The Hybrid Time Clock as a Function of Gravity

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Abstract: This paper follows on from the preceding papers [1-15] in detailing how time is a function of gravity using what is termed the "hybrid time clock", in much the same way Einstein used the analogy of a clock in his special relativity theory [16]. The paper here doesn't dispute key known facts of special relativity regarding time and gravity, and of course mass, yet it does highlight new equations relevant to the general question theoretical physics is asking in regard to gravity, namely how it is related to QED (Quantum Electrodynamics). In this paper, "time" is considered to be "what a clock measures" for the lack of a better definition. The *hybrid time clock* is a concept developed from the hybrid time equation of the preceding papers [1-15], more specifically the most recent paper "Hybrid Time Theory: "Euler's Formula" and the "Phi-Algorithm"" [15], and is implemented here in this paper as a function of gravity. In short, the concept of the *hybrid time clock* is that of using a construct of measuring time, the concept of time, using a "time-clock" as a standardized construct of measurement for time. Time could indeed be the most mysterious entity of all. It may not even exist. Yet the *hybrid time clock* is a way to measure the concept of time for the purpose of also understanding the concept of space and associated phenomena of energy and mass and light. This paper will take the concept of the *hybrid time clock* and associated equation from paper 15 ([15]: p11, eq8) and present its case as "the" integral function of G (gravity) directly associating it to EM (electromagnetism) as the phi-quantum wave-function as accounted for in the preliminary papers [1-15].

Keywords: time; space; gravity; golden ratio; pi; phi; hybrid time clock; Euler's formula; phi-algorithm; Einstein; special relativity; general relativity

1. INTRODUCTION

This paper follows on from the preceding papers [1-15] in detailing how time is a function of gravity using what is termed the “hybrid time clock”, in much the same way Einstein used the analogy of a clock in his special relativity theory [16]. The paper here doesn't dispute key known facts of special relativity regarding time and gravity, and of course mass, yet it does highlight new equations relevant to the general question theoretical physics is asking in regard to gravity, namely how is it related to QED (Quantum Electrodynamics). In this paper, “time” is considered to be “what a clock measures” for the lack of a better definition. The *hybrid time clock* is a concept developed from the hybrid time equation of the preceding papers [1-15], more specifically the most recent paper *Hybrid Time Theory: “Euler’s Formula” and the “Phi-Algorithm”* [15], and is implemented here in this paper as a function of gravity. In short, the concept of the *hybrid time clock* is that of using a construct of measuring time, the concept of time, using a “time-clock” as a standardized construct of measurement for time. Time could indeed be the most mysterious entity of all. It may not even exist. Yet the *hybrid time clock* is a way to measure the concept of time for the purpose of also understanding the concept of space and associated phenomena of energy and mass and light. This paper will take the concept of the *hybrid time clock* and associated equation $e^2 + \varphi^2 \cong \left(\sqrt{\frac{19.8}{20}}\,\pi\right)^2$ from paper 15 ([15]: p11, eq8) and present its case as “the” integral function of G (gravity) directly associating it to EM (electromagnetism) as the phi-quantum wave-function as accounted for in the preliminary papers [1-15].

Mathematics is a tool that brings measurement to gaze upon physical phenomena. Science has evolved using mathematics in a fashion that standardises certain features of physical phenomena, key features, as equations with associated constants. Space and time may both unfathomable, yet for the "purpose" of science mathematics is employed to discuss their relationship. All the standards for space and time, those dimensions, have been upheld in the preceding papers [1-15]. The key difference between the theory presented in this paper including preceding papers [1-15] to the commonly held notion of “spacetime” and its associated curvature feature as gravity (as per Einstein’s Special and General Relativity theories [16]), is that the *hybrid time clock* replaces Einstein’s simple clock, and that the *hybrid time clock* has embedded into it the idea of cause and effect replacing Newton’s and Einstein’s notions for “inertia” as gravity. To achieve such a task, this series of papers [1-15] started by presenting a case for the new time algorithm, as a hypothesis, and then presented how that time-algorithm, the φ-algorithm (golden ratio algorithm for time), could network with 3-d space, and what would result through such a joining of the concept of the φ-algorithm with 3-d space [1]. Space thus also needed defining from a new set of mathematical axioms to stream with the φ-algorithm for time [2]. Such was the process through papers 1-14 [1-14]. Through those papers, the equations and associated correct constants for gravity and electromagnetism were derived, so too the fine structure constant, the speed of light, the values for mass and charge, Rydberg’s equation, Avogadro’s number, the temperature constant, CMBR, maximum redshift, the Lamb shift, the cosmological constant, together with presenting a new modelling case of the

elementary particles, as new version of the standard model incorporating the φ-algorithm, all consistent with known values and associated observed data.

The next step was made, paper 15 [15], following paper 14 [14] having solved the cosmological constant problem, to take a new and more streamed look at the basis for the φ-algorithm in paper 1 [1]. In doing so, in taking a closer look at the *idea* of time as a circle and space as a "zero" entity extending into infinity, as the papers [1-14] generally concluded such to be the case, an algorithm for π was established relevant the φ-algorithm, a known formula for π. A key finding in paper 14 ([14]: p26) was the process of "radio-active decay" as a phenomenon in its own right, separate to the φ-algorithm for time. It was noted that Euler's formula, $e^{i\pi} + 1 = 0$, is directly related to such a phenomenon (radio-active decay) (15]: p8-9), and so it became logical to include Euler's formula into the φ-algorithm which then became known as the "hybrid time" equation, a derived formula to demonstrate such a concept is in fact valid, as a formula detailing the spatial link between Euler's formula's structure as a time algorithm to the φ-algorithm, namely $e^2 + \varphi^2 \cong \left(\sqrt{\frac{19.8}{20}}\,\pi\right)^2$ ([15]: p11, eq8). In following on from paper 15 [15], it is considered that the hybrid time theory can be used as a standard reference for time as a "*hybrid time clock*", and that this clock can be used in the process of Einstein's reasoning in his Special Relativity [16] to "derive" the concept of gravity and time as a function of it thereof, without disputing known data regarding light and gravity. Essentially, this paper shall present the case that gravity can be explained without using the concept of inertia, yet instead by applying the new *"hybrid time clock*" which owing to it having greater granularity of definition should present itself to be a theory for gravity, a theory which can make the concept of gravity something that ***can*** be "generated" through specifically manipulating an EM field (resonance). This paper will therefore be structured as follows:

1. Introduction
2. Measurements of time and space
3. Hybrid time as the primary function of gravity
4. Conclusion

The general conclusion reached is that Einstein in dealing with the concept of inertia as gravity in the context of cause and effect failed to deliver an actual theory for gravity, instead complicating light, light in space, QED, and what is perceived of the stars, with the simple notion of gravity being a curvature of spacetime as an "inertial" entity, never therefore actually providing a theory for gravity that links with EM theory, QED, and a standard model for particles, and not just that, not explaining how gravity as a force is intimately related to mass in theory other than the simple premise of "inertia". This paper shall demonstrate that if more granularity of definition is given to a form of measurement for time, here as the "*hybrid time clock*", then such an understanding of gravity can be reached without corrupting all known equations and values for the field forces, particles, mass, energy, and light.

2. MEASUREMENTS OF TIME AND SPACE

Why is the hybrid time equation from paper 15 [15] now being considered as a “clock”? Because it tells the time, and it does this by using two different process as one, e and φ, as both the radioactive decay process in time (e) and the standard contained process of matter in time (φ), as outlined in paper 15 ([15]: p11-12); the *hybrid time clock* “tells” the time, measures the idea of time, of “change”. From the first paper [1], it was suggested that time propagates as a spherical wavefront through space. Such a definition for time was preliminary. It was a way to “propose” how time could behave in space as per the proposed behaviour of light-EM. From there, that concept was annexed with a type of human-perception feature for time, namely the flow of time as perceived by human consciousness, from time-past to time-future via time-now. That then arrived at the golden ratio “algorithm” for time, as a way to measure the concept of time as adjusted to human perception. The biggest question through all the papers has been “how is it possible to seemingly “make-up” a time-algorithm and then apply it to space”? “What if it is wrong?”. “What if all that was delivered from paper 1 [1] is entirely fabricated, that formulas for EM and G cannot and should not be derived, nor the Rydberg equation, nor a standard model of particles, and so on and so forth, because the basis is wrong?” The fact is that it ***has*** worked, as it ***has*** successfully derived all that it has, all the key formulas and constants for physics theory with associated descriptions of associated phenomena to those key formulas and constants. The question though is “why” has it worked if it is commonly disputed that “time” is not a substance? The great misconception some have is that if the idea for time as an “algorithm” is presented, then such means that time must be an algorithm, and not only that, a “substance”. That is not the case. The algorithm “for” time is a way to “measure” the idea of time. Time like space could be something far more mysterious, yet for the purpose of physics a type of measurement device is being employed, here the φ-algorithm (developed into the idea of the *hybrid time clock*), to “measure” time, to standardise it so it can be measured using such an algorithm. There have been many ways to measure time in history, from different calendars, to different amounts of units to determine how long it takes the Earth to rotate, and so on and so forth. The time-algorithm is merely another way to describe the idea of time, yet used here for the specific purpose of better explaining how one would not just perceive time, yet calculate objects in space in regard to their relative motions, and thus in regard to time.

The idea of “measurement” is the mainstay of science, measuring the basic ideas of space using rulers and time using clocks. Upon measurement comes theory, to form ideas relevant to what would be a super-structure to everything, laws that govern how objects in reality behave. Measurement and theory aim to remove the unfathomability of space and time and associated phenomena from our awareness, to make it fathomable and structured, computable, and predictable, to assist us in making clearer decisions, to know our reference with greater clarity. To then propose a new way to measure the idea of time is no small thing, it’s a big deal. The reason why today there is the current facility of "theoretical physics" is because "there are still a lot of questions unanswered", hence the need to be "theoretical". The most dangerous scenario theoretical physics can find itself in is threefold: (1) believing in theory that is untested, (2) making everyone believe in theory that is untested, and (3) playing (1) and (2) without

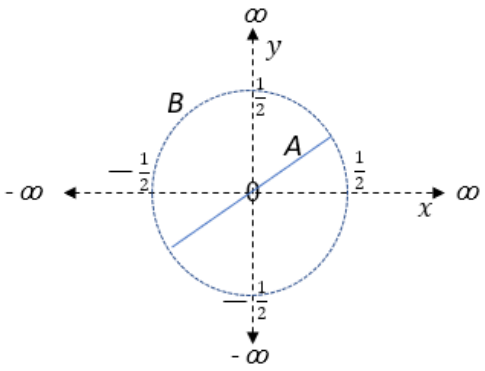
question. Those problems are not exercised in the papers thus far delivered [1-15], especially regarding the use of the new axiom for time. For instance, the last time a great change to the axioms of physics occurred was when the Michelson–Morley experiment dispelled the idea of “aether”. Yet with relativity theory, the aether giant-slayer, there are still many unanswered issues, the key one being “gravity”. It would therefore be obvious for those who refute relativity theory to go back to aether theory by citing problems with relativity theory and how the Michelson–Morley experiment was conducted. What is "aether" though? Has anyone explained what aether “is”? Although science takes a liberal approach to proposing new terms and associated ideas, ideas such as dark matter and dark energy, to fix the observed data of the stars, yet is that a licence to bring back aether-theory, a concept like dark energy and dark matter that has no real observational data to validate it. Physics, simply, is no stranger to proposing new ideas, so why not the proposal for a time-algorithm, as a *hybrid time clock* to embed itself anew into Einstein’s initial notions presented in his Special Relativity paper, to give the idea of gravity more scope with the embedded notions of “e” and “φ”, and to have this supported with known tested and observed data?

In this paper, the *hybrid time clock* will be presented along the lines of equation 8 in paper 15 ([15]: p11), $e^2 + \varphi^2 \cong \left(\sqrt{\frac{19.8}{20}}\,\pi\right)^2$, as a spatial relationship, as a spatial relationship of time as a measurement basis, representing a new analogue for gravity as a function of time, yet not only this, a more accurate basis for perception in regard to time’s flow, as per the very nature of the φ-algorithm, namely being based on the basic functional appreciation of time our perception executes, namely the movement of time from time-before to time-after via time-now. In other words, the φ-algorithm already calculates that process in any relativistic situation, and that the only feature that would need calculating in relativity theory using the *hybrid time clock* would be “how” that time algorithm relates with the idea of mass and thus gravity. In other words, in the “absence” of using a theory for time relevant to our conscious ability, spacetime theory becomes a wash of paradoxes in using the idea of inertia alone for gravity and thus mass. Case in point there is that relativity theory assumed one or two things which then lead to a series of complications and unresolvable paradoxes, two key one's being quantum-entanglement and the cosmological constant problem. Although the basic notions regarding time and gravity in special relativity are correct, as relativity theory developed to explain cosmology (primarily the redshift effect) it (relativity theory) seemed to be carrying an unnecessary and assumed weight (inertia), necessitating QED and the standard model, which still although both using inertial theory, required the necessary "perturbations" to seek new theoretical considerations to accommodate for observed phenomena (primarily QED and the standard model), as explained in paper 14 [14] (Solving the Cosmological Constant Problem).

It is therefore considered that gravity can be better explained by not using the simple premise of gravity as inertia, yet using the idea of cause and effect with a way of measuring time, of bringing cause and effect, an analogue of inertia, into the measurement process as per the φ-algorithm for time, as per the notion of time-before to time-after via time-now. In such a way, “gravity”, previously firmly tagged with the idea of “inertia”, can now be tagged and thus explained using that algorithm for time, using that measurement device for time, and thus gravity being a pure function of time, and thus in regard to light, can become a function of EM that can allow it to be a replicable thing in the lab. The

question is how inertia as concept can be removed from the axiomatic definition of space and time theory congress (not entirely of course in the overall process, just where it needs to be), in that space and time would require axioms, and not "new" axioms, yet "first" axiomatic definitions, given current space and time axiomatic definitions are based on "spacetime" aka inertia. To remove the idea of inertia though and replace the idea of what appears to be time's arrow, a standard clock, with the idea of the φ-algorithm, appears to be no minor operation, yet complicated surgical procedure to ensure that all the known constants and associated equations are still upheld. Much of that surgery has already been performed with papers 1-15 [1-15]. The key thing to consider though is how the proposal for the φ-algorithm as a way of measuring time can fit properly with the idea of 3-d space, as a general statement. The idea of time as a circle and space as a 0-reference construct was presented in paper 15 [15] in presenting an algorithm for π regarding that association between time and space. Yet it did not include the idea of the φ-algorithm for time, the ideas of φ and $\frac{-1}{\varphi}$. So, let that operation be performed here in this paper.

There are three key items to consider when putting together the notion of the algorithm for π developed in paper 15 [15] to the idea of the φ-algorithm. The first is what was presented in paper 15 ([15]: p5, fig1):



<from paper 15> Figure 1: here, A is a straight line of length "1" in any infinite region of 2-d space effected by the axes x and y around an arbitrarily reference point "0" such that from that "0" point the line extends a length of +½ and –½ from that "0" reference. "B" is the value of π as the arc around the central point "0" radius ½.

Here the blue line is length "1", as a ruler for time, as a way space (as per "0") can be used to measure time. Here this "ruler" length of space for time is a value of "1", as per figure 1.

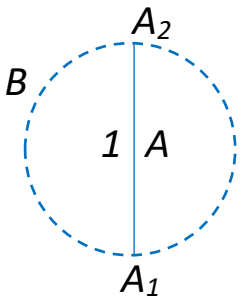


Figure 1: Here the diameter of circle "B" is length "1", as a ruler for time, as a way space (as per "0") can be used to measure time. Here this "ruler" length of space for time is a value of "1", between points A_1 and A_2.

The next key item to consider is what was presented in paper 2 [2] regarding the nature of space in regard to the φ-algorithm, as per paper 2 figure 1-2 ([2]: p4, fig1-2):

$$\left(\frac{-1}{\varphi}\right)^2 + \varphi^2 = \sim 3 \qquad (1)$$

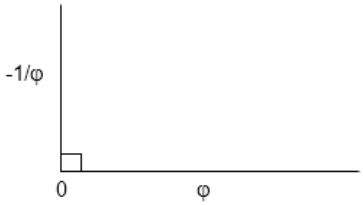


Figure 1; two axes of time, $\frac{-1}{\varphi}$ and φ.

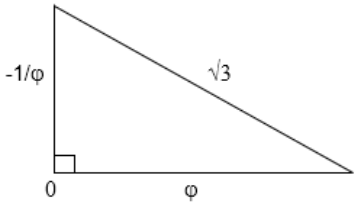


Figure 2; two axes of time, $\frac{-1}{\varphi}$ and φ, which then result in the value of ~ √3 in a squared relationship.

This can be represented as per figure 2.

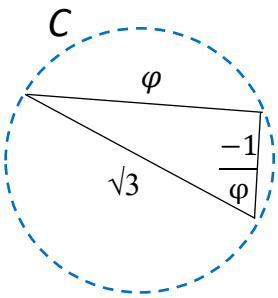


Figure 2: Here, the diameter of circle "C" is the value of √3, the hypotenuse of sides φ *and* $\frac{-1}{\varphi}$.

The third option to consider is the two directions along the axis of the time-algorithm, as per figure 17 paper 2 ([2]: p19, fig17):

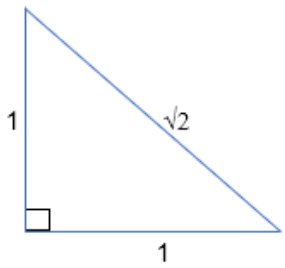


Figure 17; two axes of time t_H, 1 and 1, which then result in the value of √2 in a squared relationship as a resultant value of t_H.

This can be represented as per figure 3.

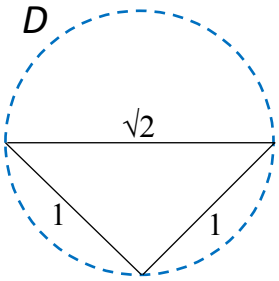


Figure 3: Here, the diameter of circle "D" is the value of √2, the hypotenuse of sides 1 and 1.

These are all spatial representations of the proposed time-scaling system. It is now a task of arranging them together as a combined geometry, as per figure 4.

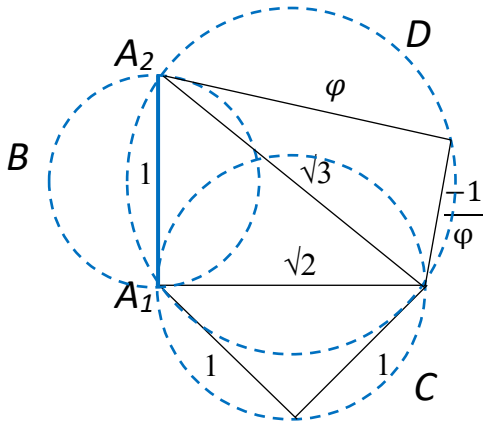


Figure 4: Here, circles "B", "C", and "D" are brought together such that the diameters of each of such circles form a right-angle triangle.

What does this combined geometry represent for time as a representation of space? The distance of line A, from A_1 to A_2 is "1". That is the concept of space in regard to time, time as circle "B". In using 3-d space, an extra two "1" units are brought together in the context of a π time-circle to result in a value of $\sqrt{2}$ as the space representation of circle "C". Not only this, the φ-algorithm for time in regard to a circle "D" is brought into play as the value of $\sqrt{3}$ as the diameter of circle "D". So, the distance between A_1 and A_2 as a spatial representation of circle "B" is being factored with $\sqrt{2}$ and $\sqrt{3}$. Yet the basic premise of time as π for circle "B" as established in paper 15 ([15]: p5-7, eq4) needs to be upheld, thus this π value can be equated to the values of $\sqrt{2}$ and $\sqrt{3}$ by the absolute association that has been measured in $\sqrt{2}$ and $\sqrt{3}$ joining A_1 and A_2 using circles "C" and "D", as follows (equation 1):

$$\sqrt{2} + \sqrt{3} \cong \pi \qquad (1.)$$

What this equation simply means is that the distance as time that circle "B" can absolutely walk (i.e., π) can only be represented through 3-d space using the φ-algorithm using those two associated lengths of $\sqrt{2}$ and $\sqrt{3}$ as per equation 1. It's not an exact match (0.15% error to the known value of π), yet a telling association; the error is a good way of saying that there is still more to the idea of time, and not just the φ-algorithm scaling system. And thus "something more" had to be established for time, as per Euler's equation in paper 15 ([15]: p11), necessitating the need for the "hybrid time" equation of $e^2 + \varphi^2 \cong \left(\sqrt{\frac{19.8}{20}}\,\pi\right)^2$. Now, let us investigate how the φ-algorithm for time can be related to the idea of gravity as the *hybrid time clock*.

3. HYBRID TIME AS THE PRIMARY FUNCTION OF GRAVITY

In this section, the notion of gravity from paper 1 ([1]: p1-8) will be presented, and highlighted to represent a function of time, primarily (3.1). Then, the idea of the φ-algorithm will be presented in a similar manner to how Einstein presented the idea of his simple clock in special relativity (3.2). Following this, the idea of the *hybrid time clock* will be then introduced, explaining the feature of time in that clock that specifically relates to the idea of gravity (3.3).

3.1 GRAVITY'S EMERGENCE FROM ELECTRODYNAMICS [1].

The idea of gravity was first presented in the first paper, in chapter 2 ([1]: p8-9):

1. Gravitational modelling

Now let us add a few features of time to space; gravity[12] as the feature of 0-scalar space given mass by time (our proposal), would be proportional to the following:

- the mass of one event M_A,
- the mass of another event M_B,
- a "*fine-structure*" mass context relevant to an overall space and time feature of the event M_c,

Gravity would also be indirectly proportional to the following:

- the time difference from M_A to M_B, t_{AB}, a process of "symmetry-breaking" with t_{BA},
- the time difference from M_B to M_A, t_{BA}, a process of "symmetry-breaking" with t_{AB},

Note that t_{BA} and t_{AB} would be features of t_N. Thus, the following equation would apply as the gravity between the two events of M_A and M_B as G_{AB} *(eq. 10.)*:

$$G_{AB<NEWTONS>} = \frac{M_C M_A M_B}{t_{AB} t_{BA}} \ (kg^3 t^{-2}) \tag{10}$$

Note that t_{AB} and t_{BA} are synonymous (same value) yet represent two different time references for M_A and M_B. Thus, the following equation would apply if we were to eliminate "time" from the equation by using ($\frac{d}{t} = c, t = \frac{d}{c}$) (eq. 11.):

$$G_{AB<NEWTONS>} = \frac{M_A c^2 M_A M_B}{d^2} \ (kg^3 t^{-2}) \tag{11}$$

Here $M_C c^2$ would represent the value of "G", the gravitational constant. M_C would represent a *fine-structure* mass-context relevant to two spatial references, yet as though the one reference in there being a "vector-tensor"[13] effect in play on the *fine-structure* level. Note equation 11. is relevant to a dual context of "time", so we need to consider applying a 3-dimensional 0-scalar context of space in view of this dual feature reference for time.

Thus, let's consider two *fine-structure* mass contexts; *fine-structure* mass context 1 M_{C1} and *fine-structure* mass context 2 $M_{C2.}$ Together, they represent the collective mass of M_{C1} and M_{C2} as $M_{C1+C2.}$ Yet this *fine-structure* mass M_{C1+C2} is a spatial dimensional entity. Simply, we have two mass entities that represent the one mass as a *fine-structure* context with a vector-tensor manifold in effect (3 vectors for each); in this universal context there would exist two 3-dimensional spatial scalar/vector paradigms for the dual time-reference, "as one" though; thus we are transforming their reference to

each other given their separate references for time, much like in the inertial Lorentz transformation model[14], yet here executed more simply while considering two references of time, t_{AB} and $t_{BA,}$ as a process of defining gravity (a spatial tensor for each vector).

Considering that the *fine-structure* mass M_{C1+C2} in a spatial context relevant to the dual time spatial dimensional equation (eq. 10.) requires to be "per" not just one 3-dimensional 0-scalar context but another, one "3" for each *fine-structure* mass context, thus a value of 3^2, together with needing to represent a double temporal t_N context (golden ratio process of two possible outcomes, φ or $\frac{-1}{\varphi}$, thus times "2", then the following can be considered for M_C (*eq. 12.)*

$$M_C = \frac{2M_{C1+C2}}{3^2} \tag{12}$$

Adding known values; the most basic *fine-structure* mass context M_C is the mass of a proton ($1.67\ldots \cdot 10^{-27}$ kg) and a neutron ($1.67\ldots \cdot 10^{-27}$ kg) representing generally the mass of a basic atom as the value of $3.33\ldots \cdot 10^{-27}$. Thus:

$$M_C = 3.33\ldots \cdot 10^{-27} \cdot \frac{2}{3^2} \cong 7.4\ldots \cdot 10^{-28}\ (kg)$$

Now, if we apply this to M_C . c^2:

$$M_C c^2 = 7.4 \cdot 10^{-28} \cdot (2.99 \cdot 10^8)^2 \cong 6.67 \cdot 10^{-11} = G\ (kgd^2t^{-2})$$

< the equivalent of equation 10. as Nm^2kg^{-2} >

Thus, it seems we can involve gravity in the process of using the golden ratio for time as a primary electromagnetic feature. Let's now look at the electromagnetic equations for charge.

In short, the equation for gravity here was based on the φ-algorithm, more exactly here as:

$$G_{AB<NEWTONS>} = \frac{M_C M_A M_B}{t_{AB} t_{BA}}\ (kg^3t^{-2}) \tag{2.}$$

Time here was and still is a function of gravity. Yet perhaps more should have been highlighted in that paper regarding the importance of that equation.

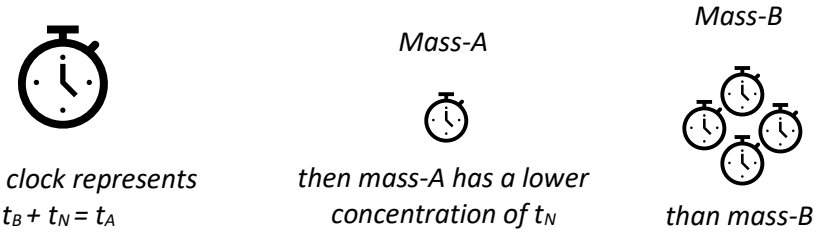
3.2 THE Φ-ALGORITHM TIME CLOCK

According to special and general relativity [16], spacetime is a 4-d manifold (3-d space, 1-d time), where the length of time is given as "ct" where "c" is a constant value set at the speed of light. Further to this, the geometry of spacetime becomes distorted by energy and momentum, a distortion represented by gravity, and thus "affected" time, distorted time, becomes known as "gravity" as the curvature of *spacetime*. According to relativity theory, *time is change* where the rate of change is measured using the number of ticks on a clock. Thus, when the number of ticks on two identical clocks are considered while timing a beam of light going from say *"clock-a"* to *"clock-b"* and from *"clock-b"* to *"clock-a"*, if the *measured distance* between each pair of

clocks are equal, each beam of light will arrive at the same time to each clock. Yet *spacetime* theory holds that the clock in the weaker gravitational field will have counted more ticks than the clock in the greater gravitational field. Or more simply, time will have passed faster for the clock in the weaker gravitational field compared to time in the stronger gravitational field. Or more simply still, an observer in the weaker gravitational field will see the clock in the stronger gravitational field ticking slower, an effect that has been confirmed by experiments, an important principle that is calculated when aiming to keep GPS satellites in-sync. Can the φ-algorithm clock explain the same phenomena?

Einstein measures time as the relativity between masses moving at different speeds and thus time dilations, time measured as a function of gravity while considering that "the speed of light is the same in all inertial and thus gravitational frames of reference". Where therefore is the variability in φ-algorithm regarding time, the variability of time? The φ-algorithm creates a frame of reference for time, as $tN = 1$. This frame of reference of time as the process of the phi-quantum wave-function is relevant to mass as explained in paper 4 ([4]: p5-8). It follows therefore that each frame of reference for time for each mass may change between different frames of reference depending on the amount of mass and this the quantity of the component phi-quantum wave-function associated to that mass. Simply, time "length" is proportional to mass, and so with a greater mass, the "time-duration" is increased. In explaining this further, it should be primarily noted that "mass" is a result of the φ-algorithm, as presented in paper 4 ([4]: p5-8). There, the idea of mass forming is proposed to be a result of the resonance of the phi-quantum wave-function. The simple issue there is that time in being associated to the phi-quantum wave-function would account for more phi-quantum wave-function resonance for the more mass, and thus more time ***as*** the "*phi-quantum wave-function*" is required. Consider figure 5.

Figure 5.



Quite simply, for a greater mass there would be more phi-quantum wave-functions in one region and thus more analogues of t_N, and thus an accumulative "longer" t_N time process. Yet, the overall time would remain the same, as per equation 2.

Thus, in considering figure 5, take two vastly different sized masses. They are not moving relative to each other, so the distance remains the same. Yet, one of the paradoxes of relativity theory is that time central to the larger mass is longer compared to the smaller mass, yet if the distance remains the same between the two objects, then in one case "c" is enhanced with the smaller mass (less time duration denominator) and minimised with the greater mass

(greater time duration denominator). Time has passed faster in the weaker gravitational field, slower in the stronger, and if the distance between those two objects is held, a third object viewing those two references will not perceive "light" at "c" depending on what it is exactly viewing, the larger mass compared to the smaller. It's all about the reference of view. Nonetheless, if light is fixed at "c", as calculations prove for the propagation of light in space, this would have implications on how light travels through space, namely if there is only one object (mass), the tendency for light from "one" object would be for light to diminish its value (as seconds) as it travels from that mass into the void (a "0" mass), and thus enhance its wavelength given that light must nonetheless be "c", as calculations suggest, and thus a natural redshift effect of light travelling in space which is explained in paper 13, "Space, and the Redshift Effect" [13].

3.3 THE HYBRID TIME CLOCK

Employing the idea of hybrid time to the φ-algorithm, as per the equation $e^2 + \varphi^2 \cong \left(\sqrt{\frac{19.8}{20}}\,\pi\right)^2$, merely considers that there would exist a component to gravity in regard to the φ-algorithm of collapsing to "0" as per Euler's equation of $e^{i\pi} + 1 = 0$. More to this, $\sqrt{\frac{19.8}{20}}$ would represent a spatial tensor for π as time in regard to "e" and "φ", which is how that spatial compression for the phi-quantum wave-function was envisaged. In other words, mass would be attractive to other mass. Simply, Euler's equation would represent the force of gravity as attraction, of relative distance collapsing to "0", and also given it is a concept of radio-active decay, of relative mass collapsing to "0", of what would be observed to be a spiral process of free elementary particles collapsing to zero when in that state. This attraction would be kinetic in being associated to the concept of "negative energy" ([7]: p2-3), together with the CMBR in being intrinsic to space, of that natural concept of the radioactive decay of the atom as presented in the paper "Solving the Cosmological Constant Problem"([14.p21-28). However in knowing this feature of gravity, the testing of paper 7 ([7]: p6-16) and those issues *of electrical-arcing and high-energy collapse of the antenna in the resonance field* become more understandable, as it would appear that a key process in the generation of a gravity field using an EM resonance field incorporates the phenomena of an "exponential" collapse as a process of atomic decay. Although this feature may seem to make the whole idea of generating a gravitational field from an EM resonance field rather pointless, it would be a matter of somehow containing and structuring that collapse of the mass associated to the G (EM resonance) field, and that would require a very particular type of antenna design that would incorporate a high energy absorbent manifold structure to catch that release of energy. Yet further to this, the possibility exists that such a process could represent a form of energy "generation" that can be held in a G (EM resonance) field, potentially yielding results for new forms of nuclear energy generation.

Another feature to consider about the *hybrid time clock* is how to measure the phenomena of the stars regarding gravity, or rather, how the *hybrid time clock* can shed better light on our current notions of General Relativity. The key notion of General Relativity is to explain the redshift effect, to explain why galaxies are held together in the context of the metric expansion of space (owing to "that" interpretation of the redshift effect, namely BBT). Yet the φ-algorithm presented in this series of papers has explained the redshift effect (Space, and the redshift Effect [13]), clearly presenting the case for a steady-state spatial reality, and that the stars would most likely be a type of highly magnified process of atomic decay. So, general Relativity is discounted. In replacement of General Relativity, the proposed process of atomic decay regarding gravity was not explained in paper 13 [13], yet here it is obvious that associated to the concept of gravity is a process of atomic decay, as per Euler's formula in the *hybrid time clock*. In other words, the most massive structure in our solar system, the sun, would naturally represent a process of atomic decay, obviously as a process of runaway nuclear fusion-fission, as it does. Yet more to this, the general emphasis for any type of matter accordingly is to go from a structured-held spatial template of time (φ-algorithm and associated phi-quantum wave-function) to an unstructured-elementary (radioactive-decay) process, as a process of continual entropy. And thus, with all things considered, it makes most logical sense to consider that the process of matter in league with the idea of light would logically appear to arise from mass-ejections from the sun as planets and slowly move out to the location of the Oort cloud as presented in paper 13 ([13]: p11-12) where the planetary debris would undergo atomic collapse, as a continual steady-state event. Given the small size of the eventual debris in the region of the Oort cloud ([13]: p13-19), their motion would be according to special-relativity conditions of time and thus appearing to move "faster" than the celestial bodies in our solar system, and thus what is thought to be huge stars with just as huge planets taking only a few hours to circle those massive stars, which technically is an absurd notion unless what appears to be huge is actually much smaller, sources of light with associated dust-clouds producing intense bursts of light that mimic elementary particle behavior yet apparently on a massive scale (Neutron stars, gamma radiation, and supposed huge planets that rotate around apparent huge stars at ridiculously fast speeds). Quite simply, according to relativity theory, if these objects are so massive, the time-dilation would suggest they should take far more than 1 year to revolve around just as more massive suns than our own. The principle of relativity appears to be run-down otherwise. Yet indeed, one may ask what makes one truly confident in the idea the stars are actual solar systems, what actual data exists that does not defy the principle of relativity to support the notion of the stars being solar systems? What is the founding construct of scientific evidence that states the stars are solar systems? There is none, simply because we have yet to go there, and further still, all data from the stars suggests that two invisible entities are required to make the current theory of the stars work (BBT), namely dark matter and dark energy, which violate the principle of relativity in not being found locally in our solar system. All in all, contemporary cosmology theory has more questions than answers in using the BBT and associated General Relativity in using inertial theory for gravity. Therefore, a few key conclusions can be reached.

4. CONCLUSION

The key intention of this paper has been to present the idea of not just the φ-algorithm for time as a model for gravity, yet the *hybrid time clock* as the basis for the property of gravity. Although the phi-algorithm equation for gravity was presented in paper 1 [1], and then explained further in regard to mass in paper 4, [4] and then presented in the form of an experiment based on an EM resonance field in paper 7 [7], the *hybrid time clock* neatly summarizes the behavior of light in regard to gravity, and the nature of gravity itself without corrupting well-held ideas and observed phenomena of special relativity. This has been achieved in the context of the 15 preliminary papers [1-15]. On top of this, a new algorithm for π was derived relevant to how time and space would interact regarding the φ-algorithm for time and 3-d space, an approximate value of 0.15% error given the absence of the required inclusion of "e". In short, the φ-algorithm for time and associated *hybrid time clock* gives a far more structured account for time regarding energy, mass, light, and thus gravity, more structured than standard special relativity.

The intention of this paper and preceding papers [1-15] has not been to change physics or the observed data, nor the fundamental equations and associated constants, yet how a proposed time-algorithm can replace inertia. The papers started cautiously, as they should, just in case there may not have been just one time-algorithm that would be required to replace the idea of inertia. In fact, as the previous paper suggests [15], there are two. Wisely papers 1-14 [1-14] set a cautious and hypothetical tone. Yet in reaching paper 15 [15], in finding the ***two*** time-algorithms replacing inertia theory, e and φ, there can be a compromise between the φ-algorithm and the known phenomena associated to Euler's formula (radio-active decay). Are such results sufficient? If not, one may question whether or not physics seems a theory valid if it can prove the stars to be real solar systems, despite a more thorough mechanism that links the field forces of this local reality being apparent in the form presented here. Fundamentally though, despite the time it would take to demonstrate the existence of the stars being solar systems, the proposal of this paper is to consider the actual research of G emerging from EM via an EM resonance field, as presented in paper 7 [7], while taking note of the newly discovered requirements for the success of that research as presented in this paper.

Conflicts of Interest

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

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