so much so it could be argued to be the veritable DNA itself of physics theory and associated mathematics in summoning its general form as mass-gravity and associated energy inclusions. Yet inertia quite simply in assuming itself as the key mechanism of spacetime makes itself incapable of properly defining the *independent ideas* of *space* and *time*, if indeed they (space and time) are allowed to be independent entities. If space and time can be considered as being the more fundamental and separate entities to the concept of spacetime, then inertia can only be secondary to the separate ideas of space and time, and thus logically should not be used to formulate theories of a great beginning such as a big bang and associated metric expansion of space. Once again, it needs to be pointed out that the idea of "inertia" is not being dispelled in these papers, only how it is being used in theoretical physics as a tool to describe space and time, and as the case unfortunately has it in contemporary physics, as spacetime.

The proposal that has been with the papers [1]-[18] is that the algorithm for time in regard to perception requires the use of time as the past (time-past) and future (time-future) as fixed parameters in between which the physical laws exist in the here and now, as those physical laws, and that the here and now is governed by a general process of "symmetry", ultimately as "1", as what Lorentz proposed regarding the basic transformation of inertial frames of reference [20]. Such a "1" determination has to be so because a symmetry is a symmetry, a transformation a transformation, namely the principle of relativity ideally needs to be upheld. Yet the human capacity in that reality in that same time-algorithm, that same algorithm of time, not only has the capacity in the here and now to perceive a real world and abide with those symmetries, those laws, yet is also endowed with the greater capacities of time-past as memory and time-future as forewarning, both of which would feature in the human ability of "choice" around time-now. Indeed, making decisions, choosing a path, would thus be a process of choosing to believe what is real or what is unreal for time-now, of considering the here and now as having a certain set of physical laws or not. A great past and a great beginning are indeed realms of speculation, even faith, in being absent of the "here and now", *__and thus to put those realms "into" the here and now__* as is the case with scientific theory in upholding the big bang theory/proposal as a gospel testament to be trusted, only muddies the symmetries, the real laws, of the here and now, leading some in physics to want to alter the value of "1" of those required transformations; such *__is not physics__*. The papers presented [1]-[18] therefore have aimed to keep the here and now pure with real data and associated real theories that can back-up real data, set at the value of "1" ($t_N = 1$), that ideal transformation "factor" of physical laws as symmetries kept to the value of "1".

Of dark matter (DM), dark energy (DE), aether, and inertia, inertia is the one concept that has physical "proof". That is not in question. What is in question is the idea of using inertia to explain space and time as spacetime as a fundamental explanation for space and time. One however cannot dissect inertia without discussing 4d spacetime, Minkowski spacetime [21]. Although the dismissal of Minkowski

spacetime can be quite quick given that its modelling is insufficient for a correct definition for time (as the previous papers [1]-[18] have highlighted), yet inertia's role with spacetime needs mention, as inertia as a concept requires that equally flawed definition of space and time **as** 4d spacetime, and so needs thorough examination. The problem with Minkowski spacetime (a combination of 3-d Euclidean space and time into a 4-d manifold, where the spacetime interval between any two events is independent of the inertial frame of reference in which they are recorded), is the idea of the "***independent***" reference; basically, gravity is meant to form the basis of spacetime as <u>a general curvature</u> according to General relativity, which then leads to the notion of gravity and thus mass (vis-à-vis, inertia) to be a continuum, and therefore not be the sub-text to **independent** inertial frames of reference. The obvious result of the use of 4-d spacetime as collective transformations of space and time ***<u>upon an inertial manifold that is considered to be unique for each reference</u>*** is to then suggest that those inertial references are all as the one curvature of spacetime, creating the effect of a need to explain what both mass and energy are upon that purely mathematical definition, ultimately requiring it seems a "massive" amount of matter (DM) and a "massive" amount of energy (DE) to have all those independent inertial references blend as one. In other words, the use of inertia to define spacetime requires so much energy and mass it is well beyond plausible. In short, bringing all the inertial references together as 1 using Minkowski space can only represent a mass and energy blowout. Clearly therefore the definition for space and time, their association, is wrong via this process, and therefore the ratio between space and time is way out of kilter owing to this application of inertia as a measurement device for space and time. The moral to such a story of physics theory is that to define space and time with an inertial yardstick, if way too much energy and mass is required to make it work, beyond what is in fact real, then don't use that inertial yardstick, and more importantly, consider a new mathematical model for space and time. Yet what model for space and time, based on what data? What is the most logical and reliable data to use to have the ideas of space and time fit with one another without reaching absurd results? To answer this question is to know "where", in general, to find that real data and with what "real" yardstick, and that means discounting cosmology as a theoretical basis.

One great understated feature of physics is that cosmology "assumes itself" as the pan-theory **basis** and **event-horizon** of physics theory, or in other words, to explain cosmology is to present a case for a pan-theory of time and space. Yet the first thing to remember about cosmology is that the only real data-based discipline that exists for cosmology is "astronomy", and as a technology, that is "telescope" technology, whether plain light magnification telescopes or mathematically/computer-data enhanced plain light telescopes. There is nothing else. No other technology exists for cosmology other than actual space-probes. Therefore, the aim of cosmology data and associated theory explaining that data is to marry all that data and associated theory to all the data and associated theory that exists **locally**. How real is that data though? Is the right metric being used to measure the stars, the right metric for distance and time? The only and perhaps **BEST** way to approach cosmology in regard to theories of space and time, what cosmology "is", that phenomena, the right metric of the stars, and so on and so forth, is to be "best" versed regarding ideas of space and time "locally", and to use the data of telescopes and those associated mathematical algorithms analysing the data of telescopes "appropriately" with that "best practice" process of local metric valuation. This is called the ***<u>principle of relativity</u>***, namely that the laws of physics locally

would apply elsewhere. Thus, for a mathematical algorithm to describe the physical laws, the symmetries, it can only depend on real data in the here and now with the provision that such data upholds physical laws that are unchangeable in time, especially with cosmology theory. That is what physics considers as a "symmetry", a physical law that applies in the here and now through all space in each now-event reference of space through time. To therefore change the basic "1" standard for the laws of inertial transformation, of mass and energy, in order to accommodate for the redshift effect (for instance), is breaking the most basic rule of what "real" data should be. However, it has become to physics to describe itself locally based on what is found in the stars, physics yielding to cosmology, preferring to find evidence for, or a reason to explain locally, ideas such as the big bang (inherent to the metric expansion of space and redshift effect), and the requirement thereof for dark energy (DE) and dark matter (DM), all of which cannot be found locally, only to muddy the "1" concept of symmetries as those local laws of transformations. Therefore, it would seem that there is a problem with how things, space and time, are defined "locally" if what is derived of cosmology using local laws of time and space, that theory, does not add up, and worse still, has physics want to make things murky on a fundamental scale of what "real" in fact is.

Therefore, a few issues need to be clearly brought to attention via the following questions:

- How is space defined?
- How is time defined?
- How is mass defined?
- How is energy defined?
- What is the association of time, space, mass, and energy?
- Can Inertia properly define space and time as spacetime?

"Inertia" is how contemporary physics addresses those issues. Inertia is considered as mass-gravity and the contained energy thereof, as spacetime (according to Einstein relativity theory). Indeed, the concept and accolade of "inertia" appears vast, almost mythological, so perhaps it needs further addressing. The issue here is defining "why" such is so in regard to inertia, "why" inertia is mythological in explaining space and time. Any list of reasons could exist for why such is so, the basic reasons being presented just previously point to lack of insight and poverty of theory. In moving forward though, the proposal is the solution offered by the perception-based algorithm for time and associated definition for space. Such space, as per paper 1 [1], was defined as a 3-d zero construct infinitely everywhere, while time was defined as a 1-d construct as a type of arrow of time from time-past (t_B) to time-future (t_A) via time-now (t_N) ([1]: p2-4), definitions successfully held through all the papers deriving all the known real-data equations and associated constants, all precisely compatible with real-phenomena and associated data. One basic idea to consider throughout all the papers therefore is that time and space are being considered on a fundamental level as _**two**_ separate constructs, and therefore if they are two different separate constructs they can only be polar opposites of that absolute realm. How is this significant? For instance, in developing upon paper 1 [1], paper 2 ([2]: p3-11) presented the idea of the phi-quantum wave-

function (PQWF). This was developed upon in paper 4 ([4]: p6-9) where it was presented that the PQWF would track over itself as a process of destructive-interference resonance (DIR) which would produce the concept of mass. At the time of writing the paper, that proposal was considered self-evident, yet in not being content with such a manner of description, let it be considered that if the phi-quantum wave-function (PQWF) undergoes destructive interference resonance (DIR), becomes "0", then according to the foundation of the PQWF "time" also would become a "0" construct:

$$\text{If } (PQWF)_e = 0, \text{ then } (time)_e = 0 \qquad (1.)$$

If though "time" becomes a "0" construct, then space becomes the opposite of "0", given that time and space by definition are opposite constructs, are in "**asymmetry**"; thus space becomes a "something", as what is defined here as "mass". Essentially, if time is a symmetry in its own regard, mass breaks that symmetry (in **"time"** becoming a "*0*"), simply owing to the logic that prescribes that if time is not "0" as a symmetry, then as a "0" construct it can only be an **asymmetry**. Yet mass would still need to be a symmetry, a part of the universal laws of transformation (as we understand as inertia), as a type of immediate action-reaction process of energy transformation as per Newtonian measurements of force, and associated Lorentz transformation basic/standard factor of "1", as highlighted in paper 14 ([14]: p14, fig3), yet further highlighted here with the addition of the significant "1" t_N factor:

Figure 1
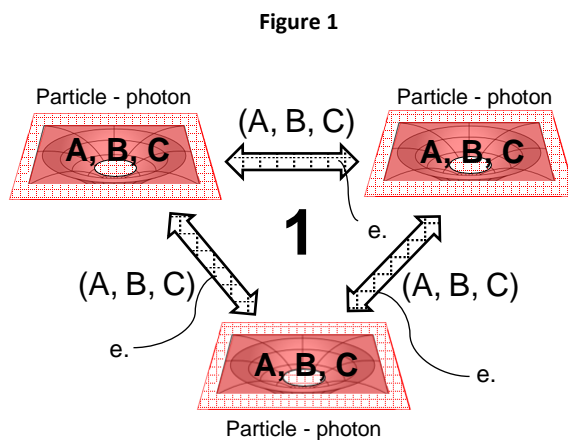
Figure 1: <*from Paper 14, page 14, Figure 3*>: A, B, C here represent qualities of a particle-photon reference "transformed" (e.) through space, considered as symmetrical, "1" being the basic transformation factor.

In terms of the creation of mass, let it be suggested that this process takes the energy of the PQWF as such:

$$(PQWF)_e = k \cdot mass \qquad (2.)$$

where the value of "k" (as was provisionally proposed ([2]: p16, eq.15)) is c^2. Further developments along this line of logic can now be made.

4.   The Golden Ratio Algorithm: Time, Space, Energy, and Mass

Paper 4 [4] aimed to present the case of the wave-function for time in space (PQWF) being able to effect into existence the idea of mass and hence a standard model of particles via destructive interference resonance (DIR), and paper 5 [5] presented the idea of the PQWF (in relation to mass) being the effector of energy, equating time with energy **via** the PQWF. Such an idea was not ambitious, yet presented a case of implementing real data into the theory, marrying the idea of a theory for time and space with *real data*, to derive real data with that theoretical proposal for time, space, energy, and mass, to derive those equations of energy and mass, and associated field equations, and cross-reference that with real data. All of such was achieved, namely that the standard of real-data, data in the here and now, was abided by and used as a standard. What papers 4 [4] and 5 [5] lacked though was properly dissecting the idea of inertia and the structure of energy to mass as a type of inertial manifold for gravity. The idea of time being causally related to energy via the golden ratio algorithm for time though was upheld in deriving key equations, except it missed a key point, namely the relationship of energy with mass. In taking this new lens of understanding though to paper 4 [4], paper 4 [4] becomes quite easy to comprehend. It was never an easy paper to present, yet the only way to present such a paper was to make the statement "time as energy", not "time is energy", yet "time **as** energy" as a hypothesis that was pursued, granted it could derive real data and associated equations and constants, which it did.

Therefore, to clarify the significant difference between *space, time, mass, and energy* with the singular concept of *inertia*, let the following be stated:

- Time is not a physical thing yet consists of dimensions.
- Space is not a physical thing yet consists of dimensions.
- Space and time are not physical things yet consist of dimensions.

Einstein relativity nonetheless considers spacetime, space and time as one, to be a physical thing, to be gravity as per mass, a physical thing, and thus by-default "inertia".

Let the following be highlighted in upholding the consistency of these papers [1]-[18]:

- Space is a different dimensional concept to time.
- Time is a different dimensional concept to space.
- Physical reality is exclusively perceivable in the here and now.
- Mass is a physical thing in the dimensions of space and time.
- Energy is a physical thing in the dimensions of space and time.
- The relationship between space and time as dimensions is nonetheless intrinsic to what each other can only be in supporting the idea of a physical reality, and thus mass and energy.

The next question is, "what is the fundamental relationship between mass and energy and why?". In abiding by the logic of the theory presented, of the golden-ratio algorithm for time, based on the perceptive ability one has in the here and now, the following equation of the golden ratio algorithm for time was presented in paper 1 ([1]: p3-4):

$$t_B + 1 = t_A \text{ (where } t_A = t_B^2, \text{ and } t_N = 1) \tag{3.}$$

Using this equation as a basis for space and time, it can only be proposed that the "initial" cause of what is real would be from a basic initial temporal dimension of t_B, the resultant effect being t_A, the effect, all of such via the process of t_N as "1" (that standard of transformation of the physical laws in the here and now ($t_N = 1$)), as per equation 4:

$$(time \ \& \ space) + 1 = (energy \ \& \ mass) \tag{4.}$$

Therefore, as this is a time equation, "time" can only be expressed relative to space as $\frac{time}{distance}$ if indeed distance is the nominated metric for measuring space. The manifestation of this ratio would be as follows:

$$t_B = \frac{time}{distance} \tag{5.}$$

Furthermore, from the previous section explaining the manifestation of mass from space, then the following would apply:

$$t_A = \frac{mass}{energy} \tag{6.}$$

Therefore, from equation 4:

$$\frac{time}{distance} + 1 = \frac{mass}{energy} \tag{7.}$$

The idea of "1" here would represent that t_N "transformation" factor as a time-now t_N event upholding the required symmetries (physical laws) in the here and now, the mathematics and elementary particle physical properties thereof as presented in paper 4 [4], "Phi-Quantum Wave-Function Crystal Dynamics". Nonetheless, in utilising the mathematics here to determine an absolute link between space, time, mass, and energy, "in" a t_N context, given $t_A = t_B^2$ ([1]: p, p4, eq3), then the following equations apply:

$$\frac{energy}{mass} = \left(\frac{distance}{time}\right)^2 \tag{8.}$$

$$energy = mass \cdot (\frac{distance}{time})^2 \qquad (9.)$$

Note that $t_B = \frac{time}{distance}$ would be a fundamental **DETERMINISM** for space and time, manifesting on this primordial temporal level of time in the overall time equation as a type of **CAUSATIVE** element, as t_B. Note also that the overall equation of time as equation 3 presents $(t_B + 1 = t_A)$ is an overall equation **for** "time"; installing the concept of space into t_B, and mass-energy into t_A, and the relationship of t_B and t_A central to "1" _as the overall equation for time_ presents a particular case of cause and effect, of time seeking to be time by it seems shrugging off space, or in other words, creating a type of space-time indeterminism for t_A, as though making t_A as "nothing", pure space as an uncertainty of "time". Quite simply, t_B would represent the **CAUSE** to the **EFFECT** of t_A by time-space of t_B making t_A indeterministic, a case already proposed in paper 1 [1] with the carried suggestion of "$t_A = ?$" ([1]: p3, eq2). Therefore, the representation of $(\frac{distance}{time})$ likewise, as a set limit for the propagation of energy in space, as "c", a **DETERMINISM** nonetheless that would **EFFECT** t_A in the manner of setting a universal speed limit for mass and energy in any frame of space and time reference while creating an indeterminate characteristic for itself . Consequent to this is therefore the idea that to study mass-matter as a process of energy release can only and always be an **INDETERMINISTIC** process of measurement, a situation Heisenberg became familiar with [22]. Simply, as t_A is the future, it is **INDETERMINISTIC** in that t_A abides by "$t_A = ?$" ([1]: p3, eq2). Therefore, although (as presented earlier) our consciousness would have access to t_B and t_A offering a type of choice for t_N, ultimately there would be a **DETERMINISM** of t_B effecting the **INDETERMINISM** of t_A. This has been the statement from paper 1 [1] as per the definition for the algorithm of time $t_B + 1 = t_A$. Of course, on top of this is the process of the time-algorithm as the PQWF seeking to define "π", a perfect circle, as presented throughout paper 2 [2] regarding the PQWF.

Effectively therefore "c" is best explained as the speed limit in any relative frame of reference for $energy$ and $mass$ in regard to $e = mc^2$, all in replacement of the idea of inertia, all without the need of dark energy (DE) and dark matter (DM), all without any ingredient that cannot be substantiated in the here and now, all while accommodating for the redshift effect in paper 13 [13] and that associated behaviour of light extra-atomically. It should though be noted that the idea of $t_N = 1$ (t_N1) should not be merely left at the notion of representing the standard for the transformation of all physical laws and thus symmetries between all inertial frames of reference, as t_N1 represents a particular dimension all its own, and that it is here that mass and energy are created via t_N1 through the universal balance of the golden ratio equation, the balance between _space and time_ and _mass and energy_, between t_B and t_A via t_N, as per the equation $t_B + t_N = t_A$. In other words, the concept of $t_N = 1$ and $t_B = \frac{time}{distance}$, suggests that t_N equates to the basic concept of $time \& disatnce$ itself **as** $mass \& energy$. Conversely and rather awkwardly, for time and distance to be as one also as mass and energy, as the concept of "spacetime", results in the notion of "gravity" (as Einstein regarded it). Yet, as presented here, there is a lot more going on regarding space and time, mass and energy, to reach that result of spacetime being gravity, which has

been the general argument of all these papers, namely employing a more finely tuned tool for time, the golden ratio algorithm for time, in order to solve the problem of DM, DE, the cosmological constant, redshift effect, and so on ([17]: p3-4).

The question of "why" therefore mass could come ***in and out of*** reality really depends on the balance of the overall equation of space and time as presented in paper 5 ([5]: p9-13), that grand micro-macro energy equation, and that also implies the overall equation for the PQWF and its Hybrid Time mandate of $e^2 + \varphi^2 \cong \left(\sqrt{\frac{19.8}{20}}\, \pi \right)^2$ ([15]: p11, eq8). Where and when mass (and energy) creation (and destruction) would happen would depend on the required integrity of the entire "real-data", $t_N 1$, equation in play, an overall equation that represents the overall energy-mass transformations happening in a general manifold of reality, as presented in paper 5 [5], paper 13 [13] "Space, and the Redshift Effect", and paper 14 [14] "Solving the "Cosmological Constant Problem"".

One interesting idea to propose is whether or not "$t_N 1$" is similar to the idea of "aether". It is really a question of semantics, namely how $t_N 1$ is being defined compared to how the idea of aether is being defined. If $t_N 1$ were aether, then aether should have no quality other than being indivisible and whole as "1" in any space and time reference for mass and energy. Giving aether a quality beyond "1", whether a spin, and so on, suggests it is no longer $t_N 1$ yet more likely a type of mass (and energy) construct. Presented here the idea of $t_N 1$ is a "concept" that is whole and indivisible, as a manifold that forms the backdrop of what is real upon/through which mass and energy comes from and goes to, all depending on the greater golden ratio algorithm for time. Simply, $t_N 1$ represents the basis for the transformation equations which themselves, all those complex inertial and momentum-based equations, merely exist to link the ideas of space and time as spacetime with mass and energy; conversely, those equations, those bridges of mathematics, are replaced with the $PQWF$ and associated Hybrid time model. That has been the process of papers 1-18 [1-18], namely explaining how the $t_N 1$ reality of t_B and t_A is consistent with all observed data, atomic to astronomical. Ultimately, $t_N 1$ proposes that there exists a fundamental tenet of "c" limiting the speed of mass and energy relative to its co-local time and space. Notably at play here also is the nature of light and the doppler effect in play with bodies in relative motion, and how light undergoing the doppler effect would change its value of energy accordingly, as presented in paper 13 [13] "Space, and the Redshift Effect", quite simply prescribing that light would be more energetic with bodies coming closer in relative motion, and less energetic with bodies moving apart in relative motion. Note that such propositions could not have been made at that stage of papers (4 [4] and 5 [5]) as clearly as presented here, as the fundamental feature of inertia needed thorough addressing, and therefore needed the idea of the Hybrid time model, an essential achievement. In short, the proposal here is that "time" and "space", as dimensions, ***are*** directly related to energy and mass respectively in a temporal golden ratio algorithm context, a golden ratio parity of $t_A = t_B^2$, the golden ratio being that time equation and thus also energy equation, creating micro-scale (elementary particle) entropy and enthalpy manifolds and macro-scale (cosmological) entropy and enthalpy manifolds, all a part of the one process of the golden ratio algorithm for time, all using and only using "real" data in the here and now ([5]: p8-11). All of such does away with the need to consider DE and DM, DE and DM being what only seems to be the

modern-day equivalent of aether, that which is derived from the heavens above yet not apparent locally, and also does away with the notion of a great beginning "big bang" and whatever end could be associated to that hypothetical proposal. Basically, theories formulated on the basis of a great beginning can only be flawed in the construction of their logic being "unreal" from day-1, depending on nothing but hyperbolic suggestions closer to fantasy than real physics, despite the eloquence of mathematics being employed to support those fantastical theories.

5.   Recalibrating Cosmology

In any quest of discovery, the metric of what is sought to be discovered, such as for instance the discovery of stars, can only be navigated using a "real" basis, using "real-data", not wishful-thinking data such as DE and DM. Considering the stars therefore as independent solar systems could in fact be wishful thinking ***in the absence of a fundamental basis of proof*** of the stars being real solar systems as an a-priori; indeed, the stars could be nuclear phenomena of a size-scale completely different to a normal solar system, and as all the equations of these papers suggest, equations all based on real data, such is more than likely.

For instance, EX-4 ([17]: p18-22) created a PQWF DIR region that lead to a type of "extrusion" of energy central to the greatest focus of PQWR DIR (wave-function destructive interference resonance). Simply put, the theory and associated research has presented the case that associated to a region of apparent "zero" EM radiation (as per a PQWF DIR field) is a type of "ejection" of energy. Such a phenomenon though is described in nature as associated to the behaviour of what is observed to be "black holes", namely an ejection of energy from an apparent black hole phenomenon [23]. The same process happened in EX-4 ([17]: p18-22), namely dampening (DIR) out an EM field (PQWF) while creating a heightened and focussed "G" effect as mass associated to that dampened EM effect (PQWF DIR) with the associated effect of energy ejection. What is to say that such a thing cannot be apparent in nature, in what is observed in the stars, "on a very small scale" as demonstrated with EX-4 ([17]: p18-22)?

In deriving the maximum redshift effect ([13]: p9-12) without the need for DE and DM, in deriving the lamb shift effect ([14]: p22-23), in deriving the absolute lowest level of energy and CMBR ([14]: p24-25), it becomes clear that to properly understand thermodynamics is to understand the concept of time, space, energy, and mass ***separately***, yet **not** as inertia; inertia, quite simply, is the apparent if not virtual field-free capability of matter to store kinetic energy, a feature of mass emerging from the PQWF via DIR. To therefore use the logic of mass as spacetime, then such does away with the necessary descriptors of time and space as independent entities, which then requires considering that the redshift effect is due to a temporal inertial metric expansion of space, which then requires an initial expansion point in time of the inertial metric expansion of space, which then requires general relativity as gravity-theory to explain how points of light considered as independent solar systems are held together in galaxies, which then leads to the need for DM, and of course DE to account for the metric expansion of space and associated requirement of energy according to the Planck scale of determination reached through inertial relativity physics, all of which plays physics into the hands of philosophy.

The issue of the stars being the size of solar systems may seem a "basic" thing to consider, yet when such a notion is executed with observational analysis through astronomy and those associated metric calculations, then the problem becomes evident that the map of the stars (in basing their relative distances on their luminosity as "solar systems") by such a process of pre-determining the size of the stars to values of luminosity, impacts **_greatly_** on the resultant calculation of the distances between those points of light and their _assumed_ magnitude. Clearly, if the stars were many magnitudes of order of mass smaller, their relative distances would be much closer to one another and to our local reference. Considering the stars as solar systems requires general relativity and associated inertial equations for gravity, also requiring DM (allegedly 70% of the universe that can't be found) and DE, both leading to a mysterious 90% of all of reality not being present in the here and now. In other words, there is a lot wrong with both the idea of using inertia to explain space and time as spacetime and the assumed size of the stars. Indeed, embedded in this problem is assuming the redshift effect to be due to the metric expansion of space, an assumption which in itself is in no way assisting "real data" in any space or time, requiring DE values popping off the scale at an eye-watering magnitude of 10^{122} above the accepted value of 10^{-9} Jm^{-3}, which would be fine if physics seeks to become a philosophy of its own reckoning by proposing such associated scales of speculation to what's real, yet is that the intention of real physics? Such is not to say that there could exist stars as suns other than our own, yet the point here is undertaking the correct analysis of the data without making undue assumptions and without worse still "making" unreal concepts out of undue assumptions while reaching absurd conclusions.

In short, one should not dismiss the idea that the stars could be anything, yet to use the stars as an a-priori based on the assumption they are solar systems and solar systems at that, other than an a-priori itself as atoms as a first consideration, **_is_** a "philosophy", not physics, as it relies on an "assumption" that is not only untested yet leads to absurd theories and associated absurd data proposals non-existent in the local here and now reality humanity occupies; if physics allows itself to rest on assumptions, then it rests upon questions that has no true definition as a type of philosophy, that as much as it wonders it still knows nothing, especially without the proper basis of the question in play, the question here being "what is time and space". The issue is not one of assuming this or that, whether the stars are suns or not, yet what the data states as a fact and how that data can be put together as a theory without requiring absurd fixes (such as DM and DE), while also proving a local phenomenon contemporary models of physics and cosmology fail to predict and explain, leading now to the next section.

6. Experiment-5 (EX-5)

Throughout all the experiments, what otherwise appeared to be anomalous and chaotic errors/incursions must in fact be explained in the context of a complete here-now ($t_N 1$) account of space, time, mass, and energy, and can be explained, as follows:

EX-1 ([7]: p10-12):

The antenna used here in the resonance chamber was the same as the antenna pin used in the magnetron launcher chamber, whereby the antenna pin in the magnetron launcher chamber jettisoned out from its plug into the waveguide with great force, suggesting that a large component to the process of EM (PQWF) destructive interference resonance (DIR) carries with it a large component of energy release at any weak point, and here its first weak point, namely the magnetron launcher chamber.

EX-2 ([7]: p13-16):

The aim here was to bleed the DIR effect from the magnetron launcher chamber to the antenna resonance chamber using a DIR antenna solenoid, the result here being the same release of energy yet with the connection between the antenna and the aerial lead into the chamber being vulnerable to the energy release, showing itself as the next weak-point. The question here was to significantly reduce the amount of energy released in this process and thus reduce this second weak point.

EX-3 ([12]: p10-12):

Here a new aerial design configuration was considered, one that did not focus on the electrical component of the DIR yet the magnetic, and therefore not a proper PQWF DIR resonance. The results were minimal if at all significant yet did confirm that there exists a clear energy component to a proper DIR for a PQWF. The task was then to understand the theory behind this energy release, hence the need to derive the Hybrid time model.

EX-4 ([17]: p18-22):

In reaching the "hybrid time" model for the PQWF [15][16], and thus the dual component of energy containment in the form of quantum-gravity (QG) and energy release as the Euler component of mass-decay, the aerial was designed to enhance the DIR effect more greatly away from the first two weak points (EX-1, EX-2), to use more EM *inert* material (plastic bulkheads), leading to what was considered to be a proper DIR field generation inside a mass-core structure, a mass-core structure which had the interesting effect of "extruding" the inner mass-core of the central Perspex "mass" out to its perimeter, provisionally confirming the "Euler" component to the Hybrid time theory in play here, namely the release of energy in the context of this structured phi-quantum wave-function (PQWF) destructive interference resonance (DIR) region. The question is **how** to bring out the QG effect with greater "gradient" significance, without having the structure of the experiment, and in this case the central mass-core (5b), being compromised in the testing process.

Despite not producing the intended gravity-effect, the experiment presented in paper 17 ([17]: p18-22) highlighted the Euler's energy release component/effect along the field line of the PQWF DIR, and as such was a success. The question though must be asked, "what was missing in that research process (EX-4) in failing to deliver a gravity-result?". The issue, as EX-5 shall highlight, was in the construction of the attaching bulkhead, a problem of cause-effect, of basic "inertia", of exposing the field both in and around the solenoid to the bulkhead structure, distorting the gravitational effect according to that employed bulkhead design. Indeed as highlighted here, the idea of "inertia" is not without merit in a basic sense; the idea of mass being a "manifestation" of the PQWF DIR has the endowed property of an "immediate" universal effect of self-association, of attraction, based on its value of mass, it's property of mass, as a process of space, and therefore in an immediate sense, as "gravity". On top of this though is the idea of a conservation of energy embedded within the concept of mass itself, as a relativity of energy conservation of mass "between" mass constructs, and therefore the concept itself of "inertia". Note that such a concept (inertia) is a "secondary" feature of space and time. To explain space and time using "inertia" as spacetime is to explain mass and energy as spacetime. However, the conservation of energy, although being fundamental to the concept of $t_N 1$ and t_B (space and time) is in fact **not** fundamental to the concept of mass and energy itself per-se, yet an effect thereof, and thus theories of space and time using "inertia", using momentum, using "energy-mass" transformations in time through space, will always reach incorrect conclusions regarding space and time and the dimensions and energies of mass (and associated universal modelling) thereof. Once again, as the papers have highlighted, there is another way to present this case, to replace inertia, by referring directly to the golden ratio algorithm for time.

The issue to address here therefore is how to now enhance the QG component of the PQWF DIR. The key change here to EX-4 is to re-design and construct/implement the bulkhead such that the QG component is more evident. Further to this, the design has removed the mass-core from the peak hot-zone PQWF DIR field, leaving it just outside that on its edge, thus preventing a mass-core meltdown as encountered in EX-4. The effect though this would have would of course be a reduction in potential thrust. Thus, the following design changes were made:
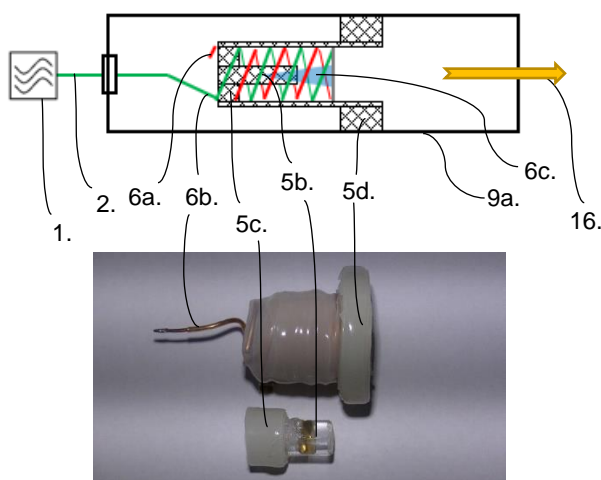
Figure 2

Image 1

Figure 2, Image 1*: RF source (1.), connecting coaxial lead (2.), one solenoid (6a.) ~10 winds forward, another solenoid (6b.) ~10 winds back, solenoid winding Perspex tube bulkhead (5d.) attached to 74mm ID aluminium pipe structure (9a.), EM destructive-interference field region (6c.), mass-core (5b.) acrylic bulkhead (5c.), mass-core (5b.) exposed to the internal destructive-interference EM gradient resonance field (6c.), direction of proposed thrust (16.)

The test was conducted along the same parameters as EX-4 ([17]: p18-22), suspended by the same mechanism, attached to the RF source with the same RF wire, 30s tests, resulting in the following before (image 2) and after (image 3) activation images when viewing the apparatus from above, distal end of containing chamber:
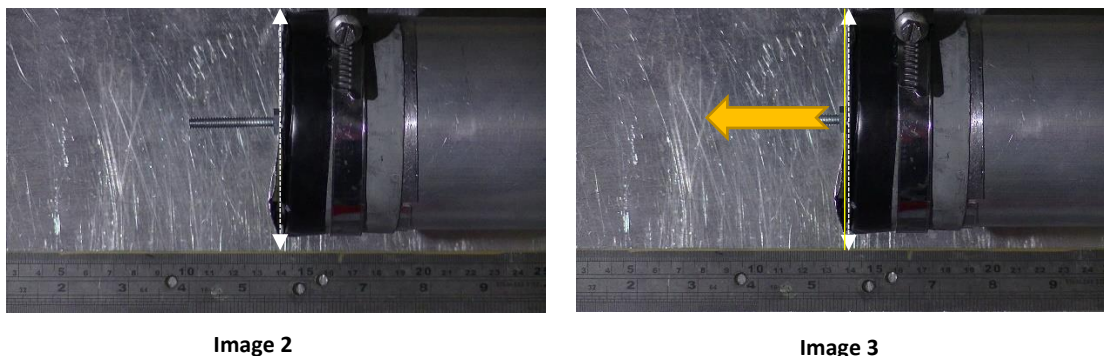
Image 2

Image 3

Images 2-3*:* suspended resonance chamber showing a 2mm movement from image 2 to image 3 in the proposed direction of thrust.

The thrust movement registered was ~2mm, seemingly very minor, yet consistent and properly directional according to the associated theory and design. To note is that the tolerance of movement allowed by the suspension device is *very limited* owing to the need to use a thick 1-metre RF 5.8GHz tolerant insulating cable, which makes this result in this axis of direction significant, together with the mass-core not being placed in the PQWF DIT hot-zone, limiting any potential thrust generation in order to prevent mass/energy extrusion from the mass-core. To ensure this movement was not an aberration nonetheless, a control test was undertaken using all the parameters according to EX-5, except without using the mass-core, with no movement registered. The movement therefore is considered to provide provisional evidence for thrust associated to this design platform and execution, albeit minor. Future testing shall be undertaken in removing any cable structure linking the RF source to the aerial, requiring a completely different RF power source and aerial design, warranting more pronounced results.

7.   Conclusion

For any foundational model of physics reaching an apex definition of space and time, the following issues have been evident through the recent centuries:

- o   Does it seek to support the idea of stars as independent solar systems?
- o   Does it rely on Newtonian physics and thus inertial physics?
- o   Does it rely on Einstein relativity and associated laws of inertia?
- o   Does it use inertia to explain space and time as spacetime and thence cosmology?

- o Does it support the metric expansion of space to explain the redshift effect in using inertial laws?
- o Does it support the big bang in using inertial laws to support the metric expansion of space?
- o Does it support the need for dark matter and dark energy to account for those inertial requirements?

Any argument in physics ideally should understand what the argument is based upon; is it based upon discussing real-data, or is the argument purely hypothetical, presenting hypothetical ideas to be later proven as fact in the context of required "real-data"? For instance, discounting the metric expansion of space, how is one resolving the redshift effect? Is one resolving it with something like "aether", a substance with no evidence in the here and now other than through pure argument and opinion? Real data, provable data, put together in the form of a pan-theory, should not necessarily be a cognitive model of the universe either; indeed, cognition is a factor for the time-algorithm involving time-past and time-future, and not just time-now, yet only *here and now* cognition in regard to the physical laws held in the balance of a greater time algorithm of time-before, time-now, and time-after can only be relevant to understanding the natural laws of the real. What can nonetheless be done with the time-before and time-after aspects of human cognition is to productively choose what is "real", and to trust that the data of what is real "is in fact real", and that means dispelling data and associated theories that are not real, data and associated theories that have failed to be proven.

The entire process of cognition here, the writing, the sharing of the data and associated theories, is based on trusting real data, trusting the symmetries of laws, trusting that reality is not playing tricks, that the basics can be understood. Here the trust is being put in the data that has been accumulated throughout the centuries, data that is "real", data not based on assumptions. One key assumption carried through the centuries has been the idea of the stars being independent solar systems. Such an assumption though discounts the real possibility of other phenomena at play, phenomena that can be explained using laws of local symmetry, phenomena that can avert the need for DM and DE, and phenomena that can avert the five key issues of cosmology as presented in paper 17 ([18]: p3-4). The proof of the "real" theory is the "real results" it offers, "real" results alternative albeit contemporary theories of inertia explaining space and time as spacetime cannot resolve. For all those collated "real-data" results (equations, constants, proofs) a general amalgamated version of papers 1-18 is available to word-search all the real-data proofs "derived" using this new algorithm for time [24].

The stars being solar systems, in short, is a poor data-inclusion metric. This will be further outlined and demonstrated to be as such in a subsequent paper confirming the real metric of the stars based on real data without the need for dark matter and dark energy, a metric entirely backed-up by real- data and associated laws/symmetries. The paper presented here nonetheless (and the papers prior) uses space and time each as an a-priori, not as spacetime, not as mass or energy or inertia, and furthermore does not "assume" the stars to be solar systems, yet accounts for space and time as an a-priori and rationalises the stars upon a space and time atomic a-priori basis with such conclusions reached to validate that basis. One thing is certain about the stars and their proposed distance, light years, namely nothing can be proven

about anything that *is* there and anything that *is not* there, simply because it is not feasible to travel such great distances. What can be proven is a theory proposing the nature of the stars and their associated appearance with a new phenomenon, a new laboratory-based phenomenon based on that theory and its appearance in the laboratory, and such is what EX-4 delivered, together with what EX-5 demonstrated regarding quantum-gravity, to be followed up further with an alternative approach and associated results.

Conflicts of Interest

The author declares no conflicts of interest; this has been an entirely self-funded independent project.

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