Zero-dimensional philosophy

Stephen H. Jarvis[1]

web:www.xemdir.com

email: stephen.jarvis@xemdir.com

Abstract: Presented here is how the physical theory approach of theoretical physics can be demonstrated to be incomplete in explaining physical phenomena if indeed physical phenomena have key dimensional components that extend beyond the dimensional time-domain of time-now; although the past and the future cannot be proven to exist, for one has happened and the other has yet to happen, and reality is primarily defined physically in the time-domain of time-now as the action-principle realm, proposed here is that the idea of time-before and time-after should be if not are essential to a complete understanding of time. It follows therefore that to propose time to be linked with space as spacetime is to restrict one's theoretic understanding of time and space to the datum reference of time-now and thence not acquire a full account of the theory of physical phenomena. This issue though is resolved with a philosophical analysis of time in extending the dimension of time to the virtual time-before and time-after time-domains consistent with our conscious ability of time, and then labelling such with a zero-dimensional mathematical theorem, by which process a resultant mathematical theorem can then more thoroughly explain the physical phenomena of time-now that the physical theory approach in physics has aimed to define.

Keywords: zero-dimensional philosophy; mathematical theorem; zero-dimension; timespace; temporal mechanics

[1] Theorist and researcher at *Xemdir*, Sydney, Australia.

1. Introduction

What is *reality*? What is the idea of being *conscious* of *reality*? What is a *question*, and then how does a *question* seek an *answer*? What *is* *consciousness*, and what is consciousness aware of and why to be involved in a *question-and-answer* dialogue in explaining reality? What makes us doubt? What makes us certain?

It could be argued that what is real is certain, and what is not real is uncertain. Yet how is consciousness defined in the process of being used to determine what is real and what is not? Indeed, what is our ability to be aware of physical reality that makes us think such is real as compared to what is not?

For instance, there is no simple mental picture that can be used to describe the inner workings of the human body. More so is there no simple mental picture to describe the inner workings of the atom. Even more so there is no simple mental picture to describe the workings of the universe.

What is a mental picture though? Is it real or imaginary, and is it helpful to explain physical phenomena with imaginary processes such as the utility of our mind producing mental pictures?

These are fundamental questions reserved for philosophy it seems, yet should they be for philosophy alone? Can these questions if not philosophy find significance in detailing an ideal axiom basis for the formulation of theories of reality that can form the basis of mathematical theorems if not physical theories themselves?

Reality is commonly defined as the sum of all that is real or existent within a system, as opposed to that which is only imaginary. The question posed here though asks how we picture reality, how we accommodate for if not explain reality by mental pictures. Are for instance mental pictures a required abstraction of theoretic formulation to explain reality in the form of a book? Can reality be explained using pages of a book that on being read invoke mental images describing the workings of reality?

To arrive at anything close to a simple mental picture of any underlying physical phenomenal process even for the dimensions of time and space, one would need a basic holistic descriptor component. For the human body, that basic *holistic* descriptor component could most simply be described as the idea of consciousness; indeed, how can the human body be explained if not in the context of explaining how well it is functioning as a conscious entity?

Can the same be said for a universal physical reality though?

If it were possible such is the same and we exist within such, namely within a greater consciousness, must we then ultimately explain physical reality as an ultimate universal consciousness as the ideal basis for our theory formulations?

Given the unfathomability of a universal consciousness, could we then ask how the universe is organized as a mathematical perception-based framework compatible with our own perception? The next questions there are, “what is *mathematical*, *mathematical* being applied to what, to mass or the dimensions, both, and why, and how indeed in a perception-based framework and such being what exactly?”

In many respects, the universal language of today is no one specific cultural dialect, yet numbers and mathematics. Numbers and mathematics even in the highest echelons speak louder than words; numbers are how we break up the hours, the days, the weeks, and the years, how we track our movement, and how we plan endeavours.

Indeed, thoughts struck on vocal cords are merely what speech is, an abstract thing given the differing words used to describe the same fundamental physical concepts of reality. Mathematics though can form any basis, yet its meaning as number relationships remains the same.

Here will be proposed a philosophical basis to explain the dimensions of time and space. Yet the process of doing such will involve using both the real aspects of our perception ability for time and space, and the unreal aspect of our ability to perceive time and space, and thus requiring a philosophical description. Specifically, the *real* aspect will acknowledge our conscious ability in the datum reference of *time-now*, and the *unreal* aspect (or perhaps more correctly the imaginary aspect) will involve our conscious ability of *time-before* and *time-after*. Indeed, if a pure theory is technically an imaginary theory based on, encircling, what is in fact real, here that idea shall be exercised in the formulation of a theory of reality that can be described in words.

Specifically, here the case is presented that mathematics can be applied to the dimensions of time and space to describe physical phenomena in a mathematical perception and thus philosophically based framework from which words can then be used in various language formats to describe the same physical phenomenal effect, yet of course from a more fundamental dimensional account.

The process of achieving such here is as follows:

1. Introduction
2. Methodology
3. State of the art
4. Theorems and theories
5. Einstein's physical theories
6. The zero-dimensional philosophical approach
7. Zero-dimensional philosophy results
8. Conclusion

Temporal Mechanics[2] [1-47] as the account of the philosophy and mathematics of zero-dimensionality for time and space is a new proposed way of examining physical phenomena in using the mathematical object description of a time-equation. More fundamentally so, Temporal Mechanics uses the philosophical and thence mathematical object description of zero-dimensionality for time and space, namely time as a moment and space as a point. To reach such, a certain zero-dimensional philosophy requires identifying in detailing self-evident principles as axioms for time and space, as a fundamental logic for a mathematical theorem if not number theory to develop upon.

[2][1][2][3][4][5][6][7][8][9][10][11][12][13][14][15][16][17][18][19][20][21][22][23][24][25][26][27][28][29][31][31][32][33][34][35][36][37][38][39][40][41][42][43][44][45][46][47].

Here with the philosophy and mathematics of zero-dimensionality, Temporal Mechanics presents the case of defining time as time-domains central to our perception ability of time and space. In other words, Temporal Mechanics presents the case of self-evident axioms for time and space, axioms that are self-evident to our perception ability of physical phenomena. The thinking here with Temporal Mechanics is that *the right initial mathematical model should derive the known equations and values relevant to known phenomena, provided that the data exists to confirm or deny that new axiomatic base.*

By all of such, the general result here shall highlight that there is a natural mathematics to reality, reality proposed as 1d, 2d, and 3d *timespace*, by going a step beyond "*Cogito, ergo sum*"[3] presented by Rene Descartes [48] towards a more mathematical approach to our conscious ability of the dimensions of time and space. Not only will be shown a natural mathematics to reality, yet one for our conscious ability that highlights a fundamental feature of a balance between light[4] and darkness[5].

2. Methodology

The proposal here is fivefold, namely:

(i) In the absence of interpreting messages from a universal consciousness as words, the description of reality most fundamentally can be presented as a philosophical description of our dimensional conscious ability embracing our conscious ability of time and space, and thus a stream of events from *time-before* to *time-after* about the datum-reference of *time-now*.

(ii) From such can be derived a mathematical theorem as based most fundamentally and primarily on a description of the dimensions of time and space central to the datum reference of *time-now* yet also including the unreal dimensions of *time-before* and *time-after* in accommodating for our perception ability, and not be based most fundamentally and primarily on the description of mass in the time-domain of *time-now* alone.

(iii) This mathematical theorem that networks all of such (using the *time-before>time-now>time-after* route) must derive the natural number system and associated prime numbers for it to be a complete number system from 0 to ∞.

(iv) The numerical relationship of time and space, here as $1 \neq 0$, is proposed to link as *time=space* for via the *time-before>time-now>time-after* route 1d, 2d, and 3d *timespace* which, in being confined by the number and equation restrictions it is proposed to be

[3] Translation: "I think therefore I am."

[4] EM (the temporal wave function as light), see section 6.

[5] EM_X^{DIR}(the spatial field effect of gravity), see section 6.

governed by (namely the time-domain of *time-now*), would derive *timespace* equations relating to what would be observed as physical phenomena[6].

(v) This mathematical theorem in being applied to the dimensions of time and space is thence proposed to relate a *physical theory*[7] to be evaluated with known data.

The resultant proposal here therefore is that current scripted physical theory approaches[8] have jumped several key fundamental steps with its axioms, primarily in overlooking a key philosophical feature to our conscious ability of time and space, especially the axiom of our ability to be conscious of time as a stream from *time-before* to *time-after* circumscribing the datum reference of *time-now*. With this proposed philosophical consideration, one is including a key feature of our dimensional perception-ability syntax in the formulation of not a physical theory yet the basis for a theory of that which is both *non-physical* (as the dimensions can only be in the time-domains of *time-before* and *time-after*) and *physical* (physical phenomena in the *time-now* datum-reference of time and space).

In adding more fine-tuning to this process, the following shall be proposed:

(vi) The primary *mathematical theorem*[9] basis for physical phenomena is a *zero-dimensional mathematics* for time and space sprung from a more fundamental philosophical analysis of our dimensional perception ability.

(vii) Zero-dimensional time is not zero-dimensional space.

(viii) Time and space do not have the same mathematical value on their respective zero-dimensional level.

(ix) It is how zero-dimensional time relates with zero-dimensional space as different mathematical values that then creates 1d, 2d, and 3d *timespace* and thence EM, mass, and gravity field phenomena.

The mathematical zero-dimensional objects of time and space are therefore proposed not to focus directly upon the *time-now* real-world objects alone yet combine as a golden-ratio equation (*Fibonacci equation*) for time involving *time-before*, *time-now*, and *time-after*, a time-equation that derives the conditions of e *(Euler's number)* and π and thence an equation for space *(Euler's equation).* By the equality of the Fibonacci equation for time and Euler's equation for space are derived a suite of equations as a mathematical theorem matching the known equations of real-world physical phenomena in the time-domain of *time-now*, primarily the fields of EM, mass, and gravity, which as a hypothesis form the primary zero-dimensional mathematical theorem. This overall mathematical theorem is *then* matched and scaled (using the charge of an electron e_c and the value for the speed of light c) with physical phenomena in presenting the case for being a *physical theory* by proxy.

[6] If indeed this mathematical theorem is modelled on our perception ability of time and space and if indeed perception is related to physical phenomena.

[7] See section 4.

[8] See section 4.

[9] See section 4.

The zero-dimensional philosophy and associated mathematical theorem proposal here therefore ultimately relies on physical phenomenal data, and thus the disciplines of classical mechanics, special and general relativity, quantum mechanics, and the standard model of particles. As becomes evident though in the process of comparing the philosophical and mathematical theorem framework to the physical phenomenal data of physics, two measurement and scaling issues become apparent in the physical theory approach of physics owing to its dependence upon mass as the primary subject of measurement, namely:

(x) The *measurement problem*: namely *how* or *whether* a wave function collapse occurs.

(xi) The *dimensional scaling problem*[10]: encountered with general relativity in curving flat spacetime.

In short, here the zero-dimensional mathematical theorem still accepts the best data measuring tools can offer, yet describes the *nature,* the *why*, and the *relationships* of that data while bearing in mind known issues with data measurement mechanisms for light, mass, and gravity. As shall be shown, this mathematical theorem process is able to derive all the key field equations of force, mass, charge, and scale.

Physics in its current form relies on analysing the physical properties of *observable* phenomena (mass, motion, and energy) as per the equations of force and momentum, and to relate such most fundamentally to a mathematical model of time and space, or more simply to create the mathematical object of momentum characterized with time and space to then build models of physical phenomena. Such is the *physical theory*[11] approach.

This *physical theory* approach has worked well for millennia. Only recently in our history have cracks started to appear in this approach in it leading to:

(xii) The search for *dark*[12] phenomena.

(xiii) The need to resolve the dimensional differences between the current theory for gravity (Einstein's general relativity as *curved spacetime*) and the discipline of quantum mechanics (as *flat spacetime),* presented here as the dimensional scaling problem (xi).

(xiv) The quantum mechanical *measurement problem* reducing the specificity of identifying exact results for quantum mechanical data (x).

In view of the key problems related to the physical theory approach and given the vast amount of data available for physical phenomena, a new approach has been proposed as the *zero-dimensional philosophical and mathematical theorem* approach, here as the philosophy and mathematics of zero-dimensional time and space, as Temporal Mechanics, primarily to tackle points (xii)-(xiv). By such

[10] It is noted how Einstein curved flat spacetime thence leading to the cosmological constant problem and thence the requirement for dark energy and dark matter; see section 5.

[11] See section 4.

[12] Dark matter and dark energy.

literature, Temporal Mechanics has found between the disciplines of general relativity and quantum mechanics a dimensional (mass-space) scaling issue reflecting upon a chosen[13] requirement for the dimensional scales.

In resolving this scaling issue, the purpose of this paper is to highlight the overall scheme of the philosophy and mathematics of zero-dimensionality and how the resultant mathematical theorem derives the two basic known field force concepts, namely EM and gravity.

Here, this paper shall describe key ideas current physics theory cannot:

(xv) How EM and gravity are related to the idea of time and space:
   a. without incurring the quantum mechanical measurement problem,
   b. and without incurring dimensional mismatch between curved and flat spacetime.

(xvi) Why reality as a physical (mass based) phenomenon is shaped the way it is by EM and gravity.

(xvii) On a fundamental level, how atoms are held together and why there is such a thing as inertial mass (resistance) as compared to gravitational mass (freefall).

As shall be highlighted, a key question being asked here with the physical theory approach and its use of the mathematical object *momentum* as its foundational mathematical object is how indeed mass attracts mass in a metric expansion of a space if mass is defined by Einstein as an *extension* of space[14]? In resolving this question, proposed here is that:

(xviii) There exists a necessary dimensional mathematical *substructure* to the idea of mass and momentum, especially to the idea of inertia, synthesized by the time-domains beyond the Lagrangian[15] coordinate *time-now* time-domain, namely as per the proposed *non-local* time-domains of *time-before* and *time-after*.

(xix) The ideas of momentum and inertia require the *philosophically proposed* mathematics of zero-dimensionality as this substructure to accurately describe themselves as processes of physical phenomena.

(xx) The zero-dimensional mathematical theorem approach can resolve the quantum mechanical *measurement problem* in not relying primarily on physical data as a model for the behaviour of EM.

As such, here it shall be demonstrated that contemporary physics in primarily using the mathematical object of momentum (and thence inertia as an assumed physical quality of mass) as a basis for its physical theories of general relativity and quantum mechanics is missing a sizeable amount

[13] Presenting as a pre-ordained general relativistic theory of cosmology in championing over the quantum mechanical measurement problem; see section 5.

[14] As proposed by Einstein; see section 4.

[15] As described in paper 40, chapter 4, of Temporal Mechanics ([40]: p9-19).

of theory together with incorrectly calculating the scales of time and space for astrophysical phenomena.

To highlight how much theory contemporary physics is missing and how incorrect the current cosmological scales for time and space are, it is necessary to simplify the description of what is being missed out on with an overview of the zero-dimensional theory papers of Temporal Mechanics in comparison to the real axis of the problem in physics today, namely the physical theorem approach and the associated requirement for mass-momentum. As shall become evident in that description process, physical phenomena have a vast ecosystem of equations and constants all based on the one zero-dimensional ***philosophically proposed*** mathematical theorem scheme where nothing should be assumed in being abstracted by words and associated thought experiments (despite the utility of doing so for experimental physics).

Proposed here therefore is the ***phenomenal reality*** of zero-dimensional space and time (space as a point and time as a moment) not as a spacetime singularity yet a zero-dimensional concept for space as a point and a zero-dimensional concept for time as a moment in time. Thence a mathematics is concorded to such, not as an abstraction, yet as a tool of choice to describe the reality of zero-dimensionality for time and space. The specificity there of such concordance is the value of 0 accorded to zero-dimensional space and the value of 1 accorded to zero-dimensional time. By such, Temporal Mechanics hypothesises the existence of a point in space and a moment in time and then applies a mathematics directly to such a proposal, not as an abstraction, yet a way to simply and clearly state that:

(xxi) The dimension of space is different to the dimension of time.

(xxii) The dimensions of space and time do not form a singularity in any point location or instance.

(xxiii) Time and space can though be associated as 1d, 2d, and 3d *timespace* as a circuit of mathematical equations around and including the datum-reference of *time-now*.

It may be argued that a point in space and a moment in time cannot be proven, that such zero-dimensional objects are not real yet abstract. However, abstraction in mathematics is:

(xxiv) The process of extracting an underlying mathematical structure from a physical object.

(xxv) Then generalizing that abstraction to apply elsewhere.

Yet with philosophical proposal for zero-dimensionality, no mathematical object is being extracted from a physical reality to be applied elsewhere. With zero-dimensionality the proposition is to consider philosophically and thence thoughtfully the mathematics of a moment in time and a point in space. Thus, with the philosophical proposal for zero-dimensionality quite the reverse is happening to the process of mathematical abstraction, namely:

(xxvi) The application of the mathematical value of 0 for space and the mathematical value of 1 for time to a proposed dimensional time and space reality as a fundamental dimensional template structure.

(xxvii) To then evaluate that fundamental dimensional template structure with known data.

(xxviii) To thence uncover any scaling issues with physical theories that are not based on the zero-dimensional mathematical approach, specifically both curved spacetime theory (general relativity) and flat spacetime theory (quantum mechanics).

By such, an overall *philosophical basis→mathematical theorem→physical theory* process of analysis is achieved.

3. State of the art

A key problem in physical theory formulations is central to joining the dimensional scales of EM with gravity. Such was the theme of the previous paper of Temporal Mechanics in discussing how Einstein in stretching-bending flat spacetime created a physical theory abstraction with the description of general relativity as a proposed basis for the phenomena of gravity ([47]: p7-11). Albert Einstein however considered that such was justified *if* his process of formulating curved spacetime could describe physical phenomena in a way that flat spacetime theories of gravity and light could not, in especially highlighting the measurement problem of quantum mechanics.

Thus, the abstract status of general relativity has been overlooked. In fact, Albert Einstein agreed with his abstract approach in comparison to quantum mechanics as per his comments in 1952 [49]:

Generalized Theory of Gravitation

The theory of the pure gravitational field on the basis of the general theory of relativity is therefore readily obtainable, because we may be confident that the "field-free" Minkowski space with its metric in conformity with (1) must satisfy the general laws of field. From this special case the law of gravitation follows by a generalisation which is practically free from arbitrariness.

The further development of the theory is not so unequivocally determined by the general principle of relativity; it has been attempted in various directions during the last few decades. It is common to all these attempts, to conceive physical reality as a field, and moreover, one which is a generalisation of the gravitational field, and in which the field law is a generalisation of the law for the pure gravitational field. After long probing I believe that I have now found the most natural form for this generalisation, but I have not yet been able to find out whether this generalised law can stand up against the facts of experience.

The question of the particular field law is secondary in the preceding general considerations. At the present time, the main question is whether a field theory of the kind here

> *contemplated can lead to the goal at all. By this is meant a theory which describes exhaustively physical reality, including four-dimensional space, by a field. The present-day generation of physicists is inclined to answer this question in the negative. In conformity with the present form of the quantum theory, it believes that the state of a system cannot be specified directly, but only in an indirect way by a statement of the statistics of the results of measurement attainable on the system. The conviction prevails that the experimentally assured duality of nature (corpuscular and wave structure) can be realised only by such a weakening of the concept of reality. I think that such a far-reaching theoretical renunciation is not for the present justified by our actual knowledge, and that one should not desist from pursuing to the end the path of the relativistic field theory.*

There, Einstein considered quantum mechanics as a more abstract process of physical theory construction, and so considered his general relativity work *more viable* than the difficulties then faced by quantum mechanics. What Einstein did not consider though was the mathematical theorem approach underlying the idea of mass, as shall be presented in the following section.

Einstein spent much of his time trying to explain how mass can be considered as a fundamental dimensional entity of space and thence time, yet still failed to deliver a suitable description of quantum mechanics that could resolve the known measurement problem issues. There, although general relativity has described phenomena Newtonian gravity could not (perihelion of Mercury, black holes, light bending to mass, temporal distortions, the constancy of c), in achieving such his spacetime theory divorced itself from flat spacetime dimensional scales and that associated quantum mechanical description of light. How Einstein did this was described in paper 47 of Temporal Mechanics ([47]: p7-11).

The physical theory approach of quantum mechanics though has also made EM difficult to describe as a physical theory given how EM can only be measured according to that theory, namely its dependence on mass/momentum and that disparity with EM and the very measuring process in play (as per the measurement problem).

The measurement problem centrally accepts the notion that the process of measuring light incurs a collapse of the EM wave function to a certain value, in which event the EM wave function prior its collapse can only be described as a probability wave function given its actual state would not be known. In fact, the physical theory approach is hampered by the very nature of light itself, and Einstein made this noticeably clear to then propose an argument for the superiority of his general relativity describing key features of the phenomena of light and mass in a way quantum mechanics could not.

Temporal Mechanics as the philosophically proposed zero-dimensional mathematical theorem resolves the measurement problem by first deriving the nature of the EM wave function and then asking, “does the zero-dimensional mathematical theorem that derives the nature of the EM wave function concord with known physical phenomenal traits of EM and associated metric values?”

In then addressing and counter-arguing Einstein’s presumption of the superiority of general relativity, here in this paper shall be achieved the following:

(xxix) Describe the philosophical basis and thence mathematical approach of Einstein's dimensional (spacetime) theory of general relativity.

(xxx) Highlight the mathematical error made there as per his deliberate curving of flat spacetime to accommodate for gravitational free fall.

(xxxi) Present the case for the zero-dimensional philosophy and associated mathematics as a derived mathematical theorem that can overcome the quantum mechanical measurement problem.

(xxxii) Uphold a dimensional scale link between gravity and EM as that new mathematical theorem approach.

No matter how well general relativity can describe gravitational phenomena, the question here being asked is whether Einstein's formulation process for general relativity bent the rules in failing to address a fundamental philosophy and associated mathematics for time and space in accordance with our unwavering perception ability of the dimensions, especially so given his curving of flat spacetime left quantum mechanics out of his scope of expression.

Indeed, to explain gravity a certain way is to then lay claim to a pandora's box of data related to physical phenomena. The problem with general relativity is that it doesn't relate on the quantum level, simply because the flat spacetime quantum level was twisted to satisfy general relativity, overlooked by Einstein given the measurement problem; simply, quantum mechanics has the measurement problem, and general relativity relies on that measurement problem to be a more viable option.

General relativity nonetheless opened a pandora's box of presumed proof by its proposal of curving flat spacetime. Such does not make general relativity as a physical theory correct though, yet a way of explaining physical phenomena *more superior* to other physical theories. The question this paper asks is, "how does Einstein's general relativity stand-up to the proof of the philosophically based zero-dimensional mathematical theorem as not just a description for gravity yet EM, each being verified with known data and associated physical phenomenal descriptors?"

4. Theorems and theories

In setting the philosophical focus of this paper, key ideas of mathematics and physics being approached by the philosophical process here need to be clarified:

(xxxiii) *Theoretical physics* is a branch of physics employing mathematical models and abstractions of physical objects and systems in the time-domain of *time-now* to reason, explain, and predict physical phenomena.

(xxxiv) *Experimental physics* thence uses experimental tools to probe physical phenomena.

(xxxv) There is an aim for *theoretical physics* to comply with the data generated by *experimental physics*.

(xxxvi) *Theoretical physics* in amalgamation with *experimental physics* can adopt two processes:

a. *Physical theories* with a greater dependence on experimental data, and thus becoming the primary focus of *theoretical physics.*
b. *Mathematical theorems* with greater dependence on the mathematical models, and thus becoming the secondary focus of *theoretical physics.*

(xxxvii) A *physical theory* is a model of physical events as judged by:

a. The extent to which its predictions agree with empirical observations.
b. Its ability to make new predictions which can be verified by new observations.
c. Being a successful relationship between various measurable quantities.
d. Its formulation of *scientific law*.

(xxxviii) A *mathematical theorem is*:

a. A statement of logic that has or can been proved as a logical argument using standard deduction procedures[16]:
    i. The axioms are often yet not always (as with zero-dimensional mathematical) abstractions of properties of the physical world.
    ii. Mathematical theorems as opposed to being a scripted scientific law are themselves *purely deductive*.
    iii. Mathematical theorems are mostly conditional statements in that their proofs deduce conclusions from hypothetical conditions.

Here, if the proposed philosophically based mathematical theorem of zero-dimensional time and space can be demonstrated to interface with physical phenomenal data, then the paralleling data of physical phenomena inputted into this mathematical theorem would logically translate into a scientific theory.

In short, here mathematics uses a philosophically proposed condition of time and space that creates a *timespace* mathematical network of equations that when scaled with known physical phenomenal values enters the domain of being a physical theory.

In demonstration of such *("philosophical basis"→"mathematical theorem"→"physical theory"*), Temporal Mechanics employs the following processes as described throughout paper 44 [44]:

(xxxix) Applying a zero-dimensional mathematical theorem to what exists beyond the datum reference of *time-now* and thus presumably beyond the *local* (the *time-now* time-domain) confines of physical reality in consulting a *philosophical basis* of our dimensional perception ability.

(xl) The process of such (xxxix) being:

a. The value "1" as a moment in time for the time-domain of *time-now (time-now=1*),

[16] As a logical consequence of the axioms and previously proved theorems.

b. The value “0” as an infinitesimal point in space (for the time-domain of *time-now*) and thus space without any dimension, as a pure vacuum without dimensional scale.
c. Thence creating the hypothetical condition of *time-before* and *time-after* from the relationship of zero-dimensional time (*time-now*=1) and zero-dimensional space (0),
d. Thence deriving the physical *fields* of 1d, 2d, and 3d *timespace* for the time-domain of *time-now*, namely the component of time imparting zero-dimensional space with a 1d, 2d, and 3d scale.

Temporal Mechanics therefore upholds the idea of a field being a physical quantity represented by scalar, vector, or tensor values for each point in space and time.

With zero-dimensional space, the hypothesis is that 0 is the absence of something, and that is how space is defined, namely having the absence of dimension and therefore scale. Yet when 0 is given dimensional scale care of time, 1d, 2d, and 3d *timespace* fields are formed in the time-domain of *time-now*. There, zero-dimensional spatial references as points in space communicate with other zero-dimensional spatial references per the temporal wave function as the basic energy field component of zero-dimensional (point) communication.

Here therefore with the zero-dimensional mathematical theorem approach, a field:

(xli) Occupies space (in being built on a pure vacuum zero-dimensional basis),
(xlii) *Contains energy* (as the component of time’s flow through the *time-now* time-domain).

Here also with the zero-dimensional mathematical theorem proposal a field does <u>*not*</u> preclude a pure vacuum yet is *based upon a pure vacuum* because of the zero-dimensional basis of time and space proposed to be at play. With the zero-dimensional approach, a *physical quantity* therefore is:

(xliii) A *physical property* of a material or system that is quantifiable by measurement:
  a. Any measurable property.
  b. A value describing the status of a physical system.
  c. Observable.
(xliv) Able to be expressed as:
  a. A *value* as an algebraic product of a *numerical value* and a *unit*.
  b. A quantifiable physical property used to describe changes between one *time-now* time-domain to another *time-now* time-domain state.

Although what Temporal Mechanics proposes here requires an axiom basis that extends beyond the confines of a physical property, quantity, and associated field description and thus a philosophical axiom, the laws of physical fields and their properties/quantities are kept in check for the time-domain of *time-now*. Yet the *principle* of the mathematical theorem at play requires an over-

arching perception-based (and thence primarily philosophical) inclusion of the time-domains of *time-before* and *time-after*. The reason for this is to assist in points (i)-(xi), considered to be a more accurate and complete approach to theorizing and describing physical phenomena in the constraint of our temporal and spatial perception abilities.

By all of such, when 0 and 1 as mathematical objects are *applied to* the dimensions of space and time respectively, as a hypothesis, the golden ratio values ($\frac{-1}{\varphi}, \varphi$), π, e (Euler's number), and the prime numbers become apparent as the key numerical components for 1d, 2d, and 3d *timespace* as demonstrated in paper 44 [44] of Temporal Mechanics. From there three basic field effects become apparent, namely EM, mass (EM^{DIR}), and gravity (EM_X^{DIR}), thence the strong and weak field forces, as demonstrated throughout papers 42-47 of Temporal Mechanics [42-47].

All such forms the basis of proof for the zero-dimensional *mathematical theorem* thence detailing a *scientific theory*. Yet is such proof required if indeed there is nothing wrong with the "physical theories" of Einstein, namely his special and general relativity theories? Are there problems with these theories and what are these problems, and how does the zero-dimensional proposal resolve these problems together with detailing what Einstein's physical theories cannot account for?

5. Einstein's physical theories

It must be noted that Einstein considered his theories of relativity (special and general) to belong to a class of "principle-theories" employing an analytic method, namely that the elements of his theories are not based on hypothesis or any strict mathematical theorem yet on empirical discovery, or rather, data that is already observed and known.

For instance, at the time Einstein conceived his theories of relativity, the Equivalence Principle and the Principle of Relativity were already known circa early 1600's [50], the redshift of light was already known circa 1848 [51], the constancy of the speed of light was already proposed circa 1860's [52], the Perihelion of Mercury was already known circa 1859 [53], light deflection around a massive object was already known circa 1801 [54], and time-dilation was already predicted via Maxwell's equations circa 1897 [55]. It was then Einstein's task to explain such phenomena in the one physical theory regarding the massless photon, and he did so the way he did [56]. Yet the problem remains regarding the completeness of Einstein's theories of relativity, specifically whether general relativity is complete in not forming a mathematical link with quantum mechanics.

To examine what the problem could be, no matter how strong his work is with describing physical phenomena, the question to be asked is if Einstein bent any physical phenomenal rules with his formulation of general relativity, and if so, what rules did he bend?

To answer this question, it is first necessary to consider what Einstein thought of space, time, and more importantly mass. Consider the following excerpts from the titled "Space-time" of the 1926 13th edition of Encyclopaedia Britannica, as presented by Albert Einstein [57]:

Space-time

All our thoughts and concepts are called up by sense-experiences and have a meaning only in reference to these sense-experiences. On the other hand, however, they are products of the spontaneous activity of our minds; they are thus in no wise logical consequences of the contents of these sense-experiences. If, therefore, we wish to grasp the essence of a complex of abstract notions we must for the one part investigate the mutual relationships between the concepts and the assertions made about them; for the other, we must investigate how they are related to the experiences.

So far as the way is concerned in which concepts are connected with one another and with the experiences there is no difference of principle between the concept-systems of science and those of daily life. The concept-systems of science have grown out of those of daily life and have been modified and completed according to the objects and purposes of the science in question.

The more universal a concept is the more frequently it enters into our thinking; and the more indirect its relation to sense-experience, the more difficult it is for us to comprehend its meaning; this is particularly the case with pre-scientific concepts that we have been accustomed to use since childhood. Consider the concepts referred to in the words "where," "when," "why," "being," to the elucidation of which innumerable volumes of philosophy have been devoted. We fare no better in our speculations than a fish which should strive to become clear as to what is water.

Space

In the present article we are concerned with the meaning of "where," that is, of space. It appears that there is no quality contained in our individual primitive sense-experiences that may be designated as spatial. Rather, what is spatial appears to be a sort of order of the material objects of experience. The concept "material object" must therefore be available if concepts concerning space are to be possible…….

Reference to the Earth

If we start from the view that all spatial concepts are related to contact-experiences of solid bodies, it is easy to understand how the concept "space" originated, namely, how a thing independent of bodies and yet embodying their position-possibilities (Lagerungsmöglichkeiten) was posited. If we have a system of bodies in contact and at rest relatively to one another, some can be replaced by others. This property of allowing substitution is interpreted as "available space." Space denotes the property in virtue of which rigid bodies can occupy different positions. The view that space is something with a unity of its own is perhaps due to the circumstance that in pre-scientific thought all positions of bodies were referred to one body

(reference body), namely the earth. In scientific thought the earth is represented by the co-ordinate system. The assertion that it would be possible to place an unlimited number of bodies next to one another denotes that space is infinite. In pre-scientific thought the concepts "space" and "time" and "body of reference" are scarcely differentiated at all. A place or point in space is always taken to mean a material point on a body of reference……

Euclidean Geometry

If we consider Euclidean geometry, we clearly discern that it refers to the laws regulating the positions of rigid bodies. It turns to account the ingenious thought of tracing back all relations concerning bodies and their relative positions to the very simple concept "distance" (Strecke). Distance denotes a rigid body on which two material points (marks) have been specified. The concept of the equality of distances (and angles) refers to experiments involving coincidences; the same remarks apply to the theorems on congruence. Now, Euclidean geometry, in the form in which it has been handed down to us from Euclid, uses the fundamental concepts "straight line" and "plane" which do not appear to correspond, or at any rate, not so directly, with experiences concerning the position of rigid bodies. On this it must be remarked that the concept of the straight line may be reduced to that of the distance.1 Moreover, geometricians were less concerned with bringing out the relation of their fundamental concepts to experience than with deducing logically the geometrical propositions from a few axioms enunciated at the outset……

Einstein has clearly set a primacy for mass over light, in fact over the idea of space itself, as a primacy of mass over space-time. Further highlighting this definition of space regarding the primacy of mass was with a final amendment that he made to his Theory of Relativity as per the following from his 15th edition to his Special and General theory [58]:

Note to the fifteenth edition

In this edition I have added, as a fifth appendix, a presentation of my views on the problem of space in general and on the gradual modifications of our ideas on space resulting from the influence of the relativistic viewpoint. I wished to show that space-time is not necessarily something to which one can ascribe a separate existence, independently of the actual objects of physical reality. Physical objects are not in space, but these objects are spatially extended. In this way the concept "empty space" loses its meaning. June 9th, 1952. A. EINSTEIN

The question of course is "what is the difference between *stretched/expanding* space[17]" and *extended* space?"

Indeed, Einstein does not confuse *stretching* with *extending*, for this amendment is merely Einstein highlighting an annexing of space as mass, mass being intricately associated to space as a localised extension of space (and not stretching).

Einstein though set the foundation to have one need to explain how to physically and practically measure space and time, and thus define them in physical terms. Yet his theory still failed to explain why mass attracts mass in the context of his required metric expansion of space ([47]: p7-11).

Philosophically, Einstein argued that *physical* beings must describe things *physically*. This though has led to several key problems regarding the dimensions of spacetime, namely the mismatch between flat spacetime (special relativity) and curved spacetime (general relativity) ([47]: p7-11).

It is interesting to note though that the physical expansion of space is now known mathematically as a *metric* expansion of space, suggesting mathematics can be a part of a *physical* process (space being connected to mass in mass being an extension of space). The implication of this is that if mathematics is therefore allowed to be a physical process, then considering a primary metric feature of space should require the mathematics of zero-dimensionality, of at least a point in space and moment in time.

Indeed though, how can one measure *physically* zero-dimensional space and zero-dimensional time? How does one measure a point in space and a moment in time if not primarily as a mathematical theorem hypothesizing such to be so? Such is the task of the philosophically proposed zero-dimensional mathematical theorem, namely, to derive the consistency and thoroughness of such, together with confirming such with the substantiating data of physical phenomena.

To note are the following *contemporary notions* of zero-dimensional space:

(xlv) Zero-dimensional space is considered as zero-dimensional topological space having *dimension zero* with respect to other non-zero dimensions of topological space, simply put graphically as a point.

(xlvi) There, the "*metric*" of zero-dimensionality *is given as zero* in comparison to *what is not zero*, namely in being associated to accompanying non-zero-dimensional spatial topologies; there, are the various mathematical descriptions for how to define such zero-dimensional spaces (as points) with other associated non-zero topologies.

(xlvii) The closest idea mathematics provides for a stand-alone zero-dimensional space is the idea of a zero-dimensional *ball* as a *point*.

(xlviii) Mathematics also provides zero-dimensional space with the idea of the *set* of rational numbers as the idea of "*subspace*" topology. Yet such is zero-dimensional subspace, not zero-dimensional space.

[17] As per the metric expansion of space.

As an extension of such (xlv)-(xlviii), the literature of Temporal Mechanics has revealed the key problem with the *assumption* of a point, namely ([43]: p1-5):

(xlix) What presumably existed before the big bang according to the ΛCDM[18] model (based on Einstein's general relativity), zero-dimensionality on an *infinitesimal* scale one could only consider.

(l) Thence what would still exist ahead of the big bang shock front, also a point yet on an *infinite* scale.

There, the problem is the <u>*scale*</u>, and Temporal Mechanics has identified this as the *infinitesimal-infinite* paradox (0-∞ paradox) of zero-dimensional space ([43]: p1-5) in view of the ΛCDM model.

Paper 43 ([43]: p6-8) of Temporal Mechanics, as with paper 44 ([44]: p8-13) thence delivered a mathematical description for zero-dimensional space, one that allowed a point as a 0-reference to be labelled for any reference in 3d space, provided that the *infinitesimal-infinite* paradox could be resolved. How such was achieved required defining zero-dimensional space with a new mathematics, specifically with new mathematical tags to accommodate for the ideas of 0 and ∞, namely the *infinitesimal* scale (0) and the *infinite* scale (∞), which then proposed a new cosmological model in highlighting the flaw in the current ΛCDM cosmological model. Simply, by using the mathematics of zero-dimensionality the ΛCDM was demonstrated to be flawed.

By such, Temporal Mechanics asks why *physicality* must be described *physically* to *support* a theory? Indeed, physical measurement can verify a physical theory, yet does a theory if not theorem depend on physical measurement alone given the idea of a theory itself is an intangible if not non-physical thing? The proposal here is *how* the intangibility of theory can make sense to our ability of conscious reason as a description of physical reality, namely by the *zero-dimensional philosophical* approach.

6. The zero-dimensional philosophical approach

The initial proposal in paper 1 ([1]: p1-5) of Temporal Mechanics was to examine how one is naturally conscious of time and space on a most fundamental level <u>*as a basis*</u> for counting objects in time and space. This led to the derivation of the time-equation. Such then through a series of papers [2-47][19] led to the fundamental mathematics of zero-dimensionality[20], specifically papers 43-47 [43-47].

To be noted here is that Temporal Mechanics is a proposed new stream of philosophical and mathematical theory, and thus much of the work of Temporal Mechanics requires referencing the work of Temporal Mechanics as compared to known data references in physics, one paper to the next. Given

[18] Dark energy (Λ) and cold dark matter (CDM) cosmological model.

[19] The primary compass of theoretic design being the time equation and its associated derived golden ratio (Fibonacci) feature.

[20] As initially presented in paper 43 [43] of Temporal Mechanics.

the large amount of data available to physics theory, Temporal Mechanics in its adaptation process to that data has itself become a just as large body of work, as follows:

(li) Volume 1 *(papers 1-7):*
   a. *Hypothesis*: the time-equation proposal and associated process of equation-data matching:
      i. [1-7].

(lii) Volume 2 *(papers 8-14):*
   a. *Adaptation*: following the revised mathematical time-equation formulation of paper 8, the required process was of equation and data matching with physical phenomena:
      i. [8-14].

(liii) Volume 3 *(papers 15-21):*
   a. *Development*: the development of a dual time approach for EM and G as the Hybrid time-theory by deriving time to have different subsidiary equations for EM and G:
      i. [15-21].

(liv) Volume 4 *(papers 22-28):*
   a. *Derivation*: the interlinking mathematics of the hybrid time theory with microscopic and macroscopic data and equations:
      i. [22-28].

(lv) Volume 5 *(papers 29-35):*
   a. *Range*: determining what the microscopic and macroscopic limits are and why for the time-equation theory, presenting a basic scheme for time-equation cosmology.
      i. [29-35]

(lvi) Volume 6 *(papers 29-35):*
   a. *Refinement*: a process of deriving the known and more refined subatomic and elementary particle values and associated field force equations and data, together with the known macroscopic values:
      i. [36-42].

(lvii) Volume 7 *(papers 43-48):*
   a. *Zero-dimensionality*: establishing the common underlying mathematics of physical phenomena and associated field force effects, particularly the basis for inertia and gravitational freefall:
      i. [43-47].
      ii. This paper being paper 48.

To then efficiently acquaint oneself with Temporal Mechanics, volume 7 has been designed with the benefit of hindsight of volumes 1-6, particularly paper 42 of volume 6 where the gravitational analogue EM_X^{DIR} field was derived ([42]: p29-56), which then inspired volume 7 as a new overall

approach to revising Temporal Mechanics with the idea of zero-point energy and thus presumably the mathematics of zero-dimensionality. The key issue found with paper 42 though was the need to thence derive the *timespace* zero-dimensional *timespace* grid, hence papers 43-47 [43-47]:

(lviii) Paper 43 [43]:
- a. Describing *zero-dimensional space* and *a moment of time*:
  - i. ([43]: p1-5).
- b. Thence deriving 1d, 2d, and 3d *timespace*:
  - i. ([43]: p6-8).

(lix) Paper 44 [44]:
- a. Using zero-dimensional mathematics to derive the natural number system from $0 \rightarrow \infty$ via deriving the prime numbers:
  - i. ([44]: p5-12).
- b. Resolving Goldbach's conjecture:
  - i. ([44]: p12-13).
- c. Resolving the Riemann hypothesis[21] in mapping the primes using Euler's equations for the zero-dimensional derived number values of $0 \rightarrow \infty$:
  - i. ([44]: p14-19).

(lx) Paper 45 [45]:
- a. Using zero-dimensional mathematics to:
  - i. Derive the 5 processes of time for physical phenomena ([45]: p12, (xv-xix)).
  - ii. Derive the constancy of the speed of light in a vacuum for all frames of reference ([45]: p15-16).
  - iii. Derive Einstein's cosmological constant *error* in Einstein's failing to accommodate for zero-dimensional mathematics ([45]: p27-31).

(lxi) Paper 46 [46]:
- a. A criticism of the current manner of employment of mathematics by physics of space *as a mass field* and time *as relative motion of masses*, as such assumes:
  - i. The dimensions automatically confer mathematically to physical objects.
  - ii. The idea of not only the mathematics of *a point in space*, yet also *a moment in time*, leading to dimensional scaling anomalies (stretching and bending).

(lxii) Paper 47 [47]:
- a. Highlighting the flaw in Einstein's theory of general relativity in:
  - i. stretching/bending flat spacetime using straight-line segments and thence:
    1. Failing to derive Fermat's principle.
    2. Failing to derive the stationary-action principle
    3. Failing to derive the principle of inertia.

[21] Solving the Riemann hypothesis is considered as a key mathematical achievement according to the Clay Mathematics Institute [59].

Preceding and yet also underwriting such, the process of paper 42 [42] was to:

(lxiii) Account for EM as the analogue of the temporal wave function.

(lxiv) Thence describe the EM model as a process of destructive interference resonance (DIR) in two ways:

a. A partial destructive interference resonance (EM^{DIR}) resulting in particle pair production as a mass-field effect:
   i. ([42]: p36-37).

b. An absolute *destructive interference resonance* (EM_X^{DIR}) resulting in a baseline zero-point field as the gravitational freefall field effect:
   ii. ([42]: p38-41).

7. Zero-dimensional philosophy results

From a philosophical[22] proposal for zero-dimensionality as a particular application of numbers to the dimensions of time and space, the following has been achieved:

(lxv) A mathematical theorem based on two fundamental derived equations each exercising absoluteness with the other, namely:

a. $t_B + 1 = t_A$ *for time*,

b. and $e_{t_B}^{i\pi} + 1_{t_N} = 0_{t_A}$ *for space*,

c. thence deriving a mathematical theorem of equations.

(lxvi) A fundamental principle of *time=space* was reached for these two derived equations (lxv) as a perfect duality acting as a compass for all the associated derived equations.

(lxvii) That mathematical theorem as those derived equations when scaled with the charge of the electron e_c and value for the speed of light c was found to be consistent with known physical phenomenal equations and associated metrics on:

a. the microscopic level (elementary particle),

b. the macroscopic level (astrophysical phenomena),

c. and all field effects in between.

Thus, the questions there are:

(lxviii) Is mathematics embedded in physical phenomena?

(lxix) Do physical phenomena perform only to the dualistic features of the Fibonacci equation ($t_B + 1 = t_A$) and Euler's equation ($e_{t_B}^{i\pi} + 1_{t_N} = 0_{t_A}$)?

[22] Specifically, a perception-based proposal.

(lxx) Is it our conscious notion of being aware of time and space, as proposed, that reckons $t_B + 1 = t_A$ and $e^{i\pi}_{t_B} + 1_{t_N} = 0_{t_A}$ to exist in nature?

(lxxi) Is how reality works the same as the way it can be described?

The philosophically based zero-dimensional mathematical theorem proposes to explain physical phenomena in the most fundamental zero-dimensional way <u>*consciously possible*</u> for the dimensions of time and space, namely using a basic zero-dimensional mathematics, as presented in paper 43 ([43]: p1-11), in then deriving $t_B + 1 = t_A$ and $e^{i\pi}_{t_B} + 1_{t_N} = 0_{t_A}$.

The fundamental idea to consider is that in using the datum reference of *time-now* as the focus, while then labelling time as a moment as the value "1" and space as a point as the value "0", and given $1 \neq 0$, then a new route was chosen to make time and space equitable by involving the unreal dimensions of *time-before* and *time-after*. By such, $t_B + 1 = t_A$ and $e^{i\pi}_{t_B} + 1_{t_N} = 0_{t_A}$ were derived as equations primarily for time and space respectively, which when brought together were able to map the prime numbers and thence derive a mathematical theorem for 1d, 2d, and 3d *timespace*.

Indeed, the interaction of $t_B + 1 = t_A$ and $e^{i\pi}_{t_B} + 1_{t_N} = 0_{t_A}$ as a *time=space* condition is derived to involve a whole host of number and equation types by their *time=space* relationship, including mapping the primes as demonstrated in paper 44 [44], yet is such a concern in trying to explain reality? For instance, in saying these numbers, all of them as we attempt to count them mathematically with equations, do not exist as a process of reality being reality, then *what* exactly is the mechanism of reality as an epistemology? Does the process of philosophy if not mathematics make us ignorant to the true nature of reality?

Here reality is proposed to be a continual sequence of events as we perceive those events, forever changing as we perceive them, some parts more than others, yet nonetheless with underlying constraints at play. Thus, the proposal is that <u>*how*</u> we can count these changes can be akin to the changes we perceive being as what reality *is*. Such an argument formed the basis of the zero-dimensional philosophy and thence mathematical theorem for time and space, initially as an account of how we are most basically conscious of time and space as dimensions ([1]: p1-11) and then reaching that counting process to the dimensions of time and space, all of such to arrive at fundamental zero-dimensional mathematical theorem for the dimensions of time and space as 1d, 2d, and 3d *timespace*.

By the results here, if reality has an underlying mathematical disturbance in the manner of a constant calculation process, it is more likely than not the mathematical disturbance (here proposed as the golden ratio equation for time and Euler's equation for space) that is <u>*the*</u> underlying *dimensional disturbance* of time with space than anything else acting as the disturbance.

Here as per the Fibonacci equation for time ($t_B + 1 = t_A$) and Euler's equation for space ($e^{i\pi}_{t_B} + 1_{t_N} = 0_{t_A}$), both as the mathematical disturbance, is generated Mandelbrot (Fibonacci) domain references for every point in 1d, 2d and 3d *timespace*, deriving the primes from $0 \rightarrow \infty$. Essentially, by this zero-dimensional mathematical theorem process, every zero-dimensional point reference is derived to be bound infinitely to zero-dimensionality while still associating with other zero-dimensional point references *infinitely* per a time-equation prescribing the golden ratio Fibonacci sequence.

The obvious question there is, "*why not interface this mathematical theorem with the physical data of reality?"* Such has been the whole point of Temporal Mechanics (zero-dimensional theory), to do that very thing. To achieve such, two scales were required, one for time (nominated as the charge of the electron e_c) and the other for space (nominated as the value for the speed of light c as the speed of transmission between points on a temporal wave function). Subsequently, the zero-dimensional mathematical theorem is not an extension of spacetime or anything similar such as Hilbert space theory, yet here the zero-dimensional mathematical theorem takes a step back as a philosophy and asks how all of physics theory has been designed in the first place while then proposing an innovative approach in harnessing today's new data availability.

In all, the paper here has described the utility of both the real and unreal aspects of our perception ability of the dimensions of time and space and proposed a solution to the real *time-now* problem of time equating with space by employing the unreal dimensions of *time-before* and *time-after*. Via that unreal route around and inclusive of *time-now* has been derived two mathematical equations, primarily one for time and one for space as the Fibonacci equation and Euler's equation respectively. There the idea of light (EM) as the equation for time and darkness (EM_X^{DIR}) as the equation for space becomes apparent as a fundamental backdrop to our being aware of not just the *time-now* time-domain, yet the time-domains off *time-before*, *time-now*, and *time-after*. By such, the resultant balance of those equations calculates the prime numbers on a $0 \rightarrow \infty$ timespace grid.

The interesting thing there is that there was no intention to prove such a light-darkness feature, or even discover it, given that light-darkness, even as a balance, was not a feature of the basic initial philosophical proposal, nor were the Fibonacci and Euler equations, only how it was proposed that we perceive time and space on a zero-dimensional level.

8. Conclusion

Via the lens of this new zero-dimensional philosophical approach there are found to be four key descriptions Albert Einstein's work for special and general relativity lacks with his philosophical approach to the dimensions of time and space:

(lxxii) The <u>*why*</u> of time, space, and mass, namely:

a. The *drive* for the arrow of time.
b. The pinpoint idea of 0d space (a point in space) in the context of time's arrow.
c. Why mass attracts mass, especially in the context of its required *metric expansion of space*.

The common feature to the field effects of EM and gravity would logically be the dimensions of time and space. There, zero-dimensional logic demonstrates a driving mathematical equation for time

and space that is forever incomplete, as what the golden ratio (Fibonacci) equation prescribes with Euler's equation, echoing its vast utility in being applied to experimental data and future research.

A stand-out feature therefore of the two key derived equations for time and space of $t_B + 1 = t_A$ and $e^{i\pi}_{t_B} + 1_{t_N} = 0_{t_A}$ respectively and their associated *time=space* equivalence principle is that according to our fundamental mathematical ability of being aware of the dimensions of time and space is derived to be a fundamental light and darkness code, of EM and EM^{DIR}_X respectively, embedded in all we perceive. This is an interesting result, especially with its association to the mathematical theorem deriving and mapping the prime numbers using Euler's zeta function, by which process solutions are proposed for the Goldbach Conjecture, Riemann hypothesis, and Fermat's last theorem. A subsequent paper shall therefore quantify this mathematical theorem as a *number theory*.

Conflicts of Interest

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

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