

Golden Ratio Photonic Crystal Dynamics

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Abstract: In this development upon three previous papers [1][2][3], we shall explain how photonic crystal constructs emerge from the elementary particle level in being associated to electron shells and how they then fractally develop to a macro-world scale per a golden ratio sequence of atomic association. We will couple this with chemical-bond modelling between atoms, while then moving on to an explanation for the Avogadro number. The emphasis of this paper is to highlight the continued utility of the golden ratio modelling for time as a fixed standard for time, the great implication being the need to understand “spatial contraction” (not “time-dilation”) to satisfy ideas of relativity forwarded by Einstein a century ago. We shall highlight how this is possible by examining the *phi-quantum wave-function* scale as a new wave-function template for electromagnetism, as initially developed in paper-2, Golden Ratio Axioms for Time and Space [2], now carried and further developed here to explain spatial contraction and associated elementary particle dynamics (including particle spin and anti-matter/particles dynamics). Considering this phi-quantum wave-function scale, we will then finally uncover the problematic process of the Cartesian coordinate system of mathematical execution for space.

Keywords: photonic crystal; elementary particle; golden ratio; fractal; Fibonacci; Avogadro number; wave-function; electromagnetism; anti-matter; Cartesian; relativity; anti-particle; Chirality; Brownian motion; particle spin; black hole; Topology; manifolds; Geometric topology; strong nuclear force; weak nuclear force; neutrino; platonic solid; blue-shift; red-shift; chaos theory; logistic map equation; gravielectric field

1. Introduction

We're at the point in this series of papers [1][2][3] where we can give a detailed enough analysis of Einstein's proposal for relativity [4] theory citing the malleability and primary function of space and not time; here we are not challenging the idea of relativity, how time can appear to stretch/slow, yet we are making the statement in using the golden ratio for time that time is not malleable beyond that algorithm of determination, and that it is in fact space that is malleable care of our new wave-function for space, the phi-quantum scale; the wave-function is addressed in the need for the initial condition of the axiom definition of phi time to find π in space. This poses problems of course to the use of a fixed Cartesian manner of spatial appreciation [5]. Harder still is the notion of how it could be possible to insert an arbitrary equation within a new axiomatic determination for time and space

without recognising any new underlying feature of time and space congress? So, the task has been to derive “all” known equations relevant to physical matter, and as is here in this fourth paper.

The first chapter will discuss exactly how different the theory presented in this series of papers is to Einstein’s proposal of relativity and by what manner of change in algorithm is being exercised; we shall explain exactly how the dialogue presented here is different as to the employment of a different set of mathematical tools and algorithms, not fixed spatial grids that transform to one another that describe wave-functions [6], yet a fixed time-algorithm that employs topographical 0-scalar space that is able to contract/bend according to relativistic demands on the phi-quantum wave-function scale. The dialogue here nonetheless although different to contemporary physics owing to its development in stride with Einstein’s ideas, reaches “more” accurate results while being able to link all the general equations of force, motion, energy, and mass from the one axiomatic base in “not” considering time to be the 4th dimensional entity of space-time that gives space-time its malleability.

The big question is though from this change, how are all the other features, the granularity of the elementary particles, being addressed? Have we addressed those issues in this series of papers thus far? There “are” features we have yet to discuss that research in contemporary physics has addressed albeit per a descript manner that upholds Einstein’s explanation for relativity and associated employment of mathematics. For instance, the spin of particles, the force behind Brownian motion, and a few other elementary particle exotic features such as the neutrino and anti-matter; we shall explain particle spin by addressing how a gravity field is effected by the folding /coupling proposal presented in the first paper [1]:

- How this spin relates with electromagnetism/gravity.
- How spin relates with the proposed electron shell photonic crystal.
- Why there are 15 or so spin particles (not including photon or electron) and their associated anti-particle counterparts.

Then we shall explain “Interatomic interactions” involving

- Chirality.
- Brownian motion.
- Atomic fractal development.
- Avogadro’s number.

Not just particle spin, yet also the subatomic realm of neutrino’s, quarks, and so on, needs addressing. All these features shall be explained. Most fundamentally, the actual propulsion mechanism of elementary particle spin and Brownian motion shall be explained. First though we shall undertake an analysis of the two types of relativity being proposed, Einstein’s fixed spatial relativity, and this one as a fixed temporal and warped/compressed space relativity. Then we shall move to a more thorough explanation of gravity on the atomic level discussing its emergent features from the atom.

2.1 A Review of Relativity

Einstein employed the idea of “time” to measure references in space, time that could though be fluid and recalibrated with a fixed spatial reference given the different motions between different spatial references. Space was the fixed entity in his appraisal of relativity. Consider figure 1:

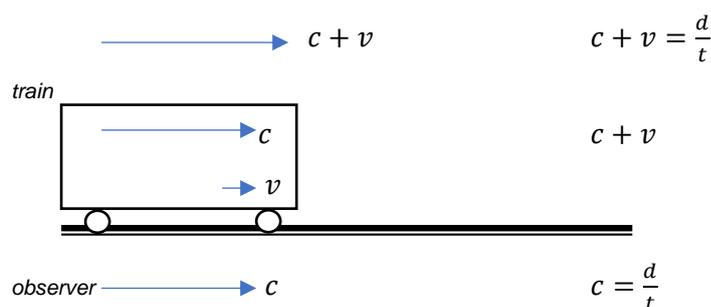


Figure 1; here Einstein reasons the idea of light on a train and how time is elongated to preserve the constancy of the speed of light from any frame of reference, and here that of the observer. This is explained as "time-dilation"; the resultant "c" care of "time" must be slower on the train with the effect of light relative to the observer by virtue of making "t" longer.

Einstein's work depended on a few key findings, the main one being the bending of the light of a star hidden behind the sun to be viewed by the Earth during an eclipse [7]. Yet does gravity bend light or is there a feature to a massive body that provides a type of repulsive effect to the path light; could there be a self-repelling effect such that light would bend around massive bodies that his theory can account for? The self-repelling effect of light is consistent with his new theory, as shall be explained. Einstein also proposed that time would slow as one's own velocity sped up. Atomic clocks in spacecraft show this to be the case [8]. Yet the dilation (slowing) of time in the context of high speed space travel using atomic clocks that show time to be measured more slowly should be examined more closely for the processes going on there; per the theory presented here, ultimately "atomic" clocks measure differently at different speeds because of the change in *spatial* mechanics of recording time, "time" which remains constant (as a golden ratio). Although time appears to slow at very high speeds over time, yet what is happening is the contraction of space. Contraction of space per the theory presented here means less radioactive decay (as is evident in the ultimate case of a black hole), and thus a slowing of atomic clocks; think of a black hole [9] with light trying to escape the surface of that massive structure, it's like travelling at the speed of light but not being able to breach it, time seems slowed, yet everything at the speed of light becomes so weighty, as with a black-hole. Simply, time as light doesn't slow but rather folds back onto itself as mass in a process of contraction. Furthermore, the fact that gravitational waves [10] can be emitted by black hole interactions suggests that time is not distorted, but rather space. Yet the most complicated feature of physics that has resulted from Einstein's work was the need to use spatial grids in mathematical transformations [11] to measure ideas of spatial symmetry between particles in the context of misread relativistic effects which look for fluctuations in time and not fluctuations in space (spatial compression).

In this series of papers [1][2][3], including this paper, we are doing something quite different. We are considering time to be fixed with the golden ratio (albeit in search of perfecting the trace of a circle), while space is the malleable/warp-capable feature; "space" is the feature that would need to undergo a type of "contraction" as a process of it being manifest, as on the level of the atom, and even more precisely the level of the elementary particles. To achieve this though we need to construct a mechanism for the contraction of space as much as Einstein developed a mechanism for the expansion of time. What is used here is the constancy of Golden Ratio temporal dimensions warping space. It means that all the mathematics employed after Einstein have been replaced with a new scaling system that represents the golden ratio for time and factors in spatial compression as a relativistic effect between moving particles/bodies. Einstein used the idea of space-time as 4d to tack on a variable time dimension to gauge space for relativistic effects in space with moving bodies and the constancy of the speed

of light. In this series of papers, we have so far explained time as the golden ratio in terms of an algorithm that defines the arrow for time, and how it imprints on space as a three-dimensional bi-directional entity. Yet let's be more precise with this new scaling system given that it is the "new" wave-function algorithm for electromagnetism and as it would seem "gravity".

2.2 The "Phi Quantum Wave-Function" scale

We need to become clear on the new phi-quantum wave-function scaling system, as this is the new wave-function descriptor for electromagnetism and gravity. Here we are replacing all the mathematical matrices and spatial grid-transformations and associated wave-function equations. We are not abiding by the Cartesian fixed approach, clearly, although we are using a 3-d spatial grid that accounts for a quantum-scale where the wave-function "seeks" to trave a value of π for each quantum step. Let's though be mindful of using the relevant terms as they exist with our spatial construction process:

- Topology [12] as a discipline of mathematics concerns the properties of space preserved under continuous deformations such as stretching, crumpling, and bending, not tearing or gluing.
- Topology's origins can be traced to early twentieth century, yet some ideas can be traced back several centuries. For instance, Seven Bridges of Königsberg by Leonard Euler [13] could be regarded as one of the first demonstrations of topological thought; Euler had realized the importance of the *edges* of a polyhedron—which led to his polyhedron formula, $V - E + F = 2$ (where V , E and F respectively indicate the number of vertices, edges, and faces of the polyhedron).
- It wasn't until the 19th century until the term *topology* was introduced by Johann Benedict Listing and it wasn't until the first decades of the 20th century that the idea of a topological space was developed. Nonetheless, by the middle of the 20th century topology had become a major branch of mathematics.
- Topology has many subfields, but here in this paper we will use Geometric topology which primarily studies manifolds and their embedding's (placements) in other manifolds. More specifically, we will investigate low-dimensional topology, (which studies manifolds of four or fewer dimensions).
 - o What we're considering here are manifolds of 1-2-3 dimensions, topological space that resembles Euclidean space near each point.
 - o we are not considering topological quantum field theory (or topological field theory or TQFT), a quantum field theory that computes topological invariants, as this is relevant to fixed spatial matrices and time dilation.

It is considered that the following golden ratio time 3-d 0-scalar space figures and equations are sufficient to describe the processes forwarded here by this theory: ([2]; p4-11, fig. 1-13, eq. 1-9). In general review of those pages and associated figures, one clear feature we have done other than compressing space as opposed to dilating time is introduce a scaling system for the atom based on the golden ratio algorithm for time in aiming to trace π . This phi-quantum wave-function scale is the fundamental process of alignment for the subatomic structure, and above all how the extra atomic structure emerges ([2]; p16, fig. 16). Once again, the diagrams contained therein highlight just one axis of determination, in this case the "x" axis; this was considered logical as defined as a t_N event

([1]; p4, eq. 4), $t_N = 1$. The other two axes will be demonstrated to represent the spin of the elementary particles, or rather how the electric and magnetic components rotate “around” the x-axis. Before we discuss the nature of particle spin though, the fundamental feature we need to acknowledge is the electromagnetic coupling context $32c$ for emergent gravity of the 22-quantum length wave-function ([2]: p16, eq. 16) and how this is contracted space ([2]; p12, eq. 9) (a relativistic requirement here, and not time-dilation). The following is the wave structure that results, a standing wave:

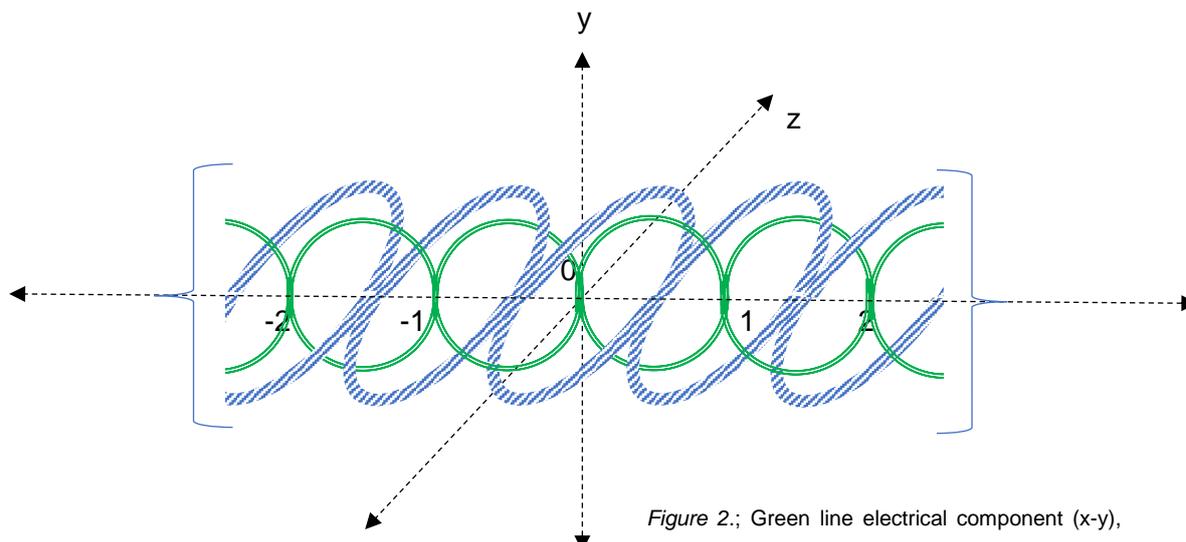


Figure 2.; Green line electrical component (x-y), blue line magnetic component (x-z), both waves out of phase with each other and perpendicular to each other, folded-over/coupled. The values on the x-axis represent $\frac{1}{2}$ quantum length increments.

Here with this “coupling (folding-over), we have a new type of wave structure for both the electrical and magnetic wave components. For the electrical component, we have perfect circle traces at the ends of each 22-quantum length. The thinking here also is that given we have a perfect π trace, we are creating a precedent for the a “reaching” of π in a complete 3-d 0-scalar space context (time “circle”), and we have this at two points on each circle on the x-axis, each point representing a key “particle” manifestation:

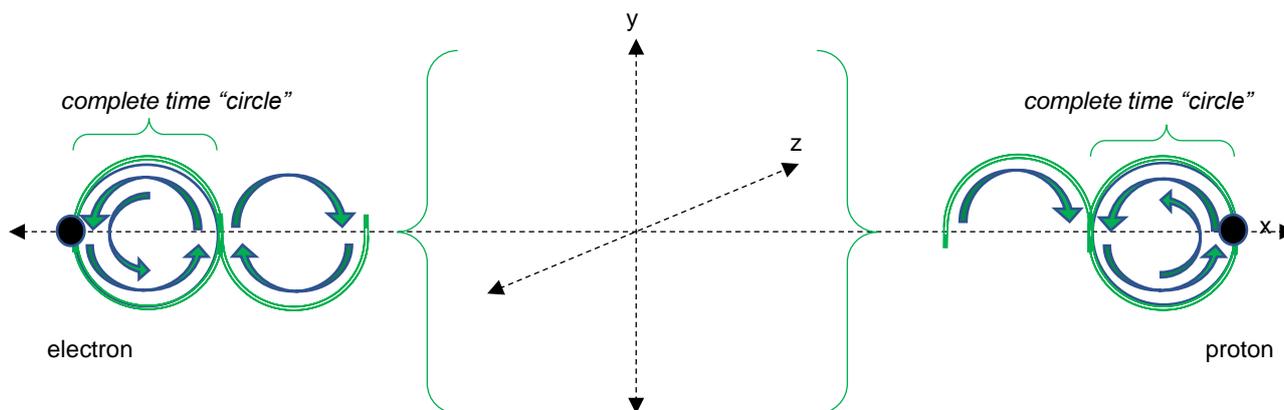


Figure 3; The thinking here with these points is that they are associated to a complete time-circle, a 3-d circular time-entity that would emerge as “mass”: this would happen for the proton and electron; only the electrical component of the wave is shown here (proton (p) and electron (e)).

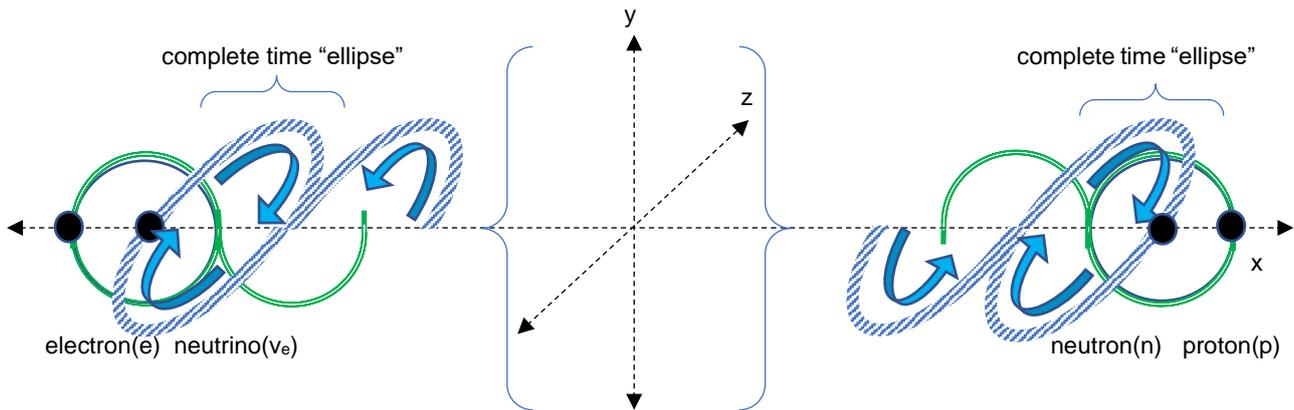


Figure 4; the thinking here with these points as the “magnetic” component, is that they are associated to a complete time “ellipse”, a 3-d ellipsoid time-entity that would emerge as “mass”; this would happen for the neutron(n) and neutrino(ν_e). Note, the electrical component of the wave is also shown here in green.

Regarding how the proton and neutron spatially relate together, it is as though they are on top of each other owing to the uncertainty between the observed location of a particle and its actual calculated position ([2]; p17). Their alignment here suggests a $\frac{1}{4}$ quantum disparity, which essentially was the initial factor out. This is another example how a strict use of a Cartesian graph and equation could not allow this determination.

The equations pointing to the manifold topology of these points at either end of the 22-quantum length phi-quantum wave-function scale now seems to unfold with greater clarity. On the proton/neutron scale (M_p) we must consider the emergent feature of mass and thus a squared value of “2 results per 3 dimensions” as a value of the emergent gravity context (universal) as M_C :

$$M_C = \left(\frac{2}{3}\right)^2 \cdot M_p \quad (1)$$

On the electron/neutrino end of the scale (e_c) we would have an inverse negative value (golden ratio to the proton/neutron) yet not squared (as this is not an emergent gravity feature), as “3 dimensions per 2 results” yet the two results “factored as a quantum wavelength (λ)” (given the electron is the effector of quantum determination) as a value of the electrodynamic (universal) context as Q_c :

$$Q_c = \frac{3}{2} \cdot \frac{1}{\lambda} \cdot e_c \quad (2)$$

These equations are relevant to the derived universal contexts for mass and charge respectively, which when each is multiplied by c^2 we arrive at G and k_e respectively. What of the dynamic between the particles on this new folded level with its $32c$ emergent gravity manifold? Here we must be arbitrary; the idea forwarded is the electron-neutrino being “self-repulsive” on this emergent mass/gravity level, and the proton-neutron being “self-attractive”. Thus, the negative end would almost seem to assume the identity of “anti-matter”, the positive “matter” (figure 5):

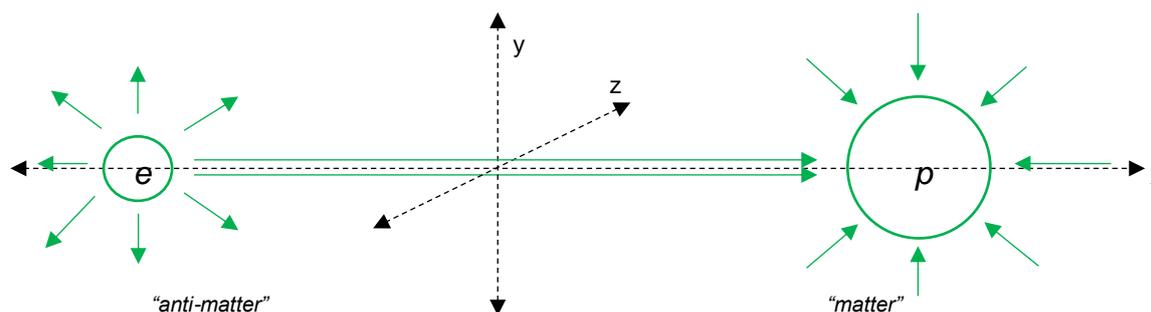


Figure 5; note the following diagram relevant to the flow of mass away from the negative (dissociative) and towards the positive (associative). This is an arbitrary determination and could be either end of the x axis, the point of arbitration here is that the p-n area would be self-attractive, and the e-v region self-dissociative

This then grants each of the 15 “matter” subatomic entities on the proton/neutron axis an association with the 15 “antimatter” subatomic entities on the electron/neutrino axis. It’s as though the 15 “antimatter” elementary particles would be the “antimatter” versions of the proton/neutron axis. What we are considering here is the effect of the proton/neutron being “self-associative” (and this would represent the strong nuclear force [14]), and the electron/neutrino being “self-dissociative” (and this would represent the weak nuclear force [15]). Note that the strong nuclear force is indicative of the electromagnetic coupling strength of the atom, 137 times as strong as electromagnetism. Gravity though as an emergent feature would represent 3 key features; the protonic, the electric, and the magnetic, and not just a protonic feature introduced here.

2.3 Protonic Gravity (EG1)

As just introduced, this is the folded electrical component of the standing wave along the x-axis (and thus apparently invisible as a folded over electrical wave). This is the process of determining the force from one end of the phi-quantum wave-function scale (electron) to the other (proton) as the electrical component would have the flow of charge as the direction an electron would move, and that is towards the proton. Coupled with this emergence is the contraction of space which accounts for the relativistic effects between the “p” and the “e”, not to mention their inherent electrostatic attraction. The feature here is the attraction of the electron to the proton. Essentially, we are confirming that the contraction prescribed as in previous papers ([2]; p12, eq.9) represents an emergent feature that is coupled to the idea of the mass-based endpoint time-circles/ellipses.

2.4 Magnetic Particle Spin (EG2)

One key under looked feature to our phi-quantum wave-function is that thus far we have considered the wave-function to develop along the x-axis, the electric component rising and falling in amplitude along the y-axis, and the magnetic component rising and falling along the z-axis. In fact, both the electrical and magnetic

components would rise and fall in amplitude in both the y-axis and z-axis, and they would achieve this by their respective rotation “around” the x-axis (figure 6):

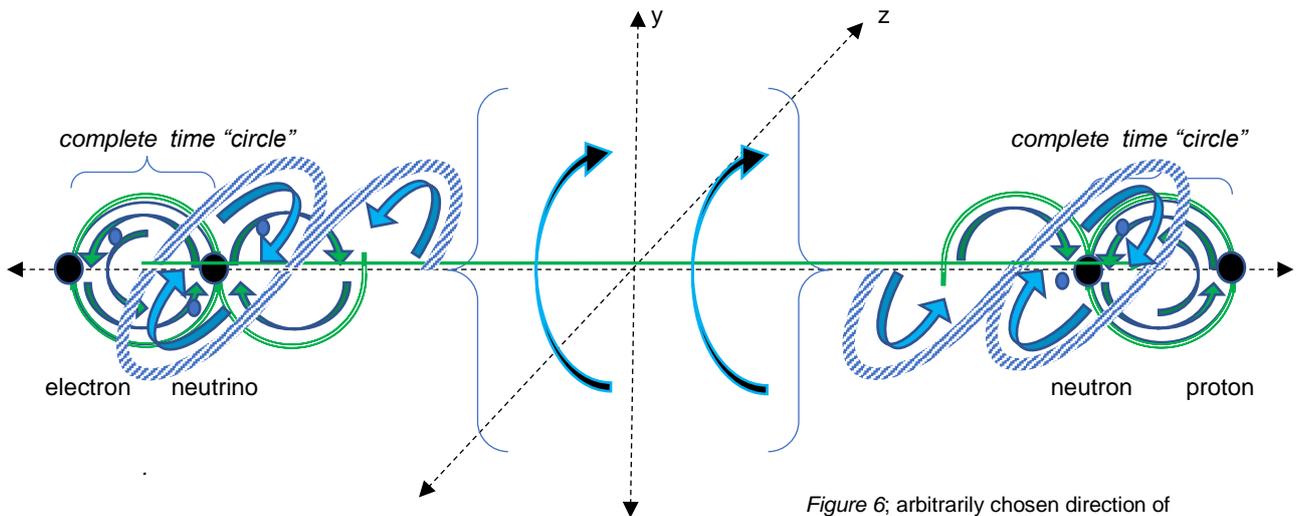


Figure 6; arbitrarily chosen direction of emergent gravity (EG2) around the x-axis.

This rotation “around” the x-axis is a feature of the idea of creating a time-front mimicking the complex (*i*) time wave-function t_B that represents a concentric front around the direction of resultant time t_A . And this would represent the “spin” component of the elementary particles. More to this though, as there exists an emergent gravity field from the negative to the positive plate, this concentric field would emerge in line with the resultant “magnetic” component of the phi-quantum wave-function, implying the nature of the magnetic field that results “around the electric field (figure 7):

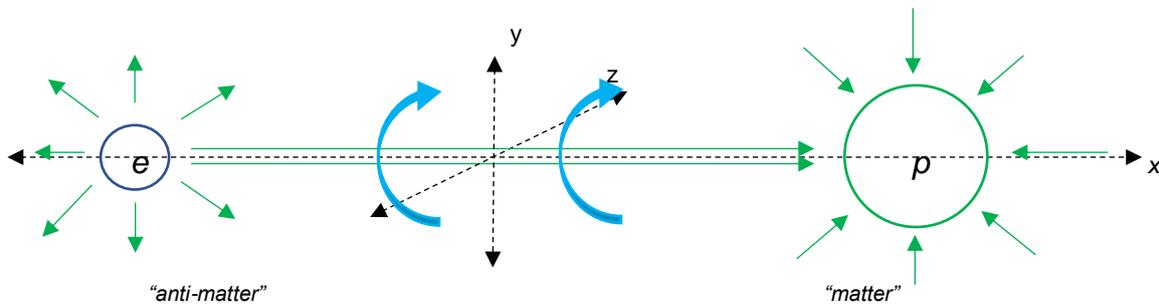


Figure 7; note the proposed (arbitrarily defined) direction of the magnetic component of force (blue) compared to the electrical (green). The actual direction of the magnetic component would be determined by the manner of emergence of the gravitational spin from the subatomic to the macro-scale. Shown is the accepted direction of magnetic field strength.

As the particles are inherently related to the phi-quantum wave-function, and this wave-function is spinning around the x-axis, then we have a particle spin likewise around this x-axis (figure 8):

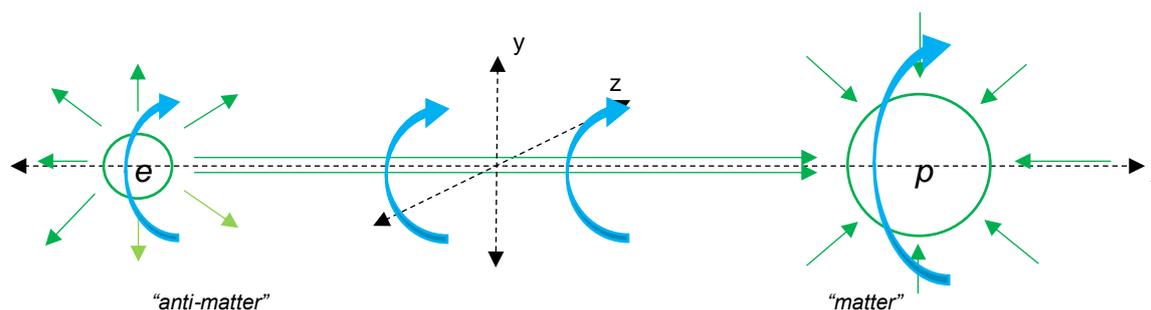


Figure 8; note the rotation of the particles as a magnetic component spin.

Although we commonly associate gravity as the attraction to a more physical mass, or more appropriately as the force between two masses, and how we explained that in the previous chapter while focussing on the positive aspect of electricity, the “self-associative” nature, we must also note that gravity is emergent from the idea of magnetism. The proposal here is that this standing wave unit of magnetism ($\frac{1}{2}$ a quantum in relative electrical/quantum length), would cause a spin of the phi-quantum wave-function and thus particle around the x-axis by the magnetic $\frac{1}{2}$ q-unit line of force that as a coupled entity emerges as this gravitational spin; the spins in being magnetic “stepped” (use new definition of the scale), represent $\frac{1}{2}$ a quantum,

Per contemporary physics, spin was originally conceived as the rotation of a particles around an axis. Note that spin here regarding a quantum is a $\frac{1}{2}$ quantum value, as contemporary physics accepts. Per equation 16 paper 2 ([2]; p16, eq. 16), regarding a coupled electromagnetic field effect, as the value for emergent gravity, we have $32c$ as the determination for k_e as k_e (as the “emergent” constant). As the universal charge coupling constant, this would suggest that each of the particles would represent an $8c$ value which would emerge as gravitational “spin”. Given the condition of the speed of light on this scalar level, although the direction of spin can be changed (depending on type of polarity in play), an elementary particle cannot be made to spin faster or slower. And of course, as highlighted here, the spin of a charged particle would be associated with a magnetic dipole moment [16] with a g -factor [17] differing from 1. This could only occur classically if the internal charge of the particle were distributed differently from its mass or as presented here by the process we are suggesting with the phi-quantum wave-function scale.

The conventional definition of the spin quantum number [18], s , is $s = n/2$, where n can be any non-negative integer. Hence the allowed values of s are $0, \frac{1}{2}, 1, \frac{3}{2}, 2$, etc. As we know, the value of s for an elementary particle depends only on the type of particle, and cannot be altered in any known way. The spin angular momentum, S , of any physical system is quantized, as is the basis here for the $\frac{1}{2}$ determination of spin. Per the theory here, the highest spin value would be “8” given we have four basic particles (proton, electron, neutron, neutrino) that would equally share in the $32c$ quantum well of emergent gravity dynamics, and thus $8c$ for each particle as we can only logically consider.

2.5 Electric/Photonic Crystal Shield (EG3)

The final idea of the emergence of gravity takes root from the “self-dissociative” effect of the electron and neutrino on the folded electromagnetic wave scale (see fig. 5). We suggested that the electron could take on 15 locations in an electron cloud format ([2]; p15, fig.15). This would still be true, yet now we are saying that because the electron is “self- dissociative” it would arrange in this cloud according to points that would transcribe most basically a platonic solid [19] (fig. 9), as the platonic solid represents geometrical shapes that would fit in a sphere where the points are a maximum distance from each other as a process of the points seeking maximum equal distance from each other, of course depending on the number of electron orientations we are considering.

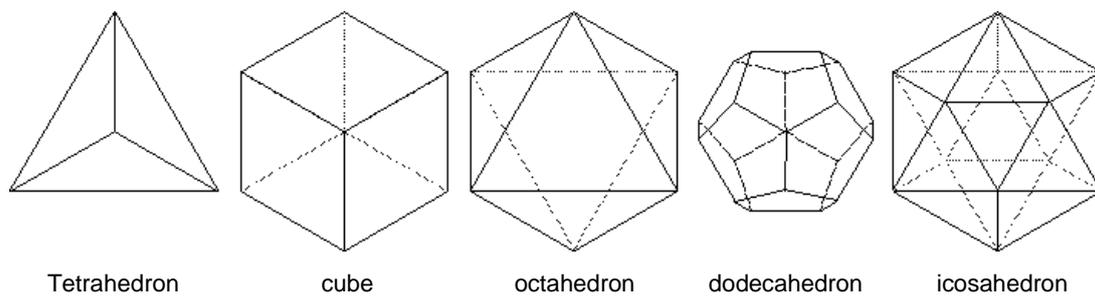


Figure 9: *The 5 platonic solids whose points/vertices represent the maximum distance the points can be locate from each other in the context of a point/crystal-sphere association of alignment.*

In this way, the gravity emerging here care of the electron being “self-dissociative” could be considered as “anti-matter” [20]. Yet this is a “weak” emergent force owing to the dominant force itself of electromagnetism and the force of electric charge. What is the force of the anti-matter spreading the points despite its relative weakness? Is it gravitational or electric? It would be anti-electric, as per the electrical equations, and thus what the name of it prescribes, a “weak” force. Nonetheless, this field effect in between the anti-matter points care of the standing wave electrons would represent a 2-d manifold. This surface area would represent the strongest region of disassociation between the electron anti-matter particles, logically, and thus a type of energy field effect representative of the anti-matter effect, a boundary if you will, to matter. The centre of these manifolds is where matter would likely accumulate and thus these points would form lines with gravitational associative properties:

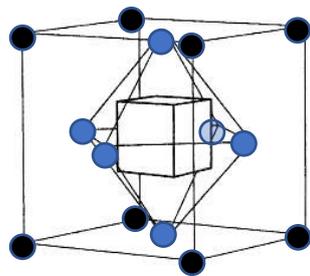


Figure 10; *black dots on the photonic crystal as the “anti-matter” particle zones that would be inhabited by electrons in the electron shell, and the blue points as the “virtual-matter” particle zones. Note the interchange of shape of platonic solid, and this “virtual-matter” photonic crystal would be merely a bridge of association by definition, as the actual “matter” points would exist centrally as the proton/neutron.*

So, on the outer photonic crystal we would have the anti-matter effect, and in the centre of each surface of the manifold flat plane joining these points as the crystal surface would be points representing the mass obeying gravitational attractive properties which themselves therefore would emerge as true “crystal “solids” of mass. It’s interesting to note that when matter (protons, neutrons) are not held together at the right distance, they have an “anti” effect on each other. This can be explained in understanding the photonic crystal. Another thing to consider is that the type of crystal employed by the electrons would be determined by the number of electrons in play in each shell and how those electrons would be involved with electrons from other atoms.

2.6 Photonic Crystal Dynamics

What therefore is the idea of mass? A “complete time “pi-singularity”” (fig. 3-4); emergence of mass would be associated to a contraction of distance in the phi-quantum wave-function. When all these features emerge together, they would do so as a singular emergent entity we would know as “mass”. Associated to mass would be three types of emergent features of gravity; ultimately gravity would have a type of monopolar positive-type “self-associative” feature, a negative-type “self-dissociative” feature, and a magnetic-type “spin” feature. Currently we only give gravity credit for its nucleus features of “association”. The “dissociative” feature would have something to do with a type of shield effect by the effect of highly charged negative particles, and the magnetic spin effect a spin around the x-axis. Above all, the photonic crystals that represent the shield effect would, depending on the electron shell count, be homeomorphic as a continuous function between these topographical platonic solid crystals. Breaking this complete time “pi-singularity” would require a breaking up of the atom, a deconstruction of the electromagnetic coupling factor, a feature of atomic congress not to be under-estimated [21] (particle collisions).

2.6.1 *Photonic Crystal Interactions*

Note that the crystal topology would be photonic for the electron shells, clearly, and the electrons and their relative position and crystal-point topology would determine how atoms link together to form compounds, as a “certain” crystal-based (platonic solid, and other combinations thereof) shape, given the “mass” feature of the atom is held in the electron anti-matter shield. Ultimately with the locked nature of compounds by these photonic crystals, there would need to be chirality [22], two different shapes, for each compound, more often than not, to satisfy the golden ratio effect of time, namely one value/shape (φ) and its negative inverse value/shape ($-\frac{1}{\varphi}$). Note that as this emergent quality, φ and $-\frac{1}{\varphi}$ would factor together to produce -1. This though then gives rise to the logistic map equation for chaos theory ([3]; p4, eq.3).

2.6.3 Phi-Quantum Wave-Function Error Gradient

One overlooked feature is the condition of time to define/trace π . The error on the phi-quantum wave-function level is of the order of the actual value of π (3.1415926) subtracted from the true value of π (3.1416253) per the value of π as per equation:

$$\frac{3.1416253 - 3.1415926}{3.1415926} = 1.04087 \cdot 10^{-5} \quad (3)$$

That is the value per unit increment of π on the phi-quantum wave-function level. This value of π used on the phi-quantum wave-function level was an adjustment from a "10" factorial, which with spatial compression (relativistic) effects incorporated becomes the value of 9.9 (19.8 for a double length, both directions of the axis. Yet the calculation of the error is relevant to 10 (9.9) units (by-definition). On an extra atomic scale though this value is squared, 9.9^2 . So, multiplying the error per π value by $(9.9)^2$ as per equation gives us:

$$1.04087 \cdot 10^{-5} \times (9.9)^2 = 1.0202 \cdot 10^{-3} \text{ (length}^3\text{)} \quad (4)$$

If we now calculated a value for this error regarding the most basic weight of a particle, let's say the neutron in aiming to a concept of pure mass without electromagnetic implications, the following equation would apply:

$$\frac{\pi \text{ error gradient}}{\text{mass of neutron}} = \frac{1.0202 \cdot 10^{-3}}{1.675 \cdot 10^{-27}} = 6.0907 \cdot 10^{23} \quad (5)$$

This value represents that for every gram(g) regarding the neutron, for 1g of a neutron, there exists an error gradient value of $6.0907 \cdot 10^{23}$. We could say the following:

$$\frac{6.0907 \cdot 10^{23} \cdot \text{mass of neutron}}{\pi \text{ error gradient}} = 1 \text{ unit of mass} \quad (6)$$

In other words, $6.0907 \cdot 10^{23}$ neutrons with a factored phi-quantum wave-function error gradient would result in the value of 1g. This number is remarkably close to Avogadro's number [26] which holds a value of $6.022 \cdot 10^{23}$. The difference between these values is only ~1% suggesting extra-atomically there could be a compression effect we haven't factored in, resulting in a slightly lower value than what we've calculated, such as a macro-scale resting level of compression. Thus, the following equation involving an overall system compression factor k_s , a value of 1.0114, and Avogadro's number N_A as follows:

$$\frac{6.022 \cdot 10^{23} \cdot \text{mass of neutron} \cdot k_s}{\pi \text{ error gradient}} = 1 \text{ unit of mass} \quad (7)$$

Quite possibly the mechanics of Avogadro's number is what we're presenting here. Note that phi-quantum wave-function (π) error gradient is a measure of length³ (and thus volume). Thus, our value basically states that there is a standard for the organisation of mass such that a uniform increase in volume (length³) would exist for the number of associated atoms for any given value of background pressure (heat, pressure, etc.). And so quite clearly with this new explanation for relativity (spatial compression), the laws of chemistry would be upheld, for no atomic

congress of equations and constants for mass and energy have been disrupted, only a new explanation for known phenomena, the key feature being spatial compression and not time-dilation.

3 Conclusion

It is difficult to conclude a paper that opens to so many possibilities of actual new a-priori research and development. Perhaps a summary of this paper will suffice. Initially we highlighted the modus-operandi of this paper and it's three preceding papers, namely a new explanation for the phenomena of relativity; here we are taking the view of contracting space and not dilating time. This though has an impact on how the idea of a wave-function is developed for light and all its associated intricacies of relativistic and quantum strangeness. We are not considering space fixed to a Cartesian grid though, yet malleable, as we are considering the idea of time as fixed to the golden ratio as per a specific equation for time. It was then our task to derive "all" the equations for energy and mass, all the forces, constants, and so on, everything; everything from this new axiomatic definition for time. We have explained all the features of space and time that have been relevant to the development of contemporary physics, and aligned those observed phenomena with the theory forwarded here. Lastly, we proposed an experiment to confirm this theory, this new interpretation of relativity.

A new theory though with such claims would not be complete without a proper criticism of contemporary directions in physics theory. It is very difficult to criticise contemporary physics though. The theory here has shown the thorough work done by physicists the world and through time over, how very accurate the calculations are "despite" using a different if not more complicated yet less accurate method of relativity. The method of calculation currently used for relativity (fixed space owing to the "Cartesian" adoption of mathematics, forcing the malleability of time) though makes things very difficult if not inaccurate when it comes to measuring and analysing and theorising the nature of reality if the underlying principal of time and space seeks a perfection that the Cartesian coordinate system of determination assumes in its execution of scientific congress. Here in this theory we are not using the Cartesian method strictly to the letter, as owing to the spatial compression effects the Cartesian coordinate system needs some play, especially in the context of time as light "aiming" to reach the value of π as a quantum step. So, when we as contemporary physicists review this paper, we would ask where the wave-function equations are, where the Cartesian coordinate placement is and those values. Simply, such can't be used here, such is not needed on this phi-quantum wave-function scale; the Cartesian coordinate system "freezes" the idea of space in our minds, it fixes it, pegs it to exact values. Yet in the context of a time and space system that is "seeking" exactness with π , but is unable to find it, which is why it develops so vastly from the level of the atom, to infinity it would seem, the use of a fixed determination of space as per the Cartesian grid "will" result in many problems of formulation. It's almost like there is a splinter in the eye of our perception, yet we are not acknowledging that splinter in our using of fixed if not perfect spatial grids with the assumption thereof by use of a just as perfect process of mathematics. Space quite simply is elastic, time is not.

Conflicts of Interest

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

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