Harmony Theory: New Theory of Space-Time and DNA

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Citation

Abstract

The sine circle map $\theta n+1 = \theta n + \Omega - (k/2\pi)\sin(2\pi\theta n)$ is

investigated from a relativistic perspective. The Ω

(frequency ratio) or average shift of the angle theta or winding number is conjectured to be a lorentz contraction

(alpha) or $\alpha = \Omega$. This has ramifications for space-time

theory and because of its relation to chaos theory also has ramifications to DNA. The winding number in the sine circle map is investigated experimentally by the Josephson junction in a microwave field. DNA is considered to be a strange attractor and its structure is related to this new theory of space-time. Space-time is an oscillator and so is matter, and thus space-time is the causation of life.

The motivation behind this paper is to see if space-time can be described in a new way as to account for the possibility of life. The concept of Alpha equal Omega brings Harmony to three major physical theories, relativity, quantum theory and chaos theory. The scientific belief that harmony can describe the universe and life in it! The belief that DNA mirrors something fundamental and basic about our universe and that fundamental thing is space-time! The new model of space-time allows for the possibility of time travel and mass-energy conversion. As well the idea that DNA is a strange attractor could lead to cures for cancer.

The sine circle map is considered to be one of the most important equations governing the dynamics of chaos. Its

equation $\theta n + 1 = \theta n + \Omega - (k/2\pi)sin(2\pi\theta n)$

Mod 1, represent motion on a unit torus (fig1) where the frequency ratio is the winding number or Omega value.

Figure 1

Figure 1: The winding number on the torus equals a lorentz contraction (from: Schuster Heinz Dr Deterministic Chaos. (Germany Physik –Verlag, 1984) p.119)
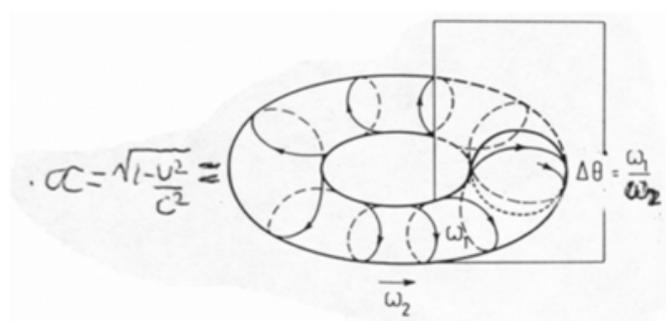

The unperturbed circle map is just $\theta n + 1 = \theta n + \Omega$

Mod 1 and its motion is periodic if the frequency ratio p/q is rational. The motion on the unit torus is quasiperiodic if p/q is irrational and the motion eventually covers the whole torus[3]. This sine circle map is studied comparing values of omega to the coupling parameter K, where the break up of periodic motion happens to chaotic motion where K is increasing to greater than 1 fig 2.

Figure 2

Figure 2: Due to the parameter K causes the formation of a strange attractor from the torus (from: Schuster Heinz Dr Deterministic Chaos. (Germany Physik –Verlag, 1984) p.116)
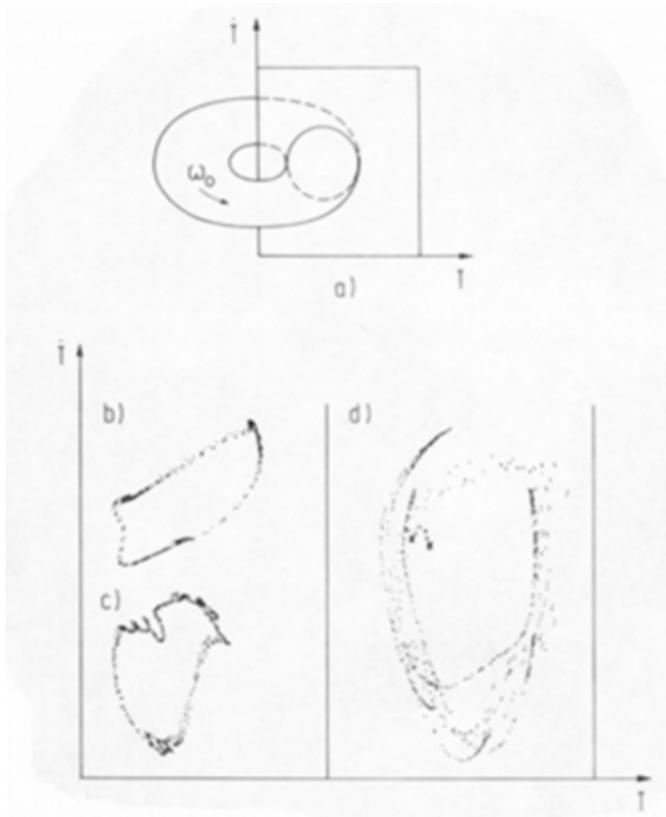
The Lorentz contraction $\sqrt{1-v^2/c^2}$ (v=velocity of object c=velocity of light) was first purposed by Lorentz through the ether as the result of a supposed effect of motion on the electromagnetic forces between the particles making up the body. Every body which has the velocity v with respect to the ether contracts in the direction of motion by the factor alpha = $\sqrt{1-v^2/c^2}$. Soon after Einstein came up the idea of relative simultaneity and ruled out the possibility of absolute simultaneity. This is where the idea of a Lorentz contraction was created to connect two systems of reference in space-time that are relatively simultaneous. The Lorentz contraction or transformation is called the factor of proportionality and connects two systems of reference moving with respect to each other. The concept of space-time was invented to explain this Lorentz transformation phenomenon and from the conception of a space-ct axis the transformation from one system of reference to another was born in space-time[1].

However there is another interpretation that deals with the idea of rotation. Since time is measured by rotation then all things in the universe depend on rotation. Time is measured by the rotation of the earth (day), and the linear interpretation of time is in intervals where by the completion of a rotation is of some time understood. If space-time is connected then space should also be governed by rotation. If two events in space-time are governed by the connection between two systems of reference having different space-ct axis then it is possible to describe two rotating systems of reference with respect to each other. The two rotating systems represent the two systems with space-ct axis. This is only true if the relationship between the systems of reference is relatively simultaneous. This is where the sine circle map comes into play. The omega value is a factor of proportionality between two simultaneously moving systems of reference. The two systems W1 and W2 represent the motion of the minor rotation over the major rotation w1/w2. If the two systems are moving with respect to each other simultaneously then the frequency ratio must be a lorentz contraction. The factor alpha which is the factor of proportionality between two systems of reference is the same as omega, which connects two rotating systems of reference on the torus or sine circle map.

Furthermore the lorentz contraction is for straight line motion and if the winding number on a torus is a straight line on curved space, then alpha or a lorentz contraction is equal to omega or

$$1) \; \alpha = (\sqrt{1-v^2/c^2}) = \Omega = w1/w2$$

Thus $\alpha = \Omega$ because the two motions are both straight lines. Omega is a straight line governed by the two rotating systems on the torus and the winding number is a geodesic that determines the periodicity and is the lorentz contraction straight line motion in regular Euclidean space. According to Max Born's book on Einstein's Theory of Relativity "...it follows that the geodetic (geodesic) lines must correspond exactly to those physical phenomena which are represented by straight lines- namely, rays of light and motions of inertia"[1]. In fact if alpha were not equal to omega this would contradict Einstein's General Theory of Relativity. Plus the torus can be generated from a square or flat Euclidean space by first folding the space into a cylinder and then gluing the two ends of the cylinder together. Thus the straight lines on the square Euclidean space form the winding number of the

map. Hence the motions are the same.

If this is true one should expect the value of omega for the sine circle map to be analogous to alpha. Alpha can be expressed as a frequency ratio and it can be expressed as a change in angle between two systems just like omega which is the change in the angle theta per iteration of the circle map. As well omega is bounded from zero to one just like the Lorentz contraction. Yet this winding number can also have negative frequency allowing for time dilations to the past. Alpha can be expressed in action angle variables as

$\omega n = \partial H / \partial J n$ the frequencies are the Hamiltonian

divided by the action J. So

2) $(\partial H / \partial J1)/(\partial H / \partial J2) = w1/w2 = \alpha = \Omega$

is the Harmonic Oscillator on the torus!

What $\alpha = \Omega$ means for space-time is that space-time is an oscillator!

This means the contraction itself is an oscillation and one may produce a lorentz contraction without incredible speeds of v just by the frequency ratio omega. If the object takes on the winding number and winds on the torus it should by this theory produce a lorentz contraction. If this is true then mass objects are space-time configurations and these configurations should be oscillators themselves. As shown

3) $E' / (\sqrt{1 - v^2/c^2}) = E'/\alpha = E/\Omega = E$

This equation states that the energy at rest is a fraction of the energy of motion by a factor of proportionality. As velocity increases the energy increases. If $\alpha = \Omega$ then the frequency ratio of the torus becomes smaller (w1/w2) then the energy should increase the same as for a lorentz contraction. Time dilation is another relationship

4) $T(\sqrt{1 - v^2/c^2}) = T(\alpha) = T(\Omega) = T'$

Or that moving clocks run slower than stationary clocks. It is also the case that if omega is not dependent on velocity but is equal to a Lorenz contraction then a negative frequency ratio is possible and time travel is possible.

So if alpha is equal to omega then these relationships should be proven true by an experiment. This experiment will be talked about later in results and discussion. For now let us consider the space-time double helical structure of DNA. The realm of chaos governs this new theory of DNA. It is through this chaos that the harmony can be seen. This theory of DNA states that DNA is the main oscillator for the cell. By this definition then, living structures can be regarded mathematically as disequilibrium/ equilibrium structures interacting with a chaotic universe to produce harmony as an oscillator. The question is what type of oscillation in physics are we talking about? If DNA is considered to be dependent on initial conditions when in motion for super coiling; then its motion can be considered to be stochastic and impossible to predict mathematically. This type of oscillator is known to be a strange attractor! This is an oscillator that is periodic (recurrent) but never repeats the same trajectory twice as shown in the figure of a Lorenz attractor fig (3).

Figure 3

Figure 3: The Harmony Structure in chaos, the strange attractor of Lorenz.
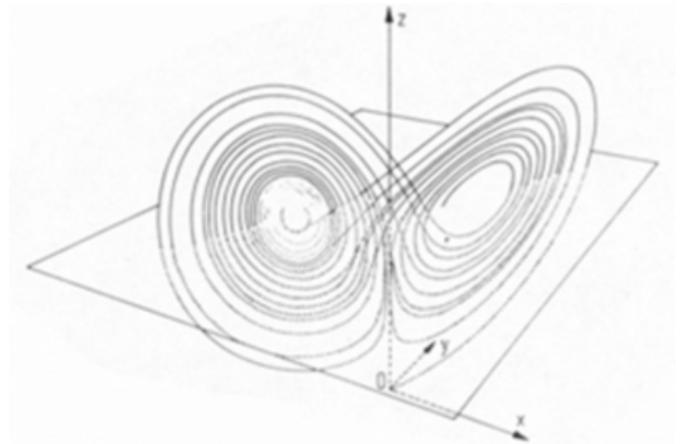
(from: Schuster Heinz Dr Deterministic Chaos. (Germany Physik –Verlag, 1984) p.92)

This is where chaos becomes harmonious; the fact that DNA is an oscillator that programs life then life is an expression of the non-linearity inherent in space-time governing the evolution of the organism. Thus life is an expression of the repeating modes of chaos to find equilibrium in chaotic flow. How does DNA relate to space-time?

Since DNA is a structure that is winding like the lorentz contraction of the torus then its governing rotation is a space-time structure that builds on the non-linearity of k in the coupling parameter for the sine circle map. Therefore it is not a surprise that life is an oscillator if space-time is an

oscillator. Further the Lorentz contraction or winding number can be equal to the golden mean governed by this equation[3],

5)

$$\alpha = \Omega = 1/L = L - 1/1 = ((\sqrt{5-1})/2) = 0.6180339$$

The helix DNA is a double helical structure that uses the golden mean to spiral for one period of its double helix (21 angstroms/34 angstroms approximates the golden mean), so DNA can be thought of as a something that evolves due to non-linearity acting on space-time. Since the golden mean is the structural organization of DNA; life uses the golden mean for its structure and this is because of the equation number 5 that space-time can induce a golden mean structural change to matter when there is strong coupling K>1.

EXPERIMENTAL DESIGN AND SETUP
THE JOSEPHSON EFFECT (PROOF OF ALPHA IS EQUAL TO OMEGA)

The Josephson ac effect is assumed to be a phase locking behavior of the damped periodically driven oscillations. Early experiments showed that when one increased the applied dc current, the current-voltage curve would develop a staircase structure with Shapiro steps[2]. The Josephson junction is two superconductors divided by a central strip were there is electron tunneling. A current generates energy across the junction when in conjunction with an applied microwave field. Fig 4 is the values.

Figure 4

Figure 4: Table of Values for Josephson junction in a microwave field.

system	periodically forced oscillator	Josephson junction
governing law	classical Newtonian mechanics	classical RCSJ effective circuit
ε	angle of oscillation	macroscopic quantum phase difference
ω_e	frequency of external force	frequency of microwave field
α	momentum of inertia	$\hbar C/2e$; C: capacitance
β	viscous damping	$\hbar/2eR$; R: resistance
$\gamma \sin \varepsilon$	restoring torque	Josephson current
A	applied constant torque	applied dc current
$B \cos \omega_e t$	applied time-varying torque	applied microwave field

(from: Wang T.C & Gou Y.S "A discussion on the Josephson Ac effect and the fractional energy quantization." Chinese Journal of Physics, 1996. pg 666)

By defining a Josphson frequency to be wj=dɛ/dt and the energy difference across the junction may be written as

6) E= hwj where h is Planks constant

When integral Shapiro steps occur wj=n we and the last equation turns out to be

7) E=n ×h we

which implies that the energy difference for the tunneling of Cooper pairs is quantized in units of h × we (the external microwave field), and the sub harmonic steps give

8) E=(n/m)h we

This behavior is compared to the steps found in a self-similar staircase where winding number is compared to the omega values and are found to be self-similar.

The winding number is the phase locking behavior in the circle map

9) W=lim (ɛn-ɛo)/n (n->inf)

The winding number physically measures the frequency ratio of the system and the external perturbation. Finally the energy across the junction is found to be

10) E=h×wj=h<dɛ/dt>=h×lim (2π(ɛn-ɛo)/nT)=W×h we (n->inf)

The quantization relations can thus be interpreted by the phase locking behavior in which the frequency ratio W=n/m and the integral quantization when m=1, so that W=n=wj/we. This suggests that the nonlinear dissipative phase locking model provides a macroscopic fractional energy quantization interpretation for the super conducting Josephson ac effect under an applied microwave periodic field. The winding number of the map interprets the fractionally quantized energy levels by the frequency ratio of two nonlinearly coupled oscillations[2].

ANALYSIS
RESULTS OF THE THE EXPERIMENT.

The first experiment proves that alpha is indeed equal to omega as the energy difference defined by the steady state Josephson frequency is

12) E=h×wj=W×h we

When W=ɛ when the K=o then we have Eɛ=E' or E'/ɛ=E where E' is the stationary energy of the quantum relationship but as we see this equation is the mass energy equation for Einstein (E'/ɛ=E). The omega values connect the frequency ratio of the two systems and therefore must be equal to

alpha. So ⍺=Ω is proven true and is also the quantum number for the system. The Lorentz contraction is then quantized

13) $\sqrt{(1-v^2/c^2)} \times hwe = W \times h\ we$

thus we have given harmony to two major theories relativity and quantum mechanics as the Lorentz contraction means that this new theory of space-time can explain quantization.

As well we see the inverse of frequency is time and thus we=$2\pi/T2$ and wj=$2\pi/T1$ and therefore

14) $T2/T1 = W = lorentz\ contraction = \sqrt{(1-v^2/c^2)}$

So time dilation and energy have proved the ratio for omega is indeed equal to alpha a lorentz contraction. Therefore our theory that space-time can be described by simultaneous rotation to create a straight geodesic line on the torus is proven true. Since the Lorentz contraction is a quantum number we can say that space-time is a harmonic oscillator that can cause quantization.

CONCLUSION

The idea that space-time is an oscillator is paramount in the idea of ⍺=Ω. If the space-ct axis can be replaced by an oscillation or rotation then one can state that the whole concept of coordinate geometry of space-ct frames joined together is in fact the same as the two minor and major rotating systems of the winding number of the circle map. The wind is the connection of the two systems and is in fact the factor of proportionality alpha. If this is true then the winding number should produce different values depending on mass by the equation E'/Ω=E or E'/Ω=E for energy and time. The answer to this is yes it does, if one examines the Josephson junction in a microwave field.

This proves that omega or winding number fractionally changes energy, frequency and time. Thus space-time must be an oscillator and can also be quantized on the map of a torus. If this is true then configurations of space-time (matter) must be oscillators. The torus is finite and unbounded. Our own expanding universe is also finite and unbounded. Therefore the motion (omega) on the circle map or torus must represent a lorentz contraction in space-time. So it is true the concept of Alpha equal Omega brings Harmony to three major physical theories, relativity, quantum theory and chaos theory.

Another example of a space-time configurations leading to chaoticle oscillators, is due to the evolution of biochemistry on the molecule DNA whose basis is an oscillator that's

existence is due to the evolution of space-time interacting with the chaotic universe. Evolution is nothing more then the manifestation of chaos on the space-time continuum. This is why in experiment 2, DNA is a strange attractor and this is why DNA is a double helical winding number that approximates the golden mean. DNA is a winding coupled helix that displays chaos. This completes Harmony theory because space-time and DNA are harmonic oscillators where the latter is Harmony by chaos. As well the new type of Lorenz contraction may give rise to quantum randomness through K which has been interpreted as probability for several decades. Finally if alpha equal omega then a Lorenz contraction can equal the golden mean and since matter is a space-time configuration then it is this Golden mean on the circle map that allows for the possibility of life, as we see the Golden Mean configuration from DNA to the structural anatomy of living organisms. Therefore it is space-time that is responsible for life. Life is flowing equilibrium harmony structure caused by coupling and chaos in space time.

Further more a Lorenz contraction changes matter a space-time configuration and omega of the circle map induces a Lorenz contraction then for mass-energy conversion you need to not only the bare winding number omega to produce a Lorenz contraction you need to change the structure of matter through the coupling parameter k. So you not only change energy and time but you change the structural organization of these through the coupling parameter k to form chaos. This is mass-energy conversion, we are not just changing the energy of the system but we are changing the way in which the energy is related or the Lorentz contraction alters the matter but the coupling parameter determines how the Lorentz contraction alters our matter. This is the fundamental theory that is stated in my book that space-time is the building block that acts through the nonlinearity inherent in k and thus we have our different structural configurations of matter, through a Lorenz contraction and value k which determines the winding number, which is proven by the Josephson junction to be a Lorenz contraction. So the sine circle map equation is a lorentz contraction that can be coupled to matter so as to change the configuration through perturbations inherent in energy exchange.

All this brings us to our new laws of space-time and DNA.

1. A Lorenz contraction for straight line motion is the same as the geodesic winding number on a circle map according to general relativity. This leads us to mass-energy conversion and time travel.

2. The winding number is in fact the representation of two oscillating systems meaning that space-time can represent a harmonic oscillator in four dimensional phase space.

3. The winding number for the superconducting Josephson junction is the quantization. Thus in this special case the Lorenz contraction is the quantization.

4. If life and DNA is an oscillator and a strange attractor then it is the space-time torus that is the causation of life as a harmonic oscillator that bridges unto chaos due to increased coupling and the golden mean.

References

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