Hybrid Time Theory: Cosmology and Quantum Gravity (I)

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Abstract: This paper, the first of two by this subject title, details the current status of cosmology, it's methodology of logic, it's axioms, and how successful it is in providing proof for those models relevant to our local reality, while then proposing a solution for what current cosmology fails to deliver. In highlighting a number of key issues regarding current cosmology theory, a new basis is forwarded to cast aside the key issues that have no concrete data, and then that new basis is aligned with 16 key preceding papers [1]-[16] that underwrite new proof for that new basis of cosmology theory, the Hybrid Time model, in reaching a pan-theory (a unified field theory, or grand unified theory, or both, whatever the case may be). To bring this new process into effect, to bring into effect all the theory that can capture all relevant data, a key new approach to physics theory must be made.

Keywords: horizon problem; flatness problem; monopole problem; Hubble constant problem; cosmological constant problem

1. Introduction

This paper, the first of two on this subject, shall detail the current status of cosmology, it's methodology of logic, it's axioms, and how successful it is in providing proof for those models relevant to our local reality, while then proposing a solution to what it fails to deliver. In highlighting a number of key issues regarding current cosmology theory, a new basis is forwarded to cast aside the key issues that have no concrete data, and then that new basis is aligned with 16 key preceding papers 1-16 [1]-[16] that

underwrite new proof for that new basis for cosmology theory, the Hybrid Time model. In presenting a case for a solution, this paper shall be structured along the follow sections:

1. Introduction.
2. Cosmological axioms of theoretical physics.
3. Recent disruptions to physics theory: relativity and the big bang theory.
4. The Physics Chimera.
5. Proposing a fundamental change.
6. The solution: time, energy, and the emergence of gravity from electrodynamics.
7. The gravielectric field generator: quantum gravity generation.
8. Quantum Gravity
9. Conclusion.

The difficulty in proposing a fundamental change to physics and cosmology is explaining a new mathematical paradigm that catches all the relevant physical data and equations of physics and cosmology, in presenting the required modifications ***to*** the *theory of physics and cosmology* that the new mathematical modelling inscribes for each of those equations and sets of data, as based on what could only be its new axiomatic principles for time and space. For physics to do that though, a paradigm shift must happen, namely clear proof that such a process is useful in the regard of any new theory that is relevant to our local reality, to our solar system, in using that new methodology, together with acknowledging such a process would approach the idea of a “pan-theory”: a “unified field theory”, or a “grand unified theory” (GUT), or a “theory of everything” (TOE), whatever the case may be.

In approaching this pan-theory, there are two features in physics that need to be observed, one is what has been achieved and the other is what has yet to be achieved; there are guardian-tenets and associated data of what has been achieved, and there are those who promote what has yet to be achieved with or without those guardian-tenets. It is not possible though to achieve something new while discrediting the guardian-tenets of what has been achieved. The issue is presenting a new "link" for all those guardian-tenets of physics. That is not a concept of throwing what has been achieved in physics away by ignoring basic tenets and associated facts, guardian-tenets. If there are holes in physics theory, those holes need to be investigated, which is what a new pan-theory with associated axioms must address without disrupting known solid truths around those holes.

In endeavouring to best define cosmology with a pan-theory, if physics is a giant puzzle awaiting solving, the puzzle of ***real*** data needs to be presented, and all those pieces need to be put together in the absence of the data that cannot be verified, data that is hoped for, anomalous data such as dark mater (DE), dark energy (DE), aether, and so on. To bring this new theoretical proposal into effect, to bring into effect all the relevant data being brought together, a key new approach to physics theory needs to be made. In this paper, this key new approach shall propose and run an experiment to test its theory. Following this in paper 2 of this named subject, the theory will then be re-applied to basic notions of spacetime theory regarding cosmological data.

2. Cosmological axioms of theoretical physics

No one knew most of what exists around us, where we live, until it was explored in the context of having not a clue about what was about to be discovered, nations, continents, even the sciences. To present a theory of the cosmos with 95% of the data missing (DE, DM), that map, and to then explore it, it is consistent with how things have worked historically, yet is it ideal? If a model of the cosmos, a theory, that uses all the data that is real and verifiable in this local reality of ours, was presented, one which also provides new insights to things such as quantum gravity in our local reality, isn't that still a step in a better direction than what currently inspires, than the current big bang (ΛCDM) theory? Or, is the idea that the cosmos should represent a type of mirror to our own local reality fallacious, is the principle of relativity itself wrong? Should clear omissions of understanding be acceptable regarding cosmology?

To explain the current logos of modern cosmology theory requires one to think on a number of different fronts of opinion and conjecture. For instance:

- Although physics theory aims to uphold the *principle* of relativity, how does it become to physics theory to propose a model for cosmology that bears no reference to the structure of our local reality? Specifically, why would cosmology propose ideas beyond the scope of our local reality, by proposing concepts such as DM and DE, and the associated metric expansion of space (not measured locally), such that 95% of the ingredients of modern cosmology (DM and DE) are absent from our local reality?
- Should not a model of cosmology propose features co-existing in our local reality, and ideally therefore propose solutions to our local reality yet to be solved, such as quantum gravity (QG)?
- On top of this, why is cosmology theory unable to account for five fundamental issues that contradict DE and DM, general relativity (GR), and the metric expansion of space, namely:

  (I) The **Horizon Problem** [17]: photons have the same uniform temperature, regardless of distance, roughly 2.725 degrees Kelvin.

  (II) The **Flatness Problem** [18]: nearly all the evidence collected by cosmologists indicates that the Universe is flat, as though spacetime shows almost no curvature whatsoever, an extremely unlikely thing in the context of a required BB.

  (III) The **Monopole Problem** [19]: the enormous energies that would have been produced by the Big Bang should have created a magnetic particle as a monopole, not a dipole, a unique entity, and yet there is no evidence for it.

  (IV) The **Hubble Constant Problem** [20]: the difference in H_0 determinations has surpassed 5 sigma.

  (V) The **Cosmological Constant Problem** [21]: that the amount of energy required for the BB to have taken place is off the scale compared to the calculated background energy, of an order of 10^{121}.

Consequent to these 5 problems, it could indeed be argued that cosmology theory is entirely upside down with its logos, namely that it is presupposing a reality which has no real gross data relevant to our local reality, when in fact the data should point to a theory that is relevant to our local reality. Should not cosmology aim to look at what works locally as opposed to what is “hoped” to work? Yet, this is upon the clear fact that no matter what theory of cosmology is presented, cosmology can always argue, "yet how can that model be *proven*"?

To prove cosmology requires two things, one is to fly out there and actually prove the theory of the stars and associated celestial objects beyond this solar system (condition A), the other requires that model of cosmology to prove something not previously proven in our local reality (condition B) based on that theory of cosmology. To be able to fly out to the stars and prove cosmology theory surely requires first the ability of "condition B" unless of course centuries is spent getting out there and back with current capability of physics theory and associated fruits of technology which is still quite useless as a concept of current models of cosmology regarding DM and DE and the absence of those qualities locally.

In all, the only thing that would present a new case for cosmology theory is a theory that makes reference to the stars that presents physics with a new provable feature of science *locally*, to use a new theory on the stars that presents a clear case of a new process of proof of a new phenomenon *locally*, while also needing to solve the (5 listed, I-V) greatest conundrums in cosmology theory, while supplying that new proof *with* something locally demonstrable that would also be demonstrated beyond the local reference of this solar system.

Given all of such, quite a list of things to consider, what are the basic axioms of modern cosmology that have led science to this situation?

An “axiom” according to Merriam-Webster [22], is:

i. *a statement accepted as true as the basis for argument or inference.*
ii. *an established rule or principle or a self-evident truth.*
iii. *a maxim widely accepted on its intrinsic merit.*

The question now beckons, “is the most important problem in physics right now something physics is trying to solve without questioning its methods, its basis, its axioms, ***or*** is it that physics is trying to solve problems using faulty theoretical tools of thought, faulty axioms?”

Looking at the forest for the trees, what does cosmology rely on ***as a physics***? For instance, is physics the ***spawn*** of cosmology, a cosmology that must be abided by and yet solved to then understand this local reality reference from seemingly unknown physical beginnings and associated axioms and laws? That may be true in a big bang (ΛCDM) theory scenario, where the BB can only spawn everything thereafter, yet such a scenario requires physics to propose the ΛCDM theory in the first place, to then set that agenda for what should only exist locally in those conditions. At any rate, given the intrinsic logic of the ΛCDM, it does seem that the ΛCDM theory, in requiring DE and DM, are the axioms itself of cosmology and thus physics theory, as they represent the codex of the “great beginning” in being the idea of a BB theory and associated requirements of DE and DM. Simply, the problem of the insertion of the

ΛCDM theory and DE and DM is that it becomes the code of axioms according to a simple theory of time, linear, from a murky and generally theoretical beginning to a just as ambiguous end. Surely physics is more insightful as a discipline, even today, than to employ such a process of logic to cosmology and hence all of physics? Surely any theory that leads to (and is instrumental for) the ΛCDM theory (DM and DE) can only ***also*** be held accountable to such a travesty, and here general relativity (GR) and special relativity (SR) needs to be brought to question, and even more fundamental to such, the idea of mass as "inertia", as shall be presented shortly.

Another line of thought regarding the relevance of physics to cosmology and vice-versa is to understand that physics surely needs to remind itself that physics needs an environmental and associated biological/medical guarantee of quality, of "being real", namely that what is being perceived of the environment is in fact a real phenomenon, and not a fault of how one perceives or the fault of what is being perceived if there is an error at play. In other words, quite simply, physics needs to be "real", a real-life science, such that thought and hypothesis are not enough alone, yet actual data and physical proof needs to be scored with any thought construction regarding the nature of what is perceivable. Indeed, there are some things in physics that are not governed by plain sight. For instance, if gravity (G) and electromagnetism (EM) were linked "simply" in nature according to our perception, it would be possible to replicate G from EM in the lab using a simple logic of perception. That's a big issue though, because it suggests that maybe EM linking with G should be viewed and appreciated in plain sight. Yet, owing it would seem to certain abstractions of human perception, EM linking with G is not intuitively evident, and thus perhaps is an understanding deep enough that it requires delving quite far into human consciousness, most rationally of course through understanding the fundamentals itself of human consciousness as perhaps what an understanding of Medicine and Psychology could allow if applied to physics.

Indeed therefore, should not the limitations and associated freedoms of human perceptive ability be acknowledged in the context of measuring reality? To hypothesise something that is not only "***not***" apparent to human perception *locally (this solar system)* like DE and DM, and aether, ***it then also*** goes against the human actual ability to perceptively solve problems, one would think. Conversely, when unanimous points of evidence filter through to the physics data factory to be analysed, it puts other theories that go against that grain of data in dispute, understandably, evidence such as the Horizon problem [17]; for instance, there is probably a very good fundamental reason for the 2.725 degrees Kelvin value, and associated CMBR, and associated "Lamb Shift" in the atom, a good fundamental reason that is not just relevant to our local reality, yet relevant to our ability, our freedom and limitation, of perception.

In explaining what ***should*** be perceptible in any physical axiom, how does it come to physics to explain features of space and time that are not perceptible or even discoverable in the laboratory? For instance, "what is aether"? *Space* is considered to our perception as a 3d construct as a type of vacuum, *time* is considered to our perception as a type of linear arrow of events that change in space, and "*aether*" is "what"? A construct of mathematical relevance to our perception as space and time are, yet as what? Or is it (aether) given physical attributes in the way it (aether) is employed in regard to space and time to fill holes in theory, much like DM and DE? Is not *aether* a result, a gap-filler of theory, of using the idea of "inertia" and "mass" in regard to space and time, as much as DM and DE are? This leads to

the key question, “what is the aim of theoretical physics”? Is there an ultimate problem that needs solving? More to the point, is any such possible ultimate problem ***tangible***? Or, is it a more idealistic thing towards having everyone agree to disagree, that an ultimate unified field theory and associated extraction of QG technology cannot be found?

As a proposal for instance, consider quantum gravity (QG) as demonstrated in the lab, generating a G field using EM, of course through using a required step of physics to achieve that result. Is such a flag to highlight a possible pan-theory, one incorporating cosmology, if those technological discoveries employed the use of a new theory beyond current theoretical physics theory? The question is important, as it sets a marker of achievement ahead that all of physics can agree with. Is it also possible that joining EM with G with a new theory "type" will "***not***" be considered as an ultimate pan-theory for physics, and if so, why? Does physics harbour the notion that joining EM with G via theory and research is not all that physics should be concerned about as a general aim? And if so, what are those other issues that need addressing. Simply, what is the point of physics if it can't prove something beyond plain sight? Is EM-G enough, or is there more, and how do those other things rank compared to EM-G proof? Would those other things be a subset of EM-G proof, for instance, or would EM-G be subset of those other things being sought in regard to a greater importance of physics theory? How indeed have the big steps in theoretical physics been made in recent history?

3. Recent disruptions to physics theory: Relativity and the BB theory

To address the modern age of science is to start with Newton, and there the idea of gravity as inertia, a primordial idea to this day that physics does not question other than Einstein’s development of relating gravity with the curvature of “*spacetime*”, despite there being no physical evidence for a curved universe (Flatness problem [18]). What is interesting to note is that Newton considered gravity to be an immediate field force effect ***as*** that inertia effect, not paying attention to the idea of light and thus the speed of light regarding bodies in relative motion, until of course the time of Einstein who brought the idea of gravity as inertia to bear on the idea of light and its associated speed between bodies in relative motion, and the associated nature of spacetime thereof with those equations of inertia. Simply, relativity theory based itself on mass as inertia and thus gravity, and therefore relative motions between masses involving gravity became the basis of relativity theory central to the idea of registering that process in the manner of light.

Despite the advancement of relativity theory, one needs to still remember how Newton contrived the idea of inertia and in what context, namely the context of the considered “immediate” nature of gravity, that there can exist a process of immediate action and reaction, as though if mass exists a certain way it can be considered by measuring the amount of resistance it offers to a change in its rest-state through the dual compass of potential and kinetic energy. Yet such a process of measurement is pure duplicity of definition, namely mass as inertia, while creating the paradigms of *potential* and *kinetic* energy. There, “inertia” is merely a manner of regarding mass by altering its defined rest-state through the gradients of

perceived *potential* and *kinetic* energy determination. In a certain way, it is precisely a *particular way* of considering something by changing its state of rest and thus perceived energy state (potential or kinetic).

Given the spurious nature of inertia as a fundamental descriptor for reality nonetheless, how was the idea of a constant speed of light arrived at in the context of inertia theory? The constancy of the speed of light was derived as a natural consequence of *two* experimentally demonstrated facts:

1. The velocity of light is independent of the *velocity of the source*, as demonstrated by the De Sitter double star experiment, [23]

2. The velocity of light is independent of the direction of *velocity of the observer*, as demonstrated by the Michelson–Morley experiment (MMX) [24]

These two principles were taken up by Einstein in his special relativity theory, as per his associated combined application of inertia. Once again though, this use of inertia resulted in ludicrous conclusions, the key one being the cosmological constant problem [21]. Further to this, much of what Einstein *didn't* explain was regarding the potential doppler effect regarding light, not just relative motion, yet which direction that relative motion occurs in. Such has presented much debate for aether theorists, who claim that the doppler shifting of light (such as the redshift effect) is an effect that can only be based on the idea of aether. Yet the idea of the doppler effect of light being held to a wave-function as per an aether medium (for otherwise in empty space what medium is light travelling in to be doppler shifted, as that argument goes) ***lacks proof***, much like DE and DM.

Converse to the idea of light as a wave-function was presented the idea of light as a massless particle, the photon, with the consideration of empty space, empty space being the ideal medium for a massless particle. Here, the redshift of light was considered to be a type of metric expansion of space, with light being a massless particle in that medium appearing “redshifted” by that proposed metric expansion of space. Aether therefore would lose to the photon given no proof has been forwarded successfully for aether’s existence. Yet aether theorists would claim that the photon and metric expansion of space has also delivered a dud with DE and DM.

Indeed, there is nothing wrong with proposing that light can be an a-priori wave-function in empty space, as it merely requires the proper definition of such to be the case, in much the same way quantum mechanics (QM) considers light to be massless photons of energy travelling through space, an arbitrary use of ideas and terms to describe known phenomena of light. Despite this, doppler studies stilll show that light has both wave and particle functionalities, however it’s sole property as a wave-function in *empty* space is not something presented as a theory, yet, or so it seems.

For instance, an over-looked feature of light being a wave-function in space, is that any clock that is moving at relative speed compared to another object must show what it only can dependent on the relative lines of motion between any two objects, if indeed light is a wave-function in space at "c". Simply, if the objects are moving away from each other, the wavelength and thus time-function must increase uniformly, and thus conversely the wavelength and time function be shorter if the objects are getting closer, which in itself is not proof of aether specifically if light can solely be a wave-function in empty

space; aether argues that a wave can only exist if there is a medium that the energy of light can make its way through, as opposed to being an a-priori wave-function itself in the concept of empty space. Thus, dispelling aether alone should not qualify the idea of light as a primary wave-function construct to be dispelled also entire.

It is no difficult task to reach the idea of the metric expansion of space in aiming to account for a redshift of light in the case of photons travelling through space as massless light particles, for of course in that situation of theory space would have to expand to account for a redshift effect of light being a part of that theoretical redshift of expanding space. Yet not so if light were described as a wave-function in space and the natural propagation of light through space had a redshift-type effect. Zwicky attempted to explain light as a wave-function in regard to the redshift effect as "tired light" [25] yet this contradicts the Horizon problem [17], namely that there is no evidence for light getting "tired" to support a redshift effect given the relatively uniform energy state of light in space.

Yet the proposal of the metric expansion of space to explain the redshift effect presented the problem of how the stars become clumped together as galaxies, requiring Einstein's general relativity theory fix. Yet this "fix" then lead to two new problems, namely what keeps those stars together (requiring a thing called dark matter (DM)), and what is the force behind the metric expansion of space itself in the first place, which appears to be accelerating called (requiring a thing called dark energy (DE)). These features (DM and DE) account for 95% of what cannot be proven in reality, so clearly the basis for DE and DM is wrong, and thus clearly one option remains, namely how light can perform as a wave-function through space in displaying a redshift effect, and how it can do this without getting "tired", and thus maintaining its basic underlying temperature, without aether.

The question then beckons, can a wave-function proposal for light in space avert the disaster of DE and DM (and associated notion of the metric expansion of space)? It would be a fundamental departure from contemporary theory, as the basis of particles and light would not be the idea of particles as mass (elementary particles) or non-mass (photons), yet "wave-functions" of energy in empty space (in discounting aether as much as DE and DM must be discounted in their absence of proof). The process of that theoretical fix would involve replacing general relativity ***and*** special relativity if indeed general relativity has been a natural flow-on effect of special relativity, a feature of how special relativity allowed itself too much room for movement with its axioms of choice, and the issue here is "inertia", which may be fine locally, yet as a tool of fine-tuning (inertia) it does seem to fail in needing the number of fixes such as DM and DE it does, subsequently arising the cosmological constant problem [21], problems which can be clearly considered to have arisen from the application of "inertia" to mass as an a-priori for space and time.

4. The Physics Chimera [9]

The Newtonian dance of mass as inertia requires two key ingredients of thought regarding energy, the first being potential energy, the second being kinetic energy. According to the Cambridge dictionary [26], potential energy is regarded as:

"the energy stored by something because of its position (as when an object is raised), because of its condition (as when something is pulled or pushed out of shape), or in chemical form (as in fuel or an electric battery)"

Kinetic energy [27] is regarded as:

"energy that an object or system has because it is moving".

The idea of potential and kinetic energy though is essentially one of creating a ***gradient*** of energy in comparison to what existed previous to the initial inertial incursion displacing an object into a higher or lower energy state of regard through such intervention, from ***stored*** energy to ***motive*** energy and/or vice-versa. Indeed, it is not a way to approach the idea of space or time, let alone the massless entity of light; to explain reality fundamentally in terms of potential and kinetic energy is like saying that reality prior the big bang had an infinite amount of potential energy and then all that energy was released as kinetic energy as the ΛCDM model and associated kinetic metric expansion of space, yet then everything in that kinetic energy context can thence, as the theory goes, be potential or kinetic depending on the local role-plays of inertia, which in itself as a basis for a theory is not only inconsistent with the basis definition itself of potential and kinetic energy, and thus merely a virtual ad-hoc definition of regard for mass, yet missing so much detail regarding the definition of space, time, and light which would otherwise underpin in all likelihood the idea of mass itself. Further coupled to this is the need to use the idea of DE to account for all that potential>kinetic energy, which is roughly 80% of reality, an amount that cannot be found, anywhere, leading to the associated cosmological constant problem [21].

Indeed, on top of this issue in using relativity theory was incorporating light as a constant referenced to the idea of time in the form of time dilations and time contractions regarding the motion of masses, the problem there being the idea of gravity and thus mass being alterable values as objects in relative motion, implying mass and thus gravity can be created or destroyed based on the varying relative motions of masses with each other in the context of a constant speed of light, which of course is ludicrous, the sole culprit there being inertial theory, therefore becoming the culprit of the need to formulate DM and propose an associated curved universe, a curved universe contradicted by the Flatness problem [18].

To consider inertia as the ability for mass to store kinetic energy is essentially ignoring the background reality and thus ***gradient*** field effects mass would exist in and be a part of, and thus suggest a virtual, unreal, logic as "inertia", ignoring those ***gradient*** background field entities. Indeed, is not mass merely ***put*** in a new field effect location ***with inertia*** and ***requires energy*** to achieve that ***new potential location*** of ***apparent stored kinetic energy as potential energy***? Inertia uses the fulcrum of potential and kinetic, yet these are words that describe a secondary process to a more fundamental field force with all those associated grades of field force effect based on measured distance in that field force in play, are they not? The idea of the ***scalar potential*** (***gradient***) is such, namely where the difference in the potential energies of an object in two different positions depends only on the positions, not upon the path taken by

the object in traveling from one position to the other, as for example potential energy due to gravity, a "***gradient***" field effect.

Indeed, the fruits of that spacetime tree of knowledge ***defy*** known data in cosmology, such as the need for DE and DM, entities not apparent locally, leading to the Cosmological Constant problem [21], not to mention the Flatness problem [18] (no spacetime curvature in the general shape of reality), all traced back to the idea of using "inertia" to explain space, time, and light, which pre-supposes mass as inertia to exist "before" space, time, and light, to be more fundamental than space, time, and light, to be more "primary" than space, time, and light, does it not? Further still, what is the connection between the so-called curvature of space (as gravity) with mass, for instance? Formulas using "inertia" and "momentum" that depend ***primarily*** on mass? As a process of logic, that does seem odd, making one consider a classic "*chicken and the egg*" scenario, namely *what came first?* The question should be, "what is more primary"? If inertia theory leads to a BB theory proposal, according to inertial theory what came first was a super-condensed "mass", a super condensed mass that created what appears to be more mass. That defies logic in the lab though, locally, despite how our minds can wonder the possibility of such a thing as the idea of a super condensed nothingness that bursts all of a sudden in what we perceive as this universe.

Inertia can do many things for mechanical engineering locally, yet the paradox exists of limiting physics through such logic given the unapproachability of any such cosmological inertia research applications. To successfully explain the primary scale data of reality as a pan-theory demonstrable in the lab, one needs to perhaps have the sense to dispense of the idea of inertia, perhaps, or at least consider that possibility of theory, the theory of space, time, and light, that does not rely on inertia, yet is still able to accommodate for all the known equations of field forces, associated constants, and all cosmologic phenomena data. Indeed, inertial cause-effect is perhaps the most obvious if not simple starting point for scientific congress regarding physics, regarding bodies in motion and how they interact, as Isaac Newton demonstrated, yet is it the most fundamental?

Beneath all those layers of inertial congress, and this is the suggestion, would be an even more fundamental relationship of logic regarding space, time, and light, more fundamental than inertia, such that without that more fundamental concept of logic inertia will always prove useless in aiming to explain the fine-tuning structure of space, time, and light. Despite this, "inertia" can still nonetheless be considered as an "emergence" of logic from a far more fundamental concept of logic. Simply, theories such as DM, DE and inflation, each independently tied to the ΛCDM model, fail in describing known empirical phenomena that the required mathematical framework of "inertia" as mass local data and associated theories actually summon to it. The basic problem with cosmology theory today is that it must be accepted that 95% of the cosmos is unaccounted for care of the foundations of SR and GR, Hubble's law, and the subsequent metric expansion of space, *and* the associated understanding of light explained as a photon (QM). In the context of a ΛCDM model, that's an axiomatic wasteland. On top of this heap of issues, there are 5 other "***independent***" key problems with cosmology theory in the context of the ΛCDM model, namely the Horizon problem [17], the Flatness Problem [18], the Monopole Problem [19], the Hubble Constant Problem [20], and the Cosmological Constant problem [21].

All in all, there have been a series of disruptions in physics theory over the past century, initially offering great promise, now all of such being questioned, setting the stage for a new disruption that can ideally solve all current questions. One thing is obvious though, namely the common link between all these features, all these issues, is the idea of using “inertia” as mass, creating such disproportionate values for mass and energy, all in the presumed context of a metric expansion of space in aiming to rectify the redshift effect (as *it only could*). To solve this problem, the issue of “inertia” needs to be addressed, if not replaced.

5. Proposing a fundamental change

The difficulty in proposing a fundamental change to physics and cosmology theory is explaining a new mathematical paradigm that upholds all the relevant physical data and equations of physics and cosmology, while presenting the required modifications ***to*** the *theory of physics and cosmology* that the new mathematical modelling would inscribe for each of those equations and sets of data, as based on what could only be its new axiomatic principles for time and space, devoid of non-existent data (DM, DE, aether). For physics to do that though, something quite astounding must happen, namely clear proof that such a process is useful in the regard of any new theory that is relevant to our local reality, to our solar system, in using that new methodology.

In taking a general look at this task, in approaching a new pan-theory, *putting the "data" together* is the task, provided there is a common fundamental basis linking the data and how that data is measured. Is there a problem though with using a new base-theory to link the data of G and EM? A few things need to be observed when documenting physical data therefore. For instance, changing the basis of the data is only going to change the basis of all the other data. If data that can be proven originates from key equations, those equations should not be in dispute given the data that can back up those theories and equations. The question with a pan-theory is how those equations can be newly derived to “better” put the data together with associated theories. A pan-theory that derives all the equations and constants, keeps all the data in check, one that proposes "new research" that is *backed-up with proof*, that's where the emphasis should be in reaching that pan-theory basis.

As a process of simple deduction, to solve the issues in cosmology, those problems in cosmology, is to suggest those problems, those features, would no longer exist. Thus, as a starting point, let it be suggested that DE, DM, and aether **do not exist** given their absence as provable data. In saying that therefore, let it be presented that the metric expansion of space does not exist to warrant DE and DM. And thus in saying that, that the redshift effect of light is not due to a metric expansion of space, yet an effect of light in space, thus far unaccounted for in physics theory, and not due to anything that cannot be proven locally (such as aether theory), yet something else. Let a steady-state cosmology be therefore considered that has a feature of light in space providing a natural redshift effect and a measurable consistent CMBR, a constant photon temperature, across what appears to be a flat non-curved space universe. Those suggestions deal with what is real, what the data presents to be the case without entertaining unknowns other than the fundamental and clear unknown of “what theory can achieve

incorporating all of these new suggestions into the one pan-theory?" Above all, this new theory would detail the principle that cosmology is only useful if it is relevant locally, especially in presenting a new provable phenomenon not understood without that new model of cosmology.

Let it be suggested that the one key thing not understood locally is the idea of gravity, namely it's aetiology, how it works, how it relates with EM, and so on and so forth. This is the elephant in the room in regard to what is known and what is unknown in theoretical physics. So, for the purpose of this new proposal, let the idea of gravity as inertia be ***discounted*** as a "basis" of force and motion. An interesting thing to bear in mind though is that when gravity as inertia is taken away as the basis of force and motion for mass, "light" in regard to "perception" (as per relativity theory) becomes the basis of measurement for mass and energy, as it only can. Yet, if light is limited by time at "c", as light speed, as confirmed per the Michelson Morley Experiment [24], then apparent changes that happen between objects in relative motion are only that, "apparent", as per regarding the nature of light and those relative references of observation regarding not necessarily "mass" yet "energy"; gravity and thus inertia and those transformation equations become therefore, in such a condition, "unnecessary", replaced by what can only be, by default, "*energy in the context of a particular measurement scaling system of time (understood as the process of entropy)*". Thus, let the following be considered:

- Space is as a "0" construct, a vacuum.
- Space is not expanding.
- Light is an energy wave propagating at a constant speed in empty space.
- The redshift effect is a feature of light in space.
- The concept therefore of light as energy measured in space between different spatial references would be equivalent to different references of space associated with that light and thus energy *as a way of measuring time*.
- Mass therefore would be implicit to the idea of light (in space) as energy, as unique references in space relative to each other, and thus would logically be a particular *function* of light as energy in space, most logically as a "wave"-function, yet a particular organisation-relationship of wave-functions.
- The relationship of mass in space in regard to light would thus be central to a fundamental feature of time as energy in space, not the idea of mass itself as action-reaction (inertia).
- "Inertia" therefore would be considered as a superfluous basis of relativity, as it merely represents the notion of cause-effect of mass, dealing out other newly and more fundamentally defined entities of consideration in this new regard of theory.

If physics is a giant puzzle awaiting solving in the absence of the notion of "inertia", the puzzle presented above is as such requiring a solution. If each piece of relevant physics-data is a jigsaw piece, all those pieces must be put together, and in doing so the general shape of reality become self-evident. To bring this into effect, a key new approach to physics theory must now be made.

6. The Emergence of Gravity from Electrodynamics [1]

To incur the least amount of impact on contemporary theory, and in this case mass-inertia equivalence, the proposal here is to replace mass-inertia equivalence with a cause-effect process for the concept of a temporal energy *wave-function*. One needs to look at the bigger picture here though. The relationship between space and time needs to be "something" other than inertia, So, the idea of "c" as a temporal energy wave-function needs to make sense, and not just that, needs to be demonstrable, as the concept of energy propagating through space (which could also even be explained as space creating a relationship with itself by using temporal energy as "c"). One must note that "c" is a letter, with an associated number value, based on a concept of space and time being related to each other in the context of energy as light travelling in space. Yet the implication of "c" as a constant value for the propagation of energy as light is profound, because it underwrites a comparison between space and time that is fixed.

There are many ways of understanding the relationship between “masses” in space and time, and inertia is a fundamental one. What is ***most*** fundamental though, ***most*** useful, “inertia” or “c”? For instance, in using the phi-algorithm ([1]: p4-7) as a scale-measurement for time, it ***is*** possible to derive "c" in knowing how to calculate the fine structure constant using the phi-algorithm for time ([2]: p12-13). In that process of formulation, energy as a scale of time propagates from a hypothetical point source as light in a spherical-front manner. The measurement of "time", although considered 1-dimensional, adapts in that formulation to each of the 3 dimensions of space as the propagation of light as a spherical-front in 3d "empty" space. The idea of energy in space propagating as such is not saying specifically that such is an absolute reference of time, or even a definition of time, yet it presents a case for the **relationship** of time with space as with the use of a wave-function of energy.

In many regards, the concept of "time" is as just as elusive as the concept of "empty space", yet the relationship between these two elusive characters can indeed be studied as a basic wave-function that then emerges the concept of mass itself and thus gravity through destructive-interference resonance of the phi-quantum wave-function (EM field), as presented in paper 4 ([4]: p4-8). The proposal throughout the papers 1-16 [1]-[16] has been that the relationship between time and space is not being considered as a physical body as inertia, as *spacetime*, yet a wave-function as light-energy, a relationship between the two elusive characters of space and time "by definition" as a wave-function such that in the condition of destructive-interference resonance there emerges the idea of mass and thus gravity, a description that by all accounts of associated derived equations and constants underwrites “better” the nature of mass and thus gravity than inertia does. Subsequently, the idea of "spacetime" becomes quite *over the top* as a definition of gravity-inertia, as it appears to assume too much in comparison to the idea of light as energy, if indeed light as energy underwrites the idea of mass and thus gravity. Inertia, in such a regard, makes it impossible to understand a proper relationship between EM and what is observed as gravity-mass; using the idea of "spacetime" as gravity will always make the idea of gravity "elusive".

Therefore, in replacing the idea of the equivalence of mass and inertia (a type of proxy measurement scale of action-reaction) with the idea of a new measurement construct for time (detailing

nonetheless a process of action-reaction, cause-effect), as energy, as a wave-function, the question must be asked, "*how would a measurement concept for time be a process of cause and effect*"? It would be a measured fixed framework that sets the tone of causality, cause *to* effect, past *to* future, arbitrarily setting such according to the function of our natural awareness, as a standard to measure cause and effect central to it. It would "*not*" be causality as an immediate event like classical physical inertia is, it would not be cause and effect in that sense, yet the measurement of time ***can*** be "central" to cause-effect by representing a fixed locale in the context of time-before to time-after as time-now, as per the classical arrow of time. The proposal through the papers [1]-[16] in "replacing" the idea of inertia has not been "destroying" the idea of inertia itself, as "inertia" will always be relevant "where" it is required as a concept, especially in the arena of measuring basic mechanical force, as such is essential to basic mechanics. Yet on a massless a-priori level of time and space, something else is required, something beyond "inertia" to set the fundamentals of time and space at play in a way that can be measured from that level of regard, as outlined in the previous section.

The question is how can that new regard of time with energy be presented without contradicting or violating known tenets of energy and time, such as Noether's [28] theorem? The answer would involve exploring how time can be "developed" in the form of a measurement structure for space, namely not betraying symmetry conditions (for physical laws), and thus *as itself* as "time" a concept of "symmetry-breaking", in not contradicting Noether's theorem, rather upholding it, through the specific design of the otherwise "symmetrical" algorithm for time's measurement *in space*, *using* time as symmetry-breaking *embedded* in any such algorithm symbolic of symmetry, of symmetrical laws and transformations, such in comparison to its own asymmetry as time alone, as presented in paper 1 ([1]: p3-9). What really must be dealt with is the question of "how is a measurement concept for time a process of cause and effect such that the equations of relativity and therefore the use of inertia, all those proofs, are not dispelled?" The solution would come as a measured fixed framework that sets the tone of causality as an analogue of classical inertia, cause *to* effect, past *to* future, a standard to measure cause and effect central to it. The proposal in the papers 1-16 [1]-[16] is to employ a process of measurement for time and space that is "*not*" causality as an immediate event like classical physical inertia is, "not" cause and effect in that sense, yet the suggestion that the measurement of time ***can*** be "central" to causality by representing a fixed locale in the context of *time-before* to *time-after* as *time-now*. In a sense, the idea of "immediate" inertial cause-effect processes have obstructed an understanding of a more useful time-theory.

Immediate inertia will always be useful, yet the papers propose, as from paper 1 [1] through to paper 16 [16], the idea of replacing the concept of cause-effect with the idea of measuring time as a wave-function is logical, such that the new measuring system for time can only be superior, as the aim of any such proposed theory would be to "expand" current physics, not discredit it. If there is any *apparent* discreditation in that process, it would be by way of resolving unanswered questions regarding for instance DM and DE. Indeed, the difficult part is using a new mathematical paradigm that upholds all the relevant physical data and equations and then, of course, presenting the required modifications to the theory that the new mathematical modelling suggests for each of those equations (and sets of data) based on its new axiomatic principles for time and space. For physics to do that though, something quite astounding must happen, namely clear proof that such is useful in the regard of any new theory that is

relevant to our local reality, to our solar system, in using that new methodology, and the case in point here is that a clear example of emerging a gravitational field effect from an EM field based on any such new theory is mandatory.

The case now in point is proving this new process of replacing the idea of inertia with a new measurement structure for time inclusive of the basic idea of cause-effect. For instance, if one could use an EM field in the lab according to a certain orientation of EM field based on the proposed theory as prescribed in papers [1]-[16], namely destructive-interference EM resonance according to a particular scale and association of wave-functions, a resultant EM field orientation that would replicate the phenomena of G, and not just G, yet gravity "minus" the idea of "inertia", such that in that EM field if a certain "G" propulsion and associated (Euler component of the Hybrid Time model [15]) energy release was generated, purely, one is not concerned about what science has considered gravity to be based on a theory of cosmology that is 95% unaccounted for as the codex of gravity as inertia, not at any rate. Such is the odd thing nonetheless regarding SR and GR in employing the use of "inertia", namely if EM is fundamentally related to G, and if one occupied a craft that was propelled by EM as "G", "inertia" would not exist in that field. The only understanding of G today is based on "inertia" theory care of SR and GR, yet such defeats the actual intention and result of joining EM with G in using EM to generate “G”. What therefore happens to "G" theory, contemporary "inertial-G" theory when it can be demonstrated in the lab that it is possible to generate a non-inertial "G"-like effect using EM? Inertia theory falls apart as the relationship between the basic field forces of EM and G.

7. The Gravielectric Field Generator: Quantum Gravity Generation

In summary, the physics and theory behind the proposed phenomena as outlined in paper 7 [7] and paper 12 [12] are as follows:

- The generation of a phi-quantum wave-function resonance.
- Using that phi-quantum scaling system as a destructive-interference EM resonance to effect a virtual spatial-mass effect that itself does not operate through inertia owing to the basis of the theory for the wave-function of EM being employed in regard to the new theory for gravity.
- Putting a mass in that field would have that mass yield into that gradient field as mass would normally yield into a gravitational field gradient of greater strength, without any cause-effect process taking place regarding that field or the structure generating that field, as such is a non-inertial mechanism of gravity.
- Thus, in attaching a bulkhead containing this system to the mass in this ***gradient*** field (as gravity is a gradient field, namely its force is dependent on the distance between two masses) thrust would be generated for that bulkhead and anything attached to it, as such is the case for the mass in that gradient field to which the bulkheads are attached.

The aim here is to demonstrate that the EM resonance (destructive-interference) creates a spatial effect associated to the destructive-interference resonance wave-function such that the destructive-interference resonance field brings into effect a mass-gravity field, as outlined in paper 4 ([4]: p4-8). In short, it is proposed that placing "mass" into a destructive-interference EM resonance field according to the phi-quantum wave-function and associated required scale, would lead to a yielding of mass "into" that focus of destructive-interference EM resonance energy in that field, into that field gradient.

7.1 PREVIOUS TESTING: EXPERIMENTS 1-3 (EX-1 – EX-3)

The idea of creating an EM resonance field was first presented in paper 7 [7] and then paper 12 [12] (as an upgrade from paper 7 [7]). In paper 7 [7], the idea of creating a destructive-interference EM resonance field was presented with the right intention, yet resulted in a problematic by-product, namely high electrical arcing. Although the wavelengths of the E and M components of the phi-quantum wave-function are the same, as described in paper 2 ([2]: p7-11), their phi-quantum wave-function dimensions are of a different order perpendicular to the direction of the wave-function central to the electrical component being monopolar, and the magnetic component being dipolar, as presented paper 2 ([2]: p7-9).

In paper 7 [7] the aerial wind and associated chamber diameter was calculated for the "electrical" component ($-\frac{1}{\varphi}$) inside the solenoid/wind, and not the magnetic component (φ), and in doing so brought into effect what appeared to be an explosive feed-back of electrical arcing in the aerial ([7]: p15, fig16). As an alternative therefore, paper 12 [12] considered the magnetic component (φ) as destructive-interference EM resonance, by using the appropriate ratio of EM field and wind diameter for the magnetic component. The results of EX-3 ([12]: p10-12) though were too minor to be consider as significant, and so the decision has been made to alter the winding structure of EX-2 ([7]: p13-16), to include double the solenoid winds and thus structure to the solenoid and thus ideally taper off the electrical arcing.

7.2 DEVELOPMENT OF THEORY FROM EXPERIMENTS 1-3.

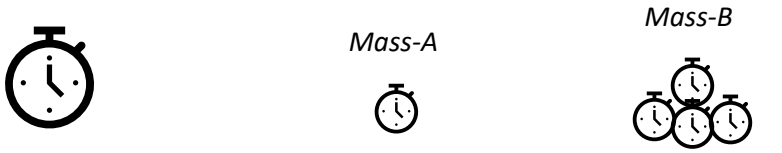
The emphasis of theory-development has been in the effect of establishing why there was so much electrical arcing in the aerial and what should be done to contain it, if indeed there was an overlooked concept in the theory that needed reviewing. The key finding was reached in paper 16 [16], as the following excerpts highlight:

3.2 THE Φ-ALGORITHM TIME CLOCK (excerpt: ([16]: p11)

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.*

3.3 THE HYBRID TIME CLOCK (excerpt: ([16]: p12)

3.3 THE HYBRID TIME CLOCK

Employing the idea of hybrid time to the φ-algorithm, to the time-equation, as per the equation $e_{t_B}^{i\pi} + 1_{t_N} = 0_{t_A}$, *merely considers that there would exist a component to gravity in regard to the φ-algorithm, to the time-equation, a process of mass and thus gravity collapsing to "0".*

Simply, it could be proposed that 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).*

Essentially, the Hybrid Time theory (Clock) has enabled a closer look at the *potential energy* and *kinetic energy* dynamics taking place in regard to the destructive-interference EM resonance field, with the new requirement being to add more "order" to the aerial, and less kinetic escape of energy in the form of electrical arcing. The key finding is of course: "*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."*

The issue therefore regarding the research is taking the electrical arcing and harnessing it better, if not preventing it and channeling it through the aerial, and thence the "mass" core. The only consideration can be is to make the aerial more structured with more winds to bleed off any such electrical arcing into it, and thus as an upscale theory, a process of capturing the "Euler" gravitational component being akin to the generation of a greater concentration of space for mass to fall into.

7.2 NEW TESTING: EXPERIMENT 4 (EX-4).

Here is presented an upgraded version of EX-2 ([7]: p13-16) using all the same apparatus and methods of EX-2 ([7]: p8, table1) except here a new aerial and a new direct communication between the aerial and the female bulkhead RF connector.

Once again, as an upscale theory, the process that is proposed to be taking place in capturing the "Euler" gravitational component is quite simply akin to the generation of a greater concentration of space for mass to fall into. This would be so if indeed it is true that space and time are linked, and that time is linked to the idea of a wave-function as light, and that a greater concentration of that energy of light as EM cancelling itself out through destructive-interference would give rise to a greater "spatial" effect if indeed space is linked to time as energy and energy here is being cancelled out, and that this greater ''spatial" effect would essentially draw mass into it, as the theory would suggest. Although the energy-equivalent would still be there, it would be evident as gravity, not EM, in undergoing destructive-interference. Simply, energy here would be conserved from EM to G. This has been the theory behind EX-1, EX-2, and EX-3, and is still the case here, except the aerial presented in EX-2 ([7]: p13-16) has been modified to generate a cleaner magnetic field alignment along the axis of the aerial, through the use of a greater number of winds, here around 10, as opposed to what was only 5 full winds (wound back on itself to effect the required destructive-interference EM resonance), and thus a 2-fold increase in the length of wire in the aerial, with the aim of bleeding off any electrical arcing and thus ideally playing that energy into the resonance field, together with bunching the winding flush together with the appropriate insulation, not spacing the winding out.

Paper 7 ([7]: p8, table1) details the precise method and associated apparatus, here the key change being a 2-fold increase in the number of winds in using a “flush” winding alignment, as per figure 1, image 1.

Figure 1

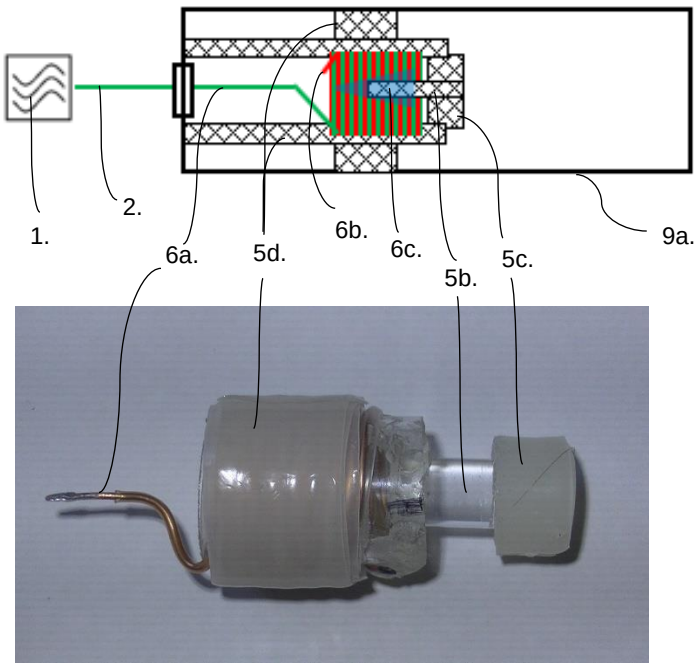


Image 1

Figure 1, 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.) Perspex bulkhead (5c.) inside solenoid Perspex tube bulkhead (5d.), “mass” core (5b.) attached to inner Perspex bulkhead (5d.) exposed to the internal destructive-interference EM gradient resonance field (6c.).

Another key change, other than the winding, is allowing the aerial wire to connect directly into the female RF cable bulkhead, and not via the male N-type connector apparatus of paper 7 ([7]: p15, fig15), essentially removing 2k, 2l, and 2m ([7]: p15, fig15-16), source of the electrical arcing in EX-2. The idea here is to eliminate all sources of potential arcing/discharge. This is highlighted in image 2.

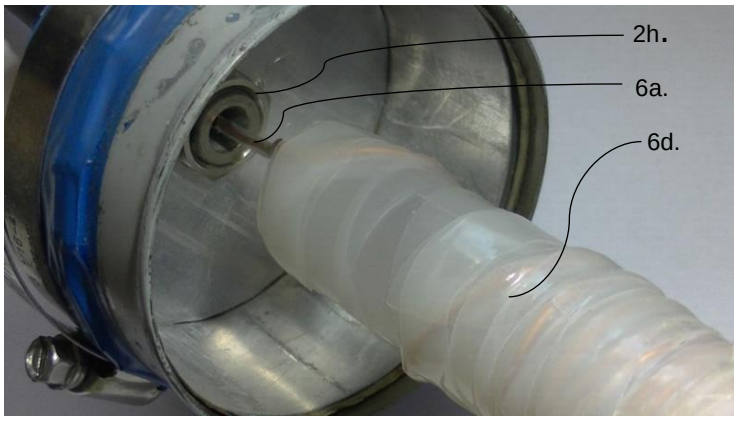


Image 2

Image 2*:* N-type female bulkhead (2h.), aerial wire leading to solenoid (6a.), proxy-aerial (6d).

The nature of the destructive interference EM field resonance (6c) gradient needs mention. As demonstrated in figure 1 (6c), the destructive interference resonance field would be stronger at the distal end of the aerial. This is so as this is a "resonance" field, and thus requires an optimal *equilibrium* of electrical field strength through the wires, which occurs optimally where the aerial winds back over itself, as at the distal end. Therefore, placing the mass core at the distal end of the aerial, within the aerial solenoid, the rod extending within the aerial, will have the rod effected by the destructive interference EM resonance field (let it be called a "***gravielectric***" (***GE***) field), from the weaker GE field strength to the strong, and hence the anticipated measurement of thrust generation, from the caudal (RF-entry) end to the distal end.

In particular, this is a different design to paper 7 ([7]: p13-15) in view of the idea of generating a concentrated magnetic resonance (destructive-interference) along a dipole axis *as straight as possible* in conjunction with the desired axis of thrust of an associated axially aligned mass (figure 1; 5b) within that straight axial magnetic resonance (destructive-interference) field (figure 1; 6c). Paper 7 ([7]: p13-15) can indeed be criticised for not upholding the need for a straight dipole axis of magnetic resonance (destructive-interference) in line with the axis of thrust of an associated axially aligned mass in that straight axial magnetic field, yet in alliance with the theory the aim once again here is to:

- generate a destructive-interference EM resonance field (GE field)
- according to a basic axial magnetic field alignment
- within which a bulkhead attached axial mass is placed
- which (the axial mass) *falls into* it (into the ***greater*** gradient EM resonance field)

Thus, to achieve this effect, the basic feature here is the Perspex rod (figure 1, image 1; 5b) falling into that ***greater*** concentration of virtual space at the distal end of the aerial where the ***destructive-interference resonance (GE)*** is at its strongest (figure 1; 6c) according to a non-inertial mechanism of gravity, enforcing the associated attached bulkhead (figure 1, image 1; 5d) to move in the direction of that aligned mass (figure 1, image 1; 5b) in the vicinity of that *stronger* gradient resonance EM field (figure 1; 6c). Thus, the clear application here is a new non-inertial propulsion mechanism (in the spectre of that EM resonance field), as from an EM source (figure 1; 1) that through a solenoid (figure 1; 6a, 6b) generates the resonance EM field (destructive-interference), replacing standard inertial propulsion systems.

The mass placed into this field was a simple Perspex-acrylic rod attached to a heat-resistant Perspex-acrylic bulkhead structure around which the solenoid aerial is wound, as per figure 1 and image 1, contained within the aluminum chamber (RF containment chamber), as per paper 7 ([7]; p9, image2-3). To mesasure the motion of the entire apparatus during RF activation, the idea proposed is to once again as per paper 7 ([7]: p13-15) suspend the chamber from a spring such that the aerial device is placed at one end of the suspended device, and thus the aerial mechanism representing itself around a fulcrum point of movement which would then, if

movement exists, result in either end displaying movement around the suspension centre-region in any particular axis of movement. Once again, the idea here is to create an independent EM destructive-interference (GE) field within the chamber, with particular attention to the right scale of the EM phi-quantum wave-function destructive-interference, and to then have the rod in the chamber yield itself into that EM destructive-interference field (GE) and thus effect movement of the associated attached bulkhead in that same direction.

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)"*). Of course, the expectation has been to derive ***primarily*** a quantum gravity (QG) effect, and thus thrust, yet here in EX-4 the aerial-arcing has been solved through allowing the aerial wire to connect directly into the female RF cable bulkhead. Nonetheless, the amount of energy released in region 6c, in the EM destructive-interference field region, is quite significant, as images 3-4 highlight, and this worthy of comment for this aerial configuration.

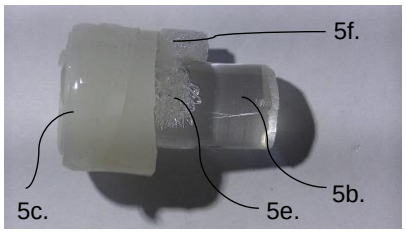


Image 3

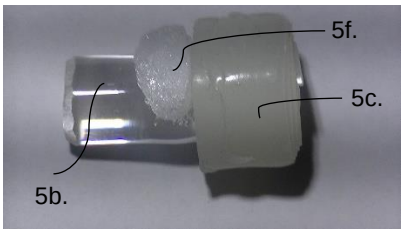


Image 4

Images 3-4*:* "mass" core (5b.), Perspex bulkhead (5c.), region of inner heat and pressure in the Perspex "mass" core (5e.) in being exposed to the internal destructive-interference EM gradient resonance field (6c.), extrusion of the Perspex "mass" core (5f.)

The combination of heat and what could only be pressure has "extruded" the inner core of the central Perspex "mass" out to its perimeter, such in the region of maximum EM resonance (destructive interference) effect. This test was repeated with consistent results, the key result being this central Perspex "mass" core (5b) region of heat and pressure according to the EM destructive-interference field region (6c.). Indeed, this would confirm 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 resonance (destructive interference) region approaching a "0" paradigm, as the theory as such has accommodated for this result, ***and*** perhaps also to an extent the phi-quantum QG component, as evidence of that "pressure-force" in that central resonance region, much like a high gravitational force causes the extrusion of a disc in the human spine under extreme pressure. 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 the absence of QG thrust, the result here is nonetheless significant, as EX-4 presents a key feature of the Hybrid Time model. Once again though, as with papers 7 [7] and 12 [12], the result is considered provisional until it can be reproduced by an independent laboratory. The process of steps pointing to the research here through the preceding papers, more specifically papers 15 [15] and 16 [16], have nonetheless led to this new result, namely in knowing what is required to produce such an effect and why such is required, in knowing that the concept of *time* as associated to an EM wave-function has associated to it two functionalities, one in the manner of Euler's formula, and the other one in the manner of the phi-quantum wave-function, one in the manner of a chaotic energy release (which in the case here had to be accommodated for through the use of a more ordered array of winds and associated solenoid bulkheads), and the other in the form of energy conservation (of energy transference through destructive-interference of an EM resonance field according to the principle and associated scaling of the phi-quantum wave-function).

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.

8. Quantum Gravity (QG) in Cosmology

The issue of relativity theory is therefore quite simple: if the speed of light is not determined by mass or even the relative motion of mass yet the relativity between space and time, then the constant between space and time can only be a constant as the wave-function of light as energy in any perspective (frame of reference) relative to the motion of masses. In short, Einstein's relativity incorrectly aimed to explain light from the perspective of mass-inertia. Whereas more correctly the process of relativity should prescribe how light as "c" can be the concordant process of perceptive reliability of space and time, and then have that basis derive all the known equations and constants of physical data based on that concordant process of perceptive reliability, after which quantum-gravity *can be described in the lab.*

In a broad sense therefore, how does EM link with G?

The proposed answer is based on accepting the fundamental difference between EM and G as a propagation ***in*** space, as the context of that difference, space, as their link. The solution comes through starting with the determination of empty space, and then filling it with a scaling system for an energy-differential in space as the "phi-quantum wave-function" [1][2], a wave-function related to a ***reliable*** human temporal perception ability (time-before, time-now, and time-after) ([1]: p2-7). Then, as the

subsequent papers 3-16 [13]-[16] presented, that wave-function proposal was discussed, and then developed, with the then aim of deriving all the relevant and provable qualities (equations and constants) of physical phenomena known to physics. It's a lot less messy and more certain than entertaining uncertainties such as DE, DM, and a metric expansion of space, the aim of course being to explain the idea of quantum gravity (QG), "G" from "EM", mass and thus gravity from the phi-quantum wave-function, and to demonstrate that in the lab. It *is* important as it will lead to new and completely efficient and clean ways of generating and storing energy, together with just as efficient propulsion mechanisms.

Alternatively, in considering two bodies in motion in ***using light as a reference with the idea of inertia and thus gravity***, such a process of examination would snowball into an associated incorrect model for cosmology and associated incorrect dimensions thereof regarding distance and time and associated mass and luminosity of the stars. Indeed, according to chaos theory as presented in paper 3 ([3]: p3-5), if a certain set of "initial conditions" are poised a certain way, and as such assuming that the stars are solar systems of a particular mass spawned from a certain big bang theory initial condition, culminating in their proposed mass and associated luminosity, and of course associated parallax lensing, then applying that to the process itself of physics and cosmology theory, it stands to reason that the greater the shape in time of that proposed cosmological reality from those proposed initial conditions (BB theory and SR-GR) will result in a truly fallacious cosmological model and associated proposed shape of the cosmos, requiring the impossible fixes of DE and DM. The fundamental conclusion for cosmology theory is that the stars are not what they have appeared to be previously in the context of the big bang theory and associated theoretical structures of GR and SR, and thus in the most extreme sense of consideration, are in fact not solar systems according to those associated theories, yet of a smaller debris-related scale.

Contemporary models of cosmology, in regard to the ideas of “spacetime” and “QG”, propose the ideas of a “Quantum Foam” and “Hawking radiation”, spill-off ideas of the idea of the Standard Model, a key specific idea thereof being that of *particle pairing*, to better explain spacetime and ideally QG. 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.

9. Conclusion

In summary, the pre-requisite literary and research work of this paper [1]-[16] employs the use of ***all*** **real** data, with the aim of reaching a pan-theory explaining the link between all such data and associated equations. Dark energy (DE) is not evidence. Dark matter (DM) is not evidence. Such are suppositions. And when those suppositions are used, they are not just the fruits of theory that has found its limit, yet together, those suppositions, form a grand supposition aiming to support what is known as the BB theory. The problem there is "***where*** *did the inertial energies for the metric expansion of space* ***come*** *from*?", thus requiring DE, and "***how*** *do galaxies appear together in that context of the metric expansion of space?*", thus requiring DM.

If unreal data should not be used in any serious fashion in a pan-theory, it can therefore be concluded that "inertia" is the chimera in that general search for a unified equation for EM and G and associated pan-theory. The papers 1-16 [1]-[16] listed in the following “references” section highlight how it is possible to avoid using DE and DM, constructs that have no data in our local reality, while upholding all real data, all physical equations and associated constants and literature/wording of those equations and constants held in their relevant context, by addressing the basic issue of "inertia" and it's relevance or rather lack thereof to the relativity between the ideas of space, time, and energy (energy as a wave-function). The work here has found that "inertia" is a secondary idea associated to mass, that “inertia” is ***not*** primary in the way space, time, and energy interact on a primary level, as papers 1-16 [1]-[16] have found. If inertia is considered to be primary, it leads to ludicrous conclusions, conclusions that defy the following ***real data-based*** issues:

(I) The Horizon Problem [17]
(II) The Flatness Problem [18]
(III) The Monopole Problem [19]
(IV) The Hubble Constant Problem [20]
(V) The Cosmological Constant Problem [21]

If there were a type of hierarchy of cosmic data, those five points are the key points that need to be resolved “before” analysing the apparent motions of the stars with each other in terms of spatial, temporal, and energy values, otherwise those calculations of the apparent motions of the stars will be held in a fallacious context in not resolving those 5 key problems. The work done in the preceding prerequisite papers [1]-[16] including here have resolved the above points (I-V), while deriving all the relevant equations and associated constants in the correct context of perceived phenomena here in this local reality. Any model of cosmology and analysis of the motions of the stars and galaxies is best advised to consider addressing points (I-V) and thus ***not*** employing the use of “inertia” in regard to the basic ideas of time, space, and energy for the analysis of the stars, for by such a manner a more accurate calculation of the spatial and temporal and energy dimensions of the stars can be reached, as presented in papers 13 [13] and 14 [14], namely that stars are exactly what they appear to be, as points of light shining through

dust clouds demonstrating atomic behaviour in association with what can be calculated to be the natural redshift of light through space.

Conflicts of Interest

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

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