

Secret Of Sankhya: Acme Of Scientific Unification

# Secret Of Sankhya: Acme Of Scientific Unification

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Transliterated From

## The Sankhya Karika

In Sanskrit

By

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**Overview of Axiomatic Sankhya.**

*Sankhya created by Maharishi Kapilla in 32000 years ago, forms the core of the Bhagavadgita, embedded in the Mahabharata. It is the only unified field theory in existence that offers a complete scientific and mathematical solution to every aspect of reality, manifest or unmanifest, in space comprising substantial components. The 68 Sanskrit axiomatic theorems or Sutras in Sankhya are transliterated, along with its mathematical derivations in part 2, for the first time, as all earlier translators could not decipher its scientific content based on combinatorial mathematics. While Part 2 contains the original Sutras in Sanskrit, the axiomatic derivation is shown first as it is an extraordinary scientific creation of unequivocal accuracy and precision that has the greatest relevance to science today, especially in view of the numerous anomalies in Physics and Cosmology that has not been solved despite great advances in measurement technology.*

*A correct theory should be simple, logically & numerically consistent and be in consonance with reality. It should be based on an axiomatic foundation, so that the principle of causality is not violated. The permanent foundation for a unified theory that defines all phenomena, at every point in space and time, must be a non-dimensional and scale-invariant formulation, if it is to fulfil the criteria of universality. In a unification paradigm, it is necessary to restrict the controlling parameter to a single variable, if it is to be effective mathematically. From an intellectual, logical and observational standpoint time or the interval between activities is the only parameter that can fill the role of a controlling parameter. The definition for the real and substantial nature of the substratum on which phenomena is based should evolve from within the theory as a consequence of its axiomatic foundation which consequently compels the inclusion of dynamic interactive states.*

*The intellectual dichotomy posed by the ordering of polarised concepts such as "maximum and minimum", "static and dynamic", "start and finish", "left and right handedness", "simultaneous and sequential", etc. should be resolved through an axiomatic unification paradigm, again arising from within the theory. Simplification of logic, rigor of analysis and elimination of conundrums must form a vital part of the derivational process to establish integrity of theoretical conclusions. Since Universal phenomena existed long before the advent of human life, a correct theory must not depend on logic structured through intellectual analysis that is contrary to the observed characteristics of natural phenomena. A classical example of a conundrum in Physics and Cosmology is the assumption that space is a vacuum, void or devoid of substantiality because of the failure of experiments to detect the presumed characteristics of space. The assumption that is a void or vacuum or without identifiable characteristics has been the greatest error in logic for axiomatically it is impossible to accept the foundation of the most realistic Universe is a void. But axiomatically there is compelling logic to identify a real foundation of elemental components or matter for it then leads to quantum with mathematical rigor from the start. A real component or elemental matter must be volumetric and its dimensional property of length underlines and defines the unit value. Since there can be no smaller unit in an elementary field of matter the volume also must be unit cubed. The next incremental dimension must be two units with a cubic form changed to one side being longer than the other two. Hence the cubic volume axiomatically must be 2cubed or 8 volumes. It is impossible to create cubic volumes of 2 to 7 units for its sides would increase fractionally as the cube root 2 etc to 7 and a fractional dimension is axiomatically forbidden in an elemental field. Therefore a cubic volume of one can only increase to one volume containing 7 additional volumes to equal 2 cubed = 8 elemental volumes. The quantum state of one containing 7 unit volumes is a*

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*natural and axiomatic consequence of elementarity. The elemental field of air has a spectrum of seven vibratory states and water has a spectrum of 7 PH levels in both incremental and decreasing levels of 14. Hence quantisation is an axiomatic process in a real but elemental field of matter. Similarly the elementary cyclic state of time is quantised perfectly by six intervals where the radius and the boundary have equal displacements from the centre and is scale invariant. The Pi value is the asymptotic sum of infinite sequential intervals but is only 6.28, which is derived later axiomatically.*

*The most important aspect to understand is that the expansion from 1 to 8 forms the first quantum and then that field of 8 becomes a stable medium everywhere due to attaining perfect balance. It then becomes an elemental field again at a higher density and all the laws of the fundamental quantum field apply again in exactly the same way. It means that the law of manifestation ONLY repeats again and again at every balanced state to create balanced fields with the hidden potential of 7 states.*

*Further, since the theoretical derivation forms the foundation for pursuing human activities efficiently, it must be amenable to observation and practical verification, for only then its utility would be confirmed intellectually. The process of verification through observation depends on a relative change which restricts its means to a dynamic parameter such as time. The proof for the completeness of a theory should rest on the unequivocal corroboration of its theoretical derivations, with every type of observational experience which naturally forms an element of physical reality.*

*As a specific case, the spectrum of phenomena observed in paranormal and spiritual domains have been widely reported through verified firsthand accounts, yet there is no place for it in current science, even as a hypothesis. Lastly, since the theory is based on axioms, its proof must be generated from within as a part of its derivational process and should not depend on arbitrary or external observational parameters. A rigorous test for the correctness of a unification paradigm lies in its ability to derive numerical solutions unambiguously, without dependence on constants that are structured through tenuous logic. The removal of uncertainty as a factor and establishment of the accuracy and correctness of a unification paradigm compulsorily leads to the concept of predestination as an operating parameter in reality.*

*Sankhya forms the core of the Bhagavadgita, embedded in the Mahabharata. Based on the foregoing principle, its axiom based foundation, bound by rigorous logic, using combinatorial mathematics, inexorably leads to an austere formulation which is the epitome of intellectual elegance. It is the only unified field theory in existence that offers a complete scientific and mathematical solution to every aspect of reality, manifest or unmanifest, in space comprising substantial components. The 68 Sanskrit axiomatic theorems or sutras in Sankhya are transliterated, along with its mathematical derivations in part 2, for the first time, as all earlier translators could not decipher its scientific content based on combinatorial mathematics.*

*While it may seem impossible to present a complete theory of manifestation of all forms of universal phenomena in just 68 theorems the ingenious method of presentation justifies its correctness. In the very first sutra or theorem a method of elliptical negation gives the clue to deriving factorial 68 numbers of solutions combinatorially from as many theorems. The logical derivational process is presented below but the comprehensive mathematical proof is given in appropriate chapters which gives simple explanations with mathematical proof for the numerous unexplainable anomalies in Physics and Cosmology. For instance the well known EPR paradox, Hubble's expanding Universe hypothesis or the unidentifiable spectrum of dark matter*

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*/energy phenomena are shown to be the product of misunderstanding the real structure of space. All of these anomalies just proves one point that there is an undetectable medium.*

*Space as a large volumetric entity can be defined and described logically and simply but the introduction of dynamism that has been observed for eons needs a more rigorous approach. In Sankhya, counting interactive events between adjacent components, comprising the continuum of space, provides the means but it depends on a ratio of change that involves an interval, defined in Physics as 'time'. Any length compared to some length is just a numerical ratio but if one of them moves the same ratio becomes a time parameter defining a dynamic state. Additionally, any cycle of interaction between any two objects has three complementary phases, in which there is a 'compressive collision', a 'rebounding reversal' and an 'expansive separation'. All these three modes too are governed by the cyclic interval of time but again defined in three complementary phases, as a 'simultaneous instant of collision', a 'resonant period of reversal' and a 'sequential interval of separation', respectively. Colliding interaction creates compressive stresses at the point of impact. In the resonant interval, compressive stress reverses to become an expansive one. The sequential expansive stage initiates the transmigration of interactive stresses that expand beyond its boundary, to other components forming the continuum of space. The three states of the interaction within a single cycle occur as a simultaneous event. However, when the interaction expands to form the sequential transmigrating state, each cycle consists of a repetition of the simultaneous state. The equality of the algebraic sum of the interactive or alternating interval leads to a perpetual harmonic oscillatory state (PHO) that sustains eternal dynamism and is the hallmark of the unification paradigm in Sankhya. The controversial and oft debated phenomenon of zero point energy is given an axiomatic mathematical foundation through the PHO derivation. The Perpetual Harmonic Oscillatory state is defined in Sanskrit as the Tri-Guna interactive states that are the cause of all phenomena in the Universe and forms the principle and singular theme in Sankhya. The axiomatic derivation of the eternally dynamic state through combinatorial mathematics is unique to Sankhya and it raises it to the acme of unification of phenomena in science.*

*As a preview of a PHO state a physical example will explain how such a state can exist perpetually. An archer's bow is the iconic model of the PHO state. The shaft of the bow is a flat long strip made up of a rigid material like wood or metal. When it is bent the outer curve stretches while the inner surface compresses at the same time and will spring back to its normally straight position of the bending pressure is removed. If a string is attached to both the ends when bent, it would resonate or vibrate as it is stretched and relaxed by the twin pressure form of stress of compression and expansion of the inner and outer layer of the bent strip. Depending on the rigidity of the strip and the elasticity of the string it would reach a balanced resonant state and remain in that state forever.*

*An amplifier with a microphone attached to the bow at its mid stable position would reproduce the resonant frequency at an audible level. Unless the strip or string changes its state the sound would be produced perpetually and has been tested successfully. The key characteristics that make it possible is the rigidity of the strip where the compressive and expansive state is created simultaneously due to its degree of rigidity and the ability of the string to maintain the same tension as a creating a vibrating rate that is constant.*

*Theoretically, an instant would be defined in Physics as an infinitesimally small interval of time approaching zero. However in reality the instant of time must have a relative but discrete numerical value. The concept of the instant of collision can be understood simply, as the interval of time a solid object takes to transfer an impact from one side to its opposite one. Stating it differently, if a solid object is pushed from one side, the opposite side would seem to move at the same moment, depending on its rigidity. If the rigidity or density of the solid object is at its*



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maximum, then that interval of time would be the minimum, forming an instant, because there would be minimal distortion. If two such similar objects collide, that interaction would take place within the same interval of time or simultaneously as an instant. There would neither be an interval smaller than that instant nor any distortion that could increase it. Consequently, the action of both objects within the instant must be defined as a simultaneous one. Similarly both ends of a rigid rod act simultaneously for if one end is pushed the other end also moves at the same instant despite the rods length. Hence simultaneous action can occur at two locations separated by the length of the rigid rod. Therefore simultaneous activity is synonymous with mass, density, rigidity, coherence and similar descriptions.

Taking the example of a moving train, consider the fixed wagon length  $L$  as the rigid rod in which both its ends act 'simultaneously in time', while the length of the gap  $G$  between two wagons acts as the 'sequential or variable aspect of time' that can change and hence not rigid. At constant train velocity let time taken by wagon be  $Lt$  while time taken by gap be  $Gt$  and if the gap  $G$  does not change then ratio of time at every instant as  $Lt/Gt$  will be constant at all train velocities. But the real length between two wagons is  $L+G$  and at constant train velocity, total time equals  $Lt + Gt$ . When the train velocity changes  $L$  being rigid  $Lt$  will change instantly whereas the gap  $G$  being variable the  $Lt / Gt$  ratio will change instantly and similarly  $Lt + Gt$  as the interval between two wagons too will change instantly. An increase in  $Lt$  will require  $Gt$  to increase to keep ratio constant whereas  $Gt$  must decrease to keep interval constant. Depending on the rate of time change a series of opposing changes must take place to maintain balance. The axiomatic algorithm that resolves the above problem of maintaining eternal balance between simultaneous and sequential oscillatory states is derived below as  $1/x = 1+x$ . It sets rigid, dense, coherent states to one as a constant of simultaneity.

Simultaneous interactions between many objects get merged into a single count, as it occurs within the 'instant cycle'. The simultaneous collision in an interaction is countable. Hence counting interactions are real events whereas the interval in terms of time is a relative comparison. Hence counting as a process of evaluating phenomena is certain and accurate. As an example if the difference between initial time as  $T_o$  and final one as  $T_f$  as  $T_f - T_o = 0$  the ratio  $T_o/T_f = 1$  is a statement that implies that the comparison is at the same instant and is confirmed by the interval  $T_f - T_o = 0$ . Hence the test for simultaneity of events is confirmed by two modes as the zero time interval or the ratio of the two being 1. The ratio of infinity/infinity also equals 1 conceptually; thereby allowing the observer to create unlimited variable ratios provided the sum is one. Whereas, time is a relative parameter and therefore, it is not a real but subjective process. There is a similar concept in Physics where waves of different frequencies superposition to decrease the interval of time separating two adjacent ones and when that interval becomes zero the concept of waves, changes to a continuum. In the case of a quantum counting in terms of an arbitrary interval as a second is relatively accurate but is not a definitive or certain process because there is no way of detecting the count as a single or a merged unit.

However, experience shows that sequential interactive events can be counted, because an interval of time separates two adjacent activities, but not those that occur simultaneously or within an instant. Ten claps can be counted as such if it occurs one after another but if all ten occur at the same instant it can be counted as only one. It causes an anomaly of nine vanishing counts when interactions synchronise to act simultaneously. Though the nine merged counts are not countable, it increases its intensity as the hidden clap-count density, within that single clap. Therefore, the number of interactions that take place simultaneously, within the time-interval of an instant, indicates its count density per 'instant of time-interval', whereas sequential ones indicate the number of such instants existing between interactions.

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Similarly, the moment of changeover from simultaneous to sequential interactive interval covers the 'resonant period of reversal', counted as numbers of such instants. Hence all phases of interactive states can be counted in terms of that instant but not those that occur simultaneously within the instant. There is no detectable method of separately identifying merged or superposed interactions but mathematically it can be evaluated by equating density with 'time squared'. The caveat is that such evaluation of discrete density values cannot be treated as separated or sequential events for it is a product of a simultaneous event.

Any axiomatic process can be simulated realistically as the manifestation sequence occurs in a medium comprising real component that remains in a dynamic state of oscillation. The entire process can be depicted as an abacus with two modes of presentation. When all the beads are aligned vertically it shows the potential state where-in the weight or mass of all beads act on one point at the bottom simultaneously. If the same vertical line up is made horizontal the beads can be moved sequentially depicting the transfer, movement or displacement as a kinetic motion and the distance is entirely dependent on the spacing of beads as a harmonic state. Spacing as time depicts momentum as same mass into acceleration into time while vertically the mass increases within the same time without any movement. Hence the number of beads moved horizontally must be reduced from the number in the vertical state thus satisfying the conservation of action as momentum proportional to the change in potential at the same time.

The gravitation and magnetic phenomena in Physics belongs to the simultaneously interacting domain and as it is not measurable separately as discrete interactive states the complication arises from the indirect mode of detecting it. The enigma of mass equal to energy/ $c^2$  is a classical example of the foregoing caveat for the mass factor is recognisable only when it has density in excess of unity. Such behaviour is a natural consequence of a substantial composition of space.

The Sankhya Sutras and its transliteration shown in the second part of the is indeed the source of an axiomatic theory but to enable the reader understand that an axiomatic logic is a self generating process the derivations below have been deliberately shown independent of any reference to the Sutras thus proving the point.

During an interaction between two very rigid components, the instant of collision, reversal and separation between the two, marks the transition from the simultaneous to the sequential states. The transition point is related to the rigid components in a self similar ratio for both the ends of the rigid state acts simultaneously or in zero time interval which must explicitly be derived through axiomatic methods. Ratios are valid only if the comparison of two parameters relate to the same instant or moment of measurement. If not the comparison becomes a sequential act where an interval of time is involved. Hence the 'simultaneous state of activity' of two or more components, within the instant, must equal **a numerical ratio** of two similar parameters whereas the 'sequential separation interval' must equal **the sum** of both, as it is not within the minimum interval. At the impact point the simultaneous instant as a ratio must equal the sequential interval as a sum when it is in balance, as shown below:

$$1/\infty = 1 + \infty. \quad [0.1]$$

This equation can be satisfied by solving the expression for a self-similar interactive displacement interval, between two components as an axiomatic value  $1+1=2$

$$\infty = \left[ \sqrt{1+2^2} - 1 \right] / 2 = 0.618034 \quad [0.2]$$

Then

$$1/\infty = 1 + \infty = 1.618034 \quad [0.3]$$

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On transposing  $\times$  it becomes

$$1 = \times + \times^2 \quad [0.4]$$

Raising it as powers as simultaneous ratios, it changes to

$$\times^n = \times^{n+1} + \times^{n+2} \quad [0.5]$$

Continuing, as the sum of infinite powers of  $\times$  with  $n$  equal to infinity, it forms a loop as [1.3]:

$$\sum_1^{\infty} \times^n = 1 / \times = 1 + \times \quad [0.6]$$

Finally, the combinatorial sum of the sequence of powers of  $\times^n$  to  $\times^{n+n}$  equals one, as a super-symmetric series with combinatorial coefficients  $a, b$  etc forming the Pascal triangle, shown below as an example :

$$\times^{n+0} + n \times^{n+1} + a \times^{n+2} + a \times^{n+n-2} + n \times^{n+n-1} + \times^{n+n-0} = 1 \quad [0.7]$$

The above sequence[1.7] enables the identification of self similar and scale invariant ratios which form a coherent volume as in nuclear, black-hole, bounded or similar agglomerate states in asymptotic freedom in Physics, that act as one single unit or simultaneously.

The sequence of derivational changes form an extraordinary and unique logical-loop, based on combinatorial values. It shows the characteristics of self-similarity and scale invariance which exists at the instant of collision & separation, between two adjacent components. The interactive phase of compressive collision being smaller, it is denoted by  $\times^2$  and the separation interval being larger, is similarly denoted by  $\times$ , leading to the period of reversal as:

$$\times - \times^2 = \times^3 \quad [0.8]$$

Therefore, the compressive displacement interval after, adding  $\times^3/2$  is:

$$\times^2 + (\times^3 / 2) = 1 / 2 \quad [0.9]$$

This is equal to the expansive phase, after subtracting  $\times^2/2$ , as:

$$\times - (\times^3 / 2) = 1 / 2 \quad [0.10]$$

Since both the compressive and expansive intervals are equal, the algebraic displacement is zero and the interactive point must remain at the centre, if all the interactive parameters do not change. Further, the asymptotic sum of the interactive ratio  $1/2$  approaches 1, confirming the consistent location of the collision at the centre, even at higher interactive count-rates:

$$\sum_1^n 1 / 2^n + 1 / 2^n = 1 \quad [0.11]$$

The foregoing derivation lays the foundation for the principle of self-similarity and scale invariance but the rigorous mathematical proof is derived in a later chapter. The axiomatic value of a cycle is obtained by combining  $\times/2=.309017$  iteratively with  $1/2^n$  combinatorially through the expression:

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$$A_{n+1} = \sqrt{\left[1 - \sqrt{1 - (A_n)^2}\right]^2 + A_n^2} \dots \text{where} \dots A_0 = x/2 \quad [0.12]$$

This leads to an axiomatic cycle of 10 interactions as  $n$  approaches infinity

The equivalence of coherent states to synchronous states is equated through rewriting the above as follows:

$$\pi / (2^n A_n) = 10 \dots \text{when} \dots n \rightarrow \infty \quad [0.13]$$

$$\frac{1}{2}^n = A_n \frac{10}{\pi} \quad [0.14]$$

Axiomatically, a resonant interactive cycle is limited to ten interactions for the cosine of the angle at 36 degree interval is  $(2\pi / 10) = 0.809017$  equal to half the golden mean as  $1.618034/2$  and is totally in consonance with the derivation above. Hence a simultaneous cycle of 10 interactions can be presented as a logarithmic index of one. Hence all numerical values in Sankhya are presented as a mathematical code with the logarithmic index to base ten, which was the prime reason earlier translators failed to do justice to the extraordinary theory. In order to be transparent to the scientific reader the constants as ratios are derived at the relevant sequences whereas in Sankhya it forms the preliminary sequence from which larger ratios are derived axiomatically.

The number of interactions taking place simultaneously within the instant cycle defines the intensity of its activity or density of interactive stresses. The maximum density of interactive counts and the minimum interval of time as the instant, form an inversely proportionate ratio leading to an axiomatic, numerical constant  $Kx$ , in Sankhya. Though the interactive colliding point remains at ratio  $1/2$ , the constant  $Kx=0.9149879$  defines its boundary limit as an asymptotic sum of combinatorial number of simultaneous interactions forming the instant and is equivalent to Catalan's constant in mathematics.  $Kx$  is a pivotal factor in Sankhya and is derived through axioms as shown below..

$$Kx = \frac{10^{1+x}}{2^3} \frac{2^{1/3}}{2^3 - 1} \frac{10^2 - 2}{10^2} = 0.9149879 \quad [0.15]$$

The interactive count rate rises to  $C$  when the colliding interaction reverses to expand or when the simultaneous state changes to a sequential one as in [1.8], as an expanding ratio of  $2/\infty^3$ :

$$C = 10^{2/\infty^3} = 296575967 \quad [0.16]$$

The constant  $C$  is the axiomatic count rate of interactions per cycle between the components comprising space following self similar and scale invariant rules of proportionality of simultaneous ratios. ( $C$  is the axiomatic frequency of an electromagnetic wave of a meter wavelength in Physics).

The interactive count rate rises to  $C^\infty$  on the compressive part of the cycle and falls to  $C^{1-\infty}$  on the expansive phase.

$$C^\infty = 10^{2/\infty^2} = 172213 \dots \dots C^{1-\infty} = 10^{2/\infty} = 1722. \quad [0.17]$$

The factor  $C^\infty$  acts as a merged simultaneous group within one interactive cycle and is the stress count density which transmigrates, as a set  $C^{1-\infty}$  times to total  $C$  counts in a cycle such that the displacement upon period is always  $C$ . Its interactive density rises and falls cyclically that creates an accelerative state or force.

It will be shown later that  $C^\infty$  forms the magnetic current and its transmigratory rate is not limited whereas  $C^{1-\infty}$  forms the electric current limited by a transfer rate of  $C$ . The magnetic

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current or transmigration of simultaneous interactions, like gravitational acceleration is not restricted or obstructed whereas the transmigration of an electric current needs a connected path for it to be sustained ]

Time is not a constant in space like the second in Physics. Since  $C$  is an axiomatic constant of an interaction between two adjacent components, then length upon time gives the displacement. Hence it depends on whether length, displacement or time is kept as a constant to derive its mutual proportionality. However, in Sankhya, there is no alternative to counting interactions as the method of deriving theoretical propositions, because the axiometrically derived  $C$  is a universal constant. In the foregoing derivation the interactive cycle is balanced where the compressive and expansive stresses are equal within that cycle, simultaneously. It leads to profound consequences shown later. In a self similar and scale-invariant resonant cycle the interactive count must be constant.

The simultaneous count rate balances, maximises or minimises into a unit count, depending on the algebraic sum of the logarithmic index.

$$10^{\frac{1}{x^3}} = 17221.....10^{\frac{1}{x^3} + \frac{1}{x^3}} = 296575967.....10^{\frac{1}{x^3} - \frac{1}{x^3}} = 1 \quad [0.18]$$

At an interactive count rate of 17221 the compressive and expansive states are equal and the algebraic sum of stress is zero. At count rate  $C$  the ratio of compressive to expansive stress counts is 100 or two simultaneous cycles.

In the sequential interactive state the difference between compressive and expansive phases of the interactive cycle is  $D_c$  as  $C^\infty / C^{1-\infty}$ :

$$D_c = C^\infty / C^{1-\infty} = 10^{2/10^2} / 10^{2/10^2} = 10^2 = 100 \quad [0.19]$$

The delay  $D_c$  of 100 interactive cycles is in the sequential state when the volumetric change becomes 2 and the radial ratio equals  $2^{1/3} = k = 1.259921$ . Hence the incremental ratio becomes  $(k-1) = 0.259921$ . Therefore the delay  $D_c / (k-1)$  form a ratio with a loss of two interactions per cycle, as the impedance to stress transmigration in space as  $S_i$ :

$$S_i = \left[ 10^2 / k - 1 \right] \left[ 10^2 - 2 / 10^2 \right] = 377.0376 \quad [0.20]$$

The impedance to the transmigration of interactive stresses in space occurs only when there is an accelerative displacement that causes the breakup of the simultaneous coherent state to crossover to a sequential resonant state. It transfers the added stress count to the adjacent component as a transmigratory process. The  $S_i$  count per cycle as impedance is effective only when transmigration is initiated by breaking the coherent state.

In space the interactive oscillations among the components are volumetric. Therefore the interactive count in all three axial directions would be  $C^3$ . However, in a coherent interactive state all the oscillations would act simultaneously and synchronously whereby two axes would merge and its interactive counts would reduce to  $C$ . But the entire surface area would oscillate in the breathing mode creating a unified surface area or flux of stress. Hence the detectable count rate of the coherent volume would only be  $C$  but the merged and hidden surface area count as  $C^2$  would initiate the oscillatory transmigration of stresses in both the compressive and expansive mode. The changes in stress count densities would initiate accelerative transmigration in both the simultaneous and sequential modes. The inward displacement would increase stress density and counts would merge, while the outward expansion would decrease stress densities to increase counts that cause detectable transmigratory displacements.

The volumetric compressive phase density count ratio would be  $(C^\infty)^3$  and  $(C^\infty)^2$  its expansive area flux density count, while  $C^\infty$  would be the axial linear phase. Similarly  $(C^{1-\infty})^3$  would represent the relative volumetric expansive count density,  $(C^{1-\infty})^2$  its expansive flux count

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while  $C^{1-\infty}$  would equal the decrease count due to expansion in any axial direction. However, the product of compressive and expansive phases would equal  $C^3$  as volumetric,  $C^2$  as area and  $C$  as linear interactive values respectively.

Stress transmigrates through an interactive cycle of compression and expansion. The period of reversal impedes the stress count transfer rate proportionate to  $Si$ . In the compressive phase  $C$  is increased as  $C/Si = C_c$  and in the expansive phase it is reduced to  $C/Si = C_e$ :

$$C_c = C/Si = 1.1182E + 11 \dots\dots\dots C_e = C/Si = 7.866E + 5 \quad [0.21]$$

The product of  $C_c$  and  $C_e$  equal  $C^2$  as the simultaneously oscillating surface and these merged interactive counts cannot be observed but the accelerative changes can be detected and measured as a force. The changes from compressive to expansive or simultaneous to sequential states are carried out over a displacement distance ratio of  $(k-1)/1$  in a cycle of  $C$  counts and causes a shortfall in the stress transmigratory distance covered in that period as:

$$DI = k-1 / C = 8.764E - 10 \quad [0.22]$$

$DI$  is a relative ratio and if  $C$  is defined in metres/second then there would be a metre shortfall in the distance covered in approximately 36.15 earth years. It has been observed experimentally as 'the Pioneer anomaly' where the estimated position of Pioneer in orbit and interval of electromagnetic signal reception time did not match and it was observed to progressively increase with distance.

In electromagnetic theory in Physics the reciprocal as  $1/C_c$  is defined as the electric field permittivity  $\epsilon$  and  $1/C_e$  as the magnetic field permeability  $\mu$ , in free space.

$$\epsilon = 1/C_c = 8.847E - 12 \dots\dots\dots \mu = 1/C_e = 1.258E - 6 \quad [0.23]$$

The Sankhyian derivation above simplifies and unifies all phenomena which are only due to the interactive state of the components in space.  $C$  is the number of interactions per simultaneous cycle comprising 10 interactions which is the 'instant interval' of a cycle. It is approximately equal to the experimentally measured frequency of an electromagnetic wave of 1 metre wavelength, if the duration of that cycle is a second. The difference between it and the experimental value of  $CL = 29979258$  are due to a shift in frequency that is 'logarithmically proportional to distance' in a gravitational field, as  $F_g$ , with the Solar boundary radius  $RS = 6.985E + 8$  and the orbital radius of Earth  $Ro = 1.491E + 11$ :

$$F_c = 10^{Ro/Ro} = 1.0108455 = CL/C \quad [0.24]$$

This confirms the Sankhyian derivation that all electromagnetic waves, including light and gravity waves, are interactive stresses created between the components forming the substratum of space and transmigrate from a higher to a lower stress count. The resonant interactive stress in space is at a self-similar and scale-invariant oscillatory rate of  $C$  per simultaneous interactive cycle formed by 10 such interactions. If the wavelength and time cycle of a light wave is set at a metre and second then the frequency of the measured light wave  $CL$  would be higher than the rate  $C$ .

$$CL - C = 3.2165E + 6 \dots\dots\dots CL/C = 1.01084548 \quad [0.25]$$

It is based on an axiomatic logic that stresses in any physical medium must always transmigrate from a higher to lower count and in space the interactive rate gives the intensity of these stresses. Therefore  $C$  is the perpetual interactive rate and any transmigration of any type of stress must have a higher rate than  $C$ . The observed Cosmological red shift is a conceptual error as  $CL$  is much higher than  $C$ , because the Sun is the closest light emitting body. Since the light from every stellar source is further than the Sun, it must have a lower count value than  $CL$  but higher than  $C$ . Therefore  $F_c$  must be the largest blue shift for observers on the earth. The interpretation of Hubble's finding that space is expanding is axiomatically impossible in space comprising substantial components. However the numerical value of Hubble's red shift with distance has a

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logical explanation. He defined the CL-C =  $3.2E+6$  as a mega-parsec and invented a new aspect of an expanding Universe. The entire spectrum of such shifts are derived theoretically and tabulated in a later chapter.

The number of interactions taking place simultaneously within the instant cycle defines the intensity of its activity or density of interactive stresses. The maximum density of interactive counts and the minimum interval of time as the instant, form an inversely proportionate ratio leading to an axiomatic, numerical constant  $K_x$ , in Sankhya. Though the interactive colliding point remains at ratio  $1/2$ , the constant  $K_x=0.9149879$  defines its boundary limit as an asymptotic sum of combinatorial number of simultaneous interactions forming the instant and is equivalent to Catalan's constant in mathematics.  $K_x$  is a pivotal factor in Sankhya and is derived through axioms in a later chapter.

In Sankhya, the concept of deriving a non-dimensional and scale-invariant theory is fulfilled perfectly by defining the instant numerically through axioms, because all phases of a fundamental interaction can be counted in terms of it. A colliding impact between two objects gave the principle of identifying both the instant and its intensity through the simultaneity of action. In three-dimensional space, the maximum number of simultaneously colliding interactive events between elemental objects is limited to six, as the top, bottom, front, back, left and right sides of an object. Earlier, a simultaneous interaction's intensity or density was specified in terms of the number of interactions within that instant.

Then in principle, taking the numerical rate of interactive counts as  $C$  in each of the six direction, its intensity or simultaneous count density at the point of collision becomes  $C^6$  and its relative instant, the Moolaprakriti in Sanskrit, as  $M_y = K_x/C^6$ . In Sankhya all derivations are strictly dimensionless numerical interactive stress count ratios in terms of  $M_y$ , which is the instant of time in an interactive cycle of ten simultaneous counts. Stating it differently, a circular and recurring displacement path can only be maintained by ten self-similar interactive intervals forming a cycle. Therefore the complete mathematical derivation of the entire manifestation process is based on the principle of only counting interactions that indicate discrete changes in cyclic time.

Applying the numerical value of  $C$ , the ratio of the simultaneous instant in dimensionless form is  $M_y = K_x/C^6 = 1.344620Eminus51$ . The axiomatic derivational concept and the numerical value of  $M_y$  is new to science but is approximately or very nearly equal to Planck's constant  $h/C^2$ ; hence is consistent with values in Physics. Contrary to the practice in Physics, the oscillatory rate  $C$  in Sankhya is measured against a self-similar and axiomatic cycle of ten of its resonant interactions forming the simultaneous instant or ten sequential interactions within the cycle as instant of time and is not an arbitrary interval like the second. The procedure above leads to self-similarity and scale-invariance, which factors are vital to sustain a unified law of manifestation at all levels. Reiterating, the dimensionless ratio  $M_y$  is the minimum cyclic interval, when two objects collide at the maximum interactive stress density and components in space act as a continuum within that interval.

Logically, unless the numerical count of 'sequential interval of separation' is greater than the 'simultaneous instant of collision', the interaction among the components in space cannot be counted or detected. Only a discrete change in time could be detected but when both the simultaneous and sequential intervals are equal, there would be no difference. In a balanced state both intervals remain equal. Hence space must remain undetectable. It is the main reason why all efforts to detect space (as aether) failed totally, despite numerous intricate experiments carried out by Michelson, Morley and several others. Since  $M_y$  forms the unit count, the interaction can become detectable only when the sequential interval increases to  $M_y + M_y = 2M_y$  counts, but there is a caveat.

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*When the ratio of the instant to sequential time-interval becomes one by two or half, a state of resonance is initiated among the components in space. The equations [1.1] to [1.14] spell out the rationale of how and why an interactive resonant rate is initiated and maintained in a sea of components forming space. Stating it simply, when continuous interactive vibrations or oscillations between two components remain in the same location it is a state of resonance. When two similar objects vibrate resonantly at the same rate between two constraints separated by some distance, the colliding point will always remain in the middle of the distance. When resonance is broken the meeting point would shift progressively towards a lower interactive count rate. Interactive stresses would begin to transmigrate beyond the point when resonance breaks and creates harmonics.*

*Reiterating, the only reason stresses transmigrate is due to a difference in the interactive count rate from the resonant constant rate of C. Interactive stresses transmigrate from a higher count rate to the resonant rate C and is absorbed into its simultaneous state of interaction. The commonly observed mechanism of temperature transfer occurs for the same reason but at another density level, to equalise oscillatory counts and reach thermal equilibrium. A My ratio of 1/2 created a resonant state in one direction in which two components in the substratum of space interacted simultaneously as a single entity thereby reducing the stress count at the colliding central location. In a three dimensional continuum the stresses in a resonant state would transmigrate inward from all six directions as top, bottom, right, left, front and rear to regain balance. Hence 8 components would be confined by the inwards transmigration of stresses towards its centre where the resonant interactive counts would reduce by merging, in attaining the simultaneous state. The difference in stress intensity or interactive count density will change by a ratio 7 because  $2^3=8$  less the primary state of 1. The acceleration of interactive stress counts towards the centre of the 8 components forming a larger scale-invariant aggregate count would be Ab:*

$$Ab = [(1+1)^3 - 1] / My = 7 / My = 5.206E + 51 \quad [0.26]$$

*The astronomical value of the interactive count indicates the intensity of stress transmigrating towards the centre of the eight components. It is because all eight units act as a single unit thereby reducing the 8 interactive counts to a single count per cycle by merging 7 counts as a simultaneously interacting state in synchrony with the one. Ab binds the 8 components together in a simultaneous and resonant state, to display the very first coherent particulate state at maximum stress density. Transmigration of stresses towards its centre initiates the phenomena of gravitation at the very fundamental level where the maximum accelerative stress intensity is Ab. The value of Ab is in counts of interactions per sequential cycle of 7 expanding volumes. It is self-similar, scale-invariant and dimensionless.*

*My defined the interval in time after which the simultaneously interacting continuum changed to a sequential state wherein the interactions could be counted as discrete intervals of time that existed between adjacent interactions. As shown earlier, the cycle of ten interactions is equal to  $2\pi$  as a ratio of radius to circumference. In all three directs it becomes  $(2\pi)^3$  which gives the increase in ratio as  $(2\pi)^2$ . Similarly the increase in volume within which the transitions occurs is 7. Therefore the ratio of change per unit radial increase of 7 volumes would be Tr:*

$$Tr = \left[ \frac{2\pi^3}{2\pi} \right] \left[ \frac{1}{7} \right] = 5.6398 \quad [0.27]$$

*Similarly, taking the volume increase as 2, the radial displacement becomes  $2^{1/3} = k=1.259921$ , and the incremental or sequential difference is  $k-1=.259921$ . Therefore comparing these two factors as a ratio of change of 2 volumes, as Tc:*



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$$T_c = \left[ \frac{2\pi^3}{2\pi} \right] \left[ \frac{1}{k-1} \right] = 151.8862 \quad [0.28]$$

*Tr is the constant that defines the ratio of counts needed to break the coherent state symmetry to change to a resonant state. Tc defines the ratio of counts that triggers the sequential transmigration process by breaking the coherent volumetric state into harmonically resonant states. As defined earlier, in the coherent state the Cc and Ce oscillatory state maintains the area parameter as C<sup>2</sup> in synchronisation and therefore Tc is needed to break that large value. The mathematical formulation of breaking the synchrony is shown further below, after the derivation of the Hadron / Lepton or Proton / Electron states from first principles.*

*The maximum, simultaneous stress count density in all three axial directions is Kx/Mly and in any one such direction it becomes (Kx/Mly)<sup>1/3</sup>. The maximum inward acceleration Ab will compress interactive stress counts between two components in space into a rigid and dense continuum such that both act as a single unit as Lp:*

$$L_p = [(Kx / my)^{1/3}] / Ab = 1.6896E - 35 \quad [0.29]$$

*Extending that logic further the 8 components in space will project a rigid interactive and relative volumetric state of Lp<sup>3</sup>:*

$$V_p = L_p^3 = 4.82E - 105 \quad [0.30]$$

*Therefore in principle Lp<sup>3</sup> would be the volumetric ratio, with the densest interactive stresses per count, going inward towards the centre of the 8 components forming a single group. Hence the ratio Lp would be the smallest displacement interval. In order to establish Lp's connection with dimensional characteristics in Physics, C can be taken as the stable axiomatic oscillatory rate per cycle, as in Sankhya. Then C into Fc metres as wavelength would equal CL metres per cyclic second as velocity, confirmed experimentally. Then, Lp equals Planck Length in metres and Lp/C = 5.697E - 44, would equal Planck time in seconds. In a dynamic and resonant substratum the axiomatic value of C must be the stable and constant motivating potential as shown earlier. On converting Ab to its equivalent value of time in seconds in Physics:*

$$Abc = 7 / MlyC = 1.76E + 43 \quad [0.31]$$

*The reciprocal of Abc signifies the minimum time in seconds where two interactions can merge to form a single event and is equal to Planck's time as Tp or Lp/C. Reiterating, Mly is the axiomatic instant of time that separates two interactions at maximum interactive count density, whereas the 'second' in time is defined in many experimental ways but is standardised on the frequency of the caesium atom.*

$$T_p = MlyC / 7 = 5.697E - 44...sec\ onds = L_p / C \quad [0.32]$$

*Stating it differently, at an interval less than Tp seconds, the components in space act as a continuum as the interactive stress density is at its maximum. Therefore the components in space will behave as a solid or rigid or incompressible object of length Lp metres in an interactive cycle of C interactions per second. Acceleration Ab is also confirmed by the following classical ratios:*

$$L_p / T_p^2 = C / T_p = Ab = 7 / Mly = 5.206E + 51 \quad [0.33]$$

*If Lp as the smallest, rigid and coherent displacement changes its stress level to a resonant state, as Ne:*

$$Ne = L_p^3 Tr / L_p^2 = 9.5287E - 35 \quad [0.34]$$

*The parameters, Lp in metres and Tp in seconds form the smallest length and time interval in space. But Lp is the length of one side of the volumetric component in space which has*

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a dynamic volume  $V_p$  as  $Lp^3$  cubic metres, in an oscillatory state with the highest interactive stress density. Similarly  $Tp^3$  into  $C^3 = Lp^3 = Vp$  which must be interpreted as the instantaneous ratio of the 8 'component volume' to the cube of the 'interval of time' that yields the value of the simultaneous interactive stress counts, as an axiomatic three dimensional constant. Because  $V_p$  is at the maximum volumetric stress density and rigidity, stresses would tunnel instantly across any number of such units that are directly in a straight line with the accelerating stress. The break in tunnelling creates the  $Ne$  states, depending on stress count densities. Hence  $Ne$  states of various levels, from one to seven, can appear instantly at great distances. Reiterating, the 8 real components in space are bound together by the inward acceleration of stress counts  $Abc$  that merge into a simultaneous interactive state at the centre where the stress counts reduce to a single cycle but at high density.

**Therefore, each component in space has a relative volume  $V_p$  equal to  $Lp^3$  and stress count density  $C^3$  in a coherent state where the time is  $Tp^3$  but with  $Tp^2$  merged to give the proportional flux density parameter for the inward accelerating interactive stress-counts at a rate  $Ah$  as gravitational acceleration. The gravitational acceleration as the fundamental and ubiquitous force has the greatest rate in simultaneous interactive states, but reduces in proportion to change in area and is not a the weakest force as surmised in Physics. In fact all other forces have the same mode of action which is that higher interactive count rates transmigrate towards lower ones that have become so through merging. (Recall the 10 clasp example as proof).**

The coherent combination of 8 components bound by the phenomenal  $Ab$  accelerative stress transmigration towards its centre establishes not only the rational for the gravitation process but also provides the mechanism for a particulate state formation. The constant  $Kx$  forming the coherent state core boundary value would also increase by the same factor of  $8-1=7$  states. But the incremental value in cyclic time would be proportionate to  $Gm$  as:

$$Gm = [(2^3 / 7) - 1] + 7 = 7.142857 \quad [0.35]$$

$Gm$  is a universal constant that defines the transformation of a volumetric coherent state into a resonant state. Volume of each component as  $Gm/7$  is in a perpetual resonant state as  $Rs$ :

$$Rs = Gm / 7 = 1.020408 \quad [0.36]$$

The cycle of 10 resonant and simultaneous interactive counts would become  $10^3=1000$  sequential interactive counts when the resonant state is broken and the increase in ratio would be  $1000/10=100$  during a period of change of 2 cyclic instants. Therefore the rate of loss of resonance or decay would be the asymptotic sum of the ratio of the difference rates as  $Rs$ :

$$Rs = \sum_{o}^{\infty} \frac{2^n}{100} = 1.0204081633 \quad [0.37]$$

The factor  $Rs$  ensures that resonance decays in infinite cyclic time or is virtually perpetual. Any comparative equation that equals the ratio  $Rs$  signifies its perpetually resonant status or that the decay in resonance will occur in infinite cycles or time.

The core  $Kx$ , increases to its maximum interactive count level as  $Mp$  in an additional cycle and breaks its coherence to reach a resonant state through the  $Gm$  factor:

$$Mp = Kx(Gm) = 6.536....also....Mp / 7 Kx = Rs \quad [0.38]$$

$Mp$  the maximum stress density parameter in a resonant state that equals  $Rs$  and hence it is a perpetual oscillatory state or resonance decays in infinite cycles / time.

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On converting it to the time value of a second in Physics, it creates the Planck Mass as  $Mps$  and if 1 cubic metre per second accelerative displacement is equated to a kilogram in terms of a coherent mass:

$$Mps = Mp / C = 2.2037E - 8..Kgs \quad [0.39]$$

The maximum core stress density ratio as Planck density is  $Dp$ :

$$Dp = Mps / Lp^3 = 4.57E + 96..kgs / m^3 \quad [0.40]$$

Similarly the space stress intensity ratio as  $St$  in kgs per second, identified as the metric elasticity of space by Sakharov and Chandrashekhar in Physics is:

$$St = Mps / Tp = 3.868E + 35 \quad [0.41]$$

The stress intensity above has been adjusted to the cyclic instant of time  $Tp$  in seconds. The intensity in terms of a change in relative volume during a second would give the constant rate of change of volumetric stress in space, within the same time period, as  $G$  Sankhya or  $G_s$ :

$$G_s = St / C^3 = \left[ \frac{C^x{}^2}{k^3} \right] = 1.482879E + 10 \quad [0.42]$$

The proof for  $G_s$  is confirmed by breaking the coherent volumetric state into its equivalent resonant state as minimal area times maximum acceleration into  $G_s$  must equal the maximum coherent stress density as mass:

$$G_s = Mps / \left[ Lp^2 \times 7 / My \right] = 1.482879E + 10 \quad [0.43]$$

There are three more modes of proof for the constant  $G_s$ :

$$Mps / Tp \left[ C^3 \right] = Mps / Lp \left[ C^2 \right] = \left[ Mps \times Tp^2 \right] / Lp^3 = Dp \times Tp^2 = G_s \quad [0.44]$$

From the foregoing, the structure of each component in space can be expressed in terms of a real object, where  $D$ =maximum density,  $T$ =minimum time,  $M$ =maximum unit mass,  $V$ =the limiting volume and  $Lp$ = the smallest length of a rigid object.

$$(Area \times acceleration \times flux D) = (V \times (flux D / T^2)) = (V \times mass D) = M \quad [0.45]$$

$$Lp^2 \times Lp / Tp^2 \times G_s = Lp^3 \times G_s / Tp^2 = Lp^3 \times Dp = Mps \quad [0.46]$$

Hence the relative dimensional attributes of each component in space is  $Lp^3$  as volume,  $Dp$  as density and  $Mps$  as mass and the process of derivation has established the parameters to be the limit in each of its type relative to the axiomatic value of  $C$ .

$G_s$ , the surface area flux stress intensity that separates the simultaneous or compressive or continuum state of the components in space from its sequential or expansive or quantised characteristics forms a universal constant. Value of  $G_s$  provides the dividing parameter between the coherent volume and resonant volume or when exactly the solid surface characteristics alter into a fluid state. The stresses in the three axial directions are in phase so that the components act as a single, rigid, dense mass but breaks coherence to attain the resonant and expansive phase at stress intensity rate of change less than  $G_s$ . The interval of time between interactions is minimal as  $1/G_sFc = G$ , which forms the Newtonian gravitational constant in Physics:

$$G = 1 / G_sFc = 6.6712819E - 11 \quad [0.47]$$

**It is evident from the above derivation that the Newtonian form of the gravitational constant is a consequence of the merged simultaneous interactive counts  $C^x$  squared in a compression cycle that increased the stress density to 2 ( $=k^3$ ) shown in equation [1.41]. It occurs in space that**

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***has a maximum stress intensity of St as in equation [1.40], which has been identified by both Sakharov and Chandrashekhar as the metric elasticity of space. Hence space cannot be treated as a void in a vacuous state.***

The real nature of G is an interval of cyclic time that separates the interactions before it merges into a continuum or combines the components in space into a rigid group by an inward acceleration because the interactive rate has reduced by combining. Further, the merging can take place only when the time interval reduces in each axial direction identically to attain a coherent state. The reason for the failure to see its true characteristics lies in not realising that dynamism is an inherent part of the cyclic time parameter. Plurality of elemental components must naturally lead to interactive states. Therefore components in space act as a rigid aggregate when its interactive interval of time, in seconds, is less than G or compressive stress intensity is more than Gs. It determines when the coherent state of mass with a centre of action is formed from the balanced resonant state.

The merging of  $Tp^2$  in a coherent state gives an addition proof that Gs is equal to the maximum interactive stress intensity as an accelerative flux in relation to Dp as the maximum volumetric stress density:

$$Dp \ Tp^2 = Gs \quad [0.48]$$

The proof for Gs can be strengthened by deriving both Dp and Gs through an alternative method. As shown before C transmigrates as  $C^\times$  in the dense mode of a simultaneous state within the instant and its volumetric value as  $C^3$  hides a merged ratio of  $(C^\times)^2$  during the period of volume or density change of 2 units. Therefore Gs should equal:

$$Gs = [C^\times]^2 / 2 = 1.4829E+10 \quad [0.49]$$

In the compressive mode  $C^\times$  is increased C times per cyclic second as  $C^{1+\times}$  and when the instant is increased to 2 the volumetric increase is  $8-1 = 7$  as a simultaneous interaction into k as the radial increase. Therefore the maximum stress density would be Dp:

$$Dp = \left[ C^{1+\times} \right]_k^7 = 4.596E+96 \quad [0.50]$$

The fact that the maximal values of Dp, Tp and Gs can be individually derived in separate ways without destroying its mutual proportionality is the acme of precision, self-similarity, scale-invariance and logical rigor, based on axioms. **Such conformity cannot be accidental.**

Unless the interactive counts are greater than Tc between two axial directions across a radial gap with a ratio of k-1, both would act as a single interactive surface. Therefore the ability to count, detect and measure interactive states is possible only after a cyclic interval equal to  $(Tc-1)$  times Tp in seconds. Converting it to a displacement ratio in which stresses would begin to transmigrate is  $[(k-1) C] \text{ m/s}$ . Therefore the constant b as Planck's constant must be:

$$b = Tp \times Tc - 1 \times k - 1 \times C = 6.62619863 \times 10^{-34} \quad [0.51]$$

***The spectrum of simultaneous interactive stresses, from Mly to h, is hidden and undetectable from direct experimental observation because these interactive counts have merged to become a dense and coherent stress count volume as a single quantum that transmigrates from component to adjacent component in space Tq:***

$$Tq = b / Mly = 4.9278E+17 \quad [0.52]$$

Therefore each accelerative quantum transfers Tq interactive stress counts simultaneously to the next component in space which is at the Ne state. Therefore the total reduction in the stress counts is  $(b-Ne)/Mly$  as Tb:

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$$Th = b - Ne / Mly = 4.2192E + 17 \quad [0.53]$$

The quantum  $b$  transmigrates from one quantum to the next in a volumetric resonant oscillatory ratio by expanding from 1 to 2 volumes, which gives a radial displacement ratio of  $k$ . Therefore the total transmigratory count is  $kTh$  as Hp:

$$Hp = kTh = 5.3158E + 17 \quad [0.54]$$

Hp is the equivalent of the Hubble's expansion parameter which was interpreted as a redshift in the frequency of light received from distant stellar sources. The displacement of light at  $C$  frequency is  $Fc$  metres per interactive cycle per second which gives the transmigratory distance of Hp as  $FcHp$  and  $L_y = 3.26$  mega parsec as the distance Hubble's had used to obtain the ratio of expansion. Then  $Er$  as the expansion ratio is:

$$Er = L_y / FcHp = 3.084E + 22 / 5.373E + 17 = 57395 m. \quad [0.55]$$

Therefore  $L_y/Er = FcHp$  is indeed the distance at which the entire potential of simultaneous stress counts of  $Th$  is expended over that distance after which the second harmonic at  $1/8$  the stress density transmigrates over a similar distance Hp. The reduction in volumetric stress density increases the interval of separation between interactive counts which is reflected in the frequency spectrum of the light received from a distant stellar body. **In Sankhya theory space can never expand as it must absorb any interactive stress count rate higher than  $C$ .**

The Planck's constant  $h$  indicates that when resonance is broken by  $T_c$ , the distance that the interactive stresses in space would transmigrate across a resonant radial gap  $(k-1)$  to create the first volumetrically resonant harmonic. It is defined as the Compton wavelength in Physics and is a linear term, whereas it is indeed a volumetric displacement of cyclic interactive stress, as shown later on. The description of Planck's constant  $h$  in Physics as the quanta or photon indicates it is the first holographic quantum of stress that is accelerated to transmigrate across the gap created by the second sequential volumetric harmonic, which resonates in step with the primary volume. From this derivation the definition of mass and charge can be established as; when interactive stresses in space can be compressed it is a charge whereas when it acts as rigid continuum it is a mass. But the transition from charge to mass is not sudden but takes  $T_c$  interactive stress counts over a distance of  $k-1$  and volume change of 7, which has been equated to  $h$  in seconds. Therefore the quantum of stresses transmigrating over a relative distance  $k-1$  constitutes work or energy and a photon must decay over distance. Hence this transition spectrum of stresses as  $Ne$ , remain in the same or  $(k-1)$  location of the boundary as a resonant holographic quantum in a perpetual oscillatory state and is measured as the Compton wavelength. As long as the  $Ne$  oscillatory stresses do not transmigrate the oscillations continue. When 7  $Ne$  are accelerated simultaneously across the  $k-1$  to equal  $h$  as the quanta or photon, the loss in sequential stress per quantum is  $Lq$  counts per cyclic second:

$$Lq = \frac{7Ne}{Mly} - \frac{b}{Mly} = C^2 \frac{k-1}{7} = \frac{k-1}{7} \left[ \frac{1}{Cc \times Ce} \right] = 3.275E + 15 \quad [0.56]$$

$$Lq = \left[ \frac{b}{Mly} \left[ \frac{1}{T_c - 1} \right] \right] = 3.275E + 15 \quad [0.57]$$

$Lq$ , the difference in coherent potential, is also equal to the variation in surface area flux density of the electromagnetic field and is shown above. It is also equal to the stress count that breaks coherence to initiate sequential transmigration. Count values above  $Lq$ , the resonant interactive stress count, stresses transmigrate with outward acceleration whereas from 1 to 6  $Ne$  where the counts are less, the acceleration is inward that gets progressively larger. At  $7/Mly$

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=Ab, the maximum accelerative count, it is evident that the resonant Ne state must be triggered instantly to 7Ne for a photon to radiate. Unless at least one Ne is motivated to transmigrate no stress transfer takes place and no work or energy functions. Ne, the resonant state, is the neutrino in Physics and does not transmigrate but any change in stress count in excess of Tr creates it at that location. In Physics Lq is equal to 13.6 volts. As Gm is the transfer constant from coherence to resonance,  $13.6/Gm = 1.89$  volts which is the work function value in the photoelectric effect.

Gs, the Sankhyan interactive stress ratio that determines when a volumetric interaction is coherent or resonant. Recalling that inward acceleration is caused by reduced interactive counts due to merging, transmigration of stresses towards the centre increases compressive stresses around the components in space and maximises when the interactive count difference between each axial direction becomes less than Tc. The reverse outward transmigration commences when the counts between two axes become more than Tc. Within the transition period of Tc, a resonant state prevails.

The foregoing derivation establishes the nature of interactive states of the components, comprising space, in the simultaneous and resonant modes. The combining of 8 components into a simultaneous state, through the Abs inward accelerative stress as gravitation, led to the derivation of the 7 incremental volumetric states of Mp. At the same time the stress intensity or interactive count density at the resonant boundary would change to a lower level as ratio Px:

$$Px = \left[ \frac{1}{2} \sqrt{\left[ \frac{10}{\pi} \right]^2 + \left[ \frac{10}{\pi} \right]^2 + \left[ \frac{10}{\pi} \right]^2} \right]^3 = 20.94799 \quad [0.58]$$

The change, compared to Kx, as a ratio P:

$$P = Kx / Px = 0.04367904 \quad [0.59]$$

The factor  $10/\pi$  denotes the interactive transition from the coherent state to the resonant state in each axial direction. Extending it to the domain of experimental Physics, with the value of time in seconds, (in volumetric form,) PM in kgs as  $m^3/s^3$  and the same dimensional process can be continued though the values are derived as dimensionless interactive count ratios.

$$PM = P / C^3 = 1.67442 \times 10^{-27} \quad [0.60]$$

PM is the transitional state of the coherent core Mps state into a resonant particulate state and forms the resonant nucleus in Physics. It is an undetectable resonance at the surface boundary of the 8 combined components of space. Analysing the entire spectrum of transition from the coherent Mp to the resonant P and Mps to PM, the compressive and expansive interactive stresses remains in total balance, confined within the same location. It therefore provides a dynamic potential head that would radiate the stresses in a sequential transmigratory mode when the difference in the interactive interval exceeds Tc. Therefore the ratio of compressive to expansive stresses in the simultaneous and resonant states can be derived as Mp/P or Mps/PM in terms of the second in Physics:

$$(Mp)(Px) = 149.62847 \quad [0.61]$$

$$Mps / PM = 1.316E+19 \quad [0.62]$$

$$\left[ \frac{Mps}{PM} \right] \left[ \frac{P}{Mp} \right] = C^2 = \left[ \frac{1}{8\mu} \right] = 8.796E+16 \quad [0.63]$$

$$\frac{Mps}{PM \cdot Px} = C^2 Gm = \left[ \frac{2\pi}{10} \right] 10^{18} \quad [0.64]$$

The above transition marks the ratio of change from a resonant to a coherent state and is extremely significant. Firstly, Mp/P is less than Tc thereby ensuring that the coherent

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state will never be broken spontaneously to attain a resonant state. Secondly the transition from the resonant sequential to the simultaneous coherent states has a merged ratio  $C^2$ , signifying that the charge to mass and vice versa conversion is exactly the same as found experimentally. The source of the permittivity and permeability constants arises from changes in the Mps/PM domain, which has never been identified in Physics. Hence the erroneous idea had evolved that electric and magnetic fields were mutually induced and therefore it had the ability to propagate its force to infinite distances. Thirdly, there are 18 orders of interactions, each equal to  $2\pi/10$  of a cycle, merged into simultaneous state at high interactive stress density and conceptually it can be seen as winding numbers or cycles frozen together. It forms the potential well as stress counts merged into the simultaneous state that causes the tremendous inward acceleration as the source for gravitation.

The dynamic potential in the coherent state as merged simultaneous interactions provides the acceleration to radiate a quantum of stress as Ps:

$$Ps = \left[ \frac{Mps}{PM} \right] \left[ \frac{1}{Px} \right] = 6.2827E+17 \quad [0.65]$$

The ratio of dynamic potential Ps and the intensity of stress in space St is a perpetual state as:

$$Rs = \left[ \frac{Ps^2}{St} \right] = 1.02040816 \quad [0.66]$$

The sequential interactive counts required to accelerate a stress quantum is Ks:

$$Ks = h / Mh = 4.9278E+17 \quad [0.67]$$

The difference as a ratio of Ps/Ks is Pp:

$$Pp = \frac{Ps}{Ks} = 1.27495 = \left[ \frac{7}{2\pi} \right]^2 Rs \left[ 1 + \frac{1}{Tc-1} \right] \quad [0.68]$$

The simultaneous to sequential transition ratio Pp is larger than the needed displacement ratio  $k$  in order to provide the coherent symmetry breaking constants shown on the right. Reiterating, the nucleus, comprising 8 components bound by gravitational acceleration  $Ab$ , is a simultaneously interacting combination of a coherent and resonant interactive oscillations, compressive at the core as Mps and expansive at the boundary surface as PM, providing the potential to sustain a perpetual harmonic oscillatory state and initiates the transmigration of stresses when its harmonic balance is upset.

While the compressed Mps had the  $Lp^3$  forming  $Vp$  with extremely high density interactive stresses PM as the expansive state, has a relative volumetric state  $Vm$  created by Rp:

$$Rp = k-1 / C^{1+x} = 5.089E-15.....Vm = Rp^3 = 1.318E-43 \quad [0.69]$$

The resonant state commences by expanding to twice the volume and  $k-1$  is the incremental displacement. Along with it the constant  $C$  increases by  $C^x$  to occupy the incremental displacement gap. The Mps stress density Dp reduces to PM/PM as Pd:

$$Pd = PM / Rp^3 = 1.27E+16 = \left[ \frac{C^x}{k-1} \right]^3 \left[ \frac{Kx}{Px} \right] \quad [0.70]$$

The gravitational acceleration at the boundary surface reduces to a very small value Pg:

$$Pg = \left[ \frac{PM}{Rp^2 Gs} \right] = 4.36E-9 \quad [0.71]$$

Because the inward acceleration is very low as Pg, the outward stress transmigration can be initiated easily. The period of cyclic time (second) is Pt:

$$Pt = \sqrt{Rp / Pg} = \sqrt{Gs / Pd} = 1.08038E-3 \quad [0.72]$$

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Also the Permittivity and Permeability parameters are directly connected to Rp as the radial distance of the coherent surface of PM. Hence the mode of derivation of the two parameters in Physics is an approximation as the existence of the Pbo state had not been established. In Sankhya time is not a separate parameter for it only indicates the interactive interval in an axiomatically dynamic oscillatory state. Therefore, as Mhy was derived on the bases of an accelerative transmigration from all six sides of a volumetric state, then  $Pr^6 \propto Ps = 1$ :

$$Pr^6 \times Ps = (1.59E-18) \times (6.283E+17) = 1 \quad [0.73]$$

Two important principles are covered in this equivalence. Volumetric change in interactions in the simultaneous state is equal to the change in the cyclic interval thereby proving that no stresses are unaccounted for. Or that the algebraic sum of the exchange of compressive and expansive stresses are zero. Since measurable time is not involved no work or energy is lost in resonant decay, hence the entire oscillatory process can continue perpetually. Therefore the complex nuclear state will decay in infinite cycles or time. Its proof is provided by the constant of resonant decay in infinite cycles Rs:

$$Mps / [(PM)(Px)(C^2)(7)] = Rs = 1.02040817 \quad [0.74]$$

Beyond the PM boundary the resonant state can change to an outward accelerative stress transmigrationary transfer when the resonant symmetry is broken. Gm is the constant that transforms the coherent state to a resonant one. The incremental displacement ratio  $k-1$  and the seven incremental volumes during the expansive phase form a ratio  $Ke = (k-1)/7$  in each axial direction and in all three it is  $Ke^3$  and the ratio of increase is  $Ke^2$ . The increase in volumetric ratio when expanding resonantly is 2 or  $ke^3$ . When PM expands the stress density must reduce to Pm:

$$Pm = \frac{PM}{Gm} \left[ \frac{2+Gm}{1+Ke^2} \right] + 2 = 1.67262151E-27 \quad [0.75]$$

When PM expands it reduces to Pm and on the compressive cycle it increases to Pn:

$$Pn = \frac{PM}{Gm} \left[ \frac{2+Gm}{1+Ke^2} \right] + 2 = 1.67492765E-27 \quad [0.76]$$

Pn is the Neutron mass and Pm is the Proton mass in kgs while PM is not yet recorded in Physics. PM is a pivotal coherent state in substantial space. The proof that Pn, PM and Pm are in a perpetual harmonic oscillatory state is given below:

$$\left[ \frac{PM-Pm}{Pn-PM} \right] \left[ \frac{2}{Gm} \right] = 1.. (and) .. \left[ \frac{PM-Pm}{Pn-PM} \right] \left[ \frac{2}{7} \right] = Rs = 1.02040817 \quad [0.77]$$

The above proof shows that compression and expansion stress exchange takes place perpetually within the same cyclic time and the average value is  $Gm/2$  as Gmr:

$$Gmr = Gm / 2 = 3.57142857 \quad [0.78]$$

Gmr is the dimensionless nuclear gyromagnetic ratio in a free field of space. The difference between  $Gm/2$  and  $7/2 = 1/14$  and confirms the perpetual status as  $7-(-7) = 14$ , as a precisely balanced interactive state. Both Mps and PM are factored by Gm, proving again that the coherent and resonant states exchange coherent mass in the Gm cycle whereas the Pn & Pm states exchange coherent charge as mass. The exchange of compressive and expansive stress within the nuclear boundary is a change in the stress density as a potential. The similar exchange at the 2<sup>nd</sup> harmonic boundary accelerates stresses to transmigrate to the adjacent component in space. The symmetry breaking parameter Tc and the impedance to stress transmigration Si/Rs form a ratio as Si/(Tc Rs) and the stress count intensity of PM is reduced at its harmonic boundary as Mep as kgs:



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$$Mep = PM \cdot Ke^2 \cdot \frac{k-1}{100} \cdot Tc = 9.114E - 31 \quad [0.79]$$

*Simplifying PM/Mep can be written as:*

$$\left[ \frac{7}{k-1} \right]^2 \left[ \frac{10}{2\pi} \right]^2 = 1837.187315 \quad [0.80]$$

*Mep is the compressive flux stress density at the 2<sup>nd</sup> harmonic surface boundary oscillating as a single spherical envelope around PM, at the resonant rate of C but with a volumetric displacement of twice that of Vm. The Mps density of Dp was derived using  $(C^{1+\infty} k)^7$  as the compressive state. Similarly the expansive state is  $C^{1-\infty}$  and its sequentially interactive and merged density is Dm:*

$$Dm = \left[ C^{1-\infty} \right]^7 \quad [0.81]$$

$$Me = \left[ \frac{Dm}{Ab} \right] \left[ 1 - \frac{2}{\sqrt{5}} \right] = 9.11023E - 31 \quad [0.82]$$

*Mep is the resonant stress flux density value when the PM boundary compresses. Me is the merged stress flux density when Mps expanded. Therefore, PM in the Pho state has a Gmr ratio that would resonate with its boundary if the oscillations are to continue perpetually. Therefore the difference in compressive stress density between Mep and Me must enable the derivation of the expanded density state as Mee or the Electron in Physics. But the 2<sup>nd</sup> harmonic boundary has a displacement ratio of k that would modify the Gmr proportionately.*

$$Mee = Me - \left[ \frac{Mep - Me}{kGmr} \right] = 9.10938382E - 31 \quad [0.83]$$

*Mee is the Electron stress density and matches experimental findings precisely. The proof is shown below:*

$$\left[ \frac{PM - Pm}{Pm - PM} \right] = Gmr = 3.57142857 = \left[ \frac{Mep - Me}{(Me - Mee)k} \right] \quad [0.84]$$

*Gmr is the ratio of the finest level of difference between compressive and expansive oscillatory states and has a value of GmrC oscillations per second as Ls:*

$$Ls = GmrC = 1.0591998E + 9 \dots \text{cycles / sec} \quad [0.85]$$

*Ls is the increased rate needed to create the Gmr ratio from the normal Pho rate.*

***It is an extraordinary state of dynamic balance but is made to seem sterile mathematically. The left side of the Gmr equation is in the simultaneously interactive state C, at a much higher stress density level and the compressive and expansive stresses exchange counts too are at the same rate Gmr. Whereas the right side is in the sequentially resonant state C, but at a much lower stress flux density level, at a displacement ratio k and rate of Gmr. Change in sequential time at the Mee or Electron level as charge is converted to a simultaneous potential level as mass at the Pm or Proton level, within the same period. The mechanism of converting both the simultaneous counts as potential and the sequential count as a time interval is by varying the stress count rate change both additively and logarithmically at the same time. It is a tunnelling process where density is increased by converting the count to its logarithmic value or by creating the simultaneous state through incremental stress counts that breaks resonance. The***

*The ratio of two sequentially interacting components will have a cyclic ratio difference as*

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$$\left[ 1 - \left[ 1 / \sqrt{1 + 2^2} \right] \right] = 0.5527864 \quad [0.86]$$

In the simultaneous interaction the logarithmic increase of C will be  $Lq$ :

$$Lsq = \text{Log}(C) + .5527864 = 9.02492235. \text{ (and)} 10^{9.02492235} = 1.05906436 \text{E} + 9 \quad [0.87]$$

The logarithmic value  $Lsq$  is less than  $Ls$  because the perpetual resonance factor  $Rs$  has been changed by the increase in count rate consequent to decrease in the  $Pp$  ratio of change from simultaneous to sequential states. The compressive stress count as  $C^\infty / Pp = 1.35076825 \text{E} + 5$ , is the ratio needed to break resonance but the cyclic time in which this interaction occurs must be reduced from  $Pp$ . The ratio of radius to circumference is  $2\pi$  and  $1 / (2\pi)^3$  is the coherent or simultaneous time value for a coherent cycle. Therefore:

$$C^\infty / \left[ Pp - 1 / 2\pi^3 \right] = 1.35505304 \text{E} + 5 \quad [0.88]$$

Correcting  $Ls$ :

$$Lsq - 1.35505304 \text{E} + 5 = [1.05906438 \text{E} + 9] \left[ \frac{2}{7C} \right] = 1.02027762 \quad [0.89]$$

The value above is less than  $Rs = 1.02040817$  providing the proof that the simultaneous potential stress count has reduced through a logarithmic factor to provide the increase in the sequential count at the expense of a change in  $Rs$ .

$Ls$  is the Lambshift, found experimentally in Physics and it gives proof of the continual exchange of stress quanta as photons that keeps the  $Pm$  as Proton and  $Mee$  as Electron in a dynamic state. Here again  $Mep$ ,  $Me$  and  $Mee$  exchange sequentially resonant charges, ready to transmigrate. However, as stated earlier, the  $Mee$  or the Electron has an interactive displacement of  $k$ , which would affect experimental measurement by a proportionate impedance factor  $Si$  as follows:

$$\left[ 1 / \left( 1 + \frac{1}{k-1} \right) 100 \right] + 1 = 1.002063. \text{ (and)} Ls / 1.002063 = 1.05701926 \text{E} + 9 \quad [0.90]$$

The measured value of 1057 Mcs is a convincing proof for Sankhyan theory as it is an axiomatic derivation in which there are no uncertainties, hence all the interactive stress count values are shown precisely and unambiguously. Further proof is provided by precise matching of ratios of important parameters for which there is no theoretical reason in Physics but as shown the Sankhyan axiomatic derivation leaves no room for doubt.

The Proton to Electron mass ratio as a dimensionless number is an enigma in Physics. The  $Pbo$  state derivation demonstrated the equivalence of the Electron as the boundary state of the Proton, both of which oscillated at the same rate  $C$ .

$$\left[ \frac{Pn}{Pm} \right] = 1.00137875 = 1 + \left[ \frac{k-1}{7} \right]^2 \quad [0.91]$$

$$\left[ \frac{PM}{Mep} \right] = 1837.18731507 = \left[ \frac{7}{k-1} \right]^2 \left[ \frac{10}{2\pi} \right]^2 \quad [0.92]$$

$$\frac{Pn}{Me} = 1838.512267 \dots \frac{Pn}{Mee} = 1838.6838 \dots \frac{Pm}{Mee} = 1836.1522 \quad [0.93]$$

$$\left[ \frac{Pm}{Mee} \right] \left[ \frac{1}{\beta} \right] = 1.00000025846445 \quad [0.94]$$

The  $Pm/Mee$  ratio 1836.15219687196, as the Proton to Electron mass ratio, referred to as  $\mu$  or  $\beta$  in Physics, is recorded as 1836.1526724718. It is slightly larger because the hidden  $PM/Mep$  ratio that forms the reference base which is not yet discovered in science has coloured the experimental measurement. The proof given here discloses the real nature of the  $Pm/Mee$  ratio which has been derived axiomatically and confirms its correctness compared to the measured value

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$$\left[\frac{7}{k-1}\right]^2 \left[\frac{10}{2\pi}\right]^2 \left[\frac{1}{\beta}\right] = 1.00056348397 \square \frac{PM}{Mep} \frac{Mee}{Pm} = 1.000563743 \quad [0.95]$$

The comparison of  $\beta$  with PM/Mep and the same with Pm/Mee as the actual value of the Proton and Electron in a resonant state of balance shows a small difference. Any experimental measurement interferes with the resonant state and hence both the Proton and Electron have a different measured value from that shown in Sankhya. It must be reiterated strongly that axiomatic derivations cannot be changed and therefore form a benchmark, as it has been proved by the foregoing.

All the ratios match precisely, considering that the axiomatically derived values cannot be changed but experimental measurement errors need tolerance levels. Since all the states relate to stress levels on the components in space, the accelerative environment on the earth would induce errors in measurement too. Reiterating, the derivation of the Pho state and all its concomitant ratios based on axiomatic fundamentals, at the most important core level of Physics, have never been carried out nor attempted. However, the precise equivalence of experimental findings provides unequivocal confirmation for Sankhyan logic that all phenomena can be derived by the process of counting interactions combinatorially. The single variable needed to balance phenomena is cyclic time.

The derivation of the Mps, PM, Pn, Pm, Mep, Me, Ne and Mly states from fundamentals are possible because the relative time-interval remains constant in a coherent and resonant environment comprising the components in space. However the Mee or Electron is the balancing outer surface boundary of Pm or Proton and therefore neither its relative oscillatory interval nor the boundary displacement ratio is ever constant. Since the process of balancing involves changes in the transmigration rates and flux density, the Mee state mass value is only correct at the instant of balance in sustaining the Pho state. Hence it is the only parameter that cannot be derived independently but it has to be equated to an axiomatic constant of balance. Because of its changing characteristics it is the only state that can be directly detected by counting.

The Pho stress is compressive at Mep, resonant at Me, attains coherence at Mps and expansive at the second harmonic level of Mee, at a radial displacement ratio  $k$  forming the boundary of PM. Similarly the higher density stress is compressive at Pn, resonant at PM, attains coherence at Mps and expands at Pm. All oscillate at the resonant Pho rate of  $C$ , at twice the volumetric displacement  $V_m$ . While the interaction between adjacent components is sustained at an axiomatic rate of  $C$ , any accelerative change increases the count rate by a logarithmically proportionate decrease in the potential ratio  $P_p$ . Therefore the harmonic state of the continuum in space is kept in dynamic balance perpetually. If and when any interactive rate goes below  $C$ , it is absorbed and the local potential rises through logarithmic conversion. The interactive control mode is based on modulating stress count densities through logarithmic variation of count rate of the standard  $C$ . All the other coherent states mentioned above cannot be counted directly but can be inferred through the state of the Mee electron state due to changes in stress count density and interactive intensity. However all the stable particulate states can be calculated precisely because of the single self-similar and scale-invariant Guna law of interactions, shown earlier.

Further proof of the internal nuclear structure of the coherent Mps and resonant PM in the Pho state is derived as follows. Stress density variations in the coherent and compressive state, changes mass proportionately whereas in the resonant and expansive interactions the sequential time interval alter as frequency of charge transmigration. In the Mps/PM mass change cyclically, both compressive as  $C^{1+\infty}$  and expansive as  $C^{1-\infty}$  interact simultaneously within a cycle and produce two phases. In the expansive phase of 7 sequential changes take place additively but in the simultaneous compressive phase it changes logarithmically. The three modes of compressive,

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resonant and expansive as  $Dp$  &  $Dm$ ,  $C^{1+x}$  &  $C^{1-x}$  and  $Cc$  &  $Ce$  respectively are shown below at its maximum value in the coherent domain.

$$[Dp \times Dm] / k^7 = [(C^{1+x})(C^{1-x})]^7 = (1/Cc \ 1/Ce)^7 = C^{2 \times 7} \quad [0.96]$$

$$C^{2 \times 7} = 4.07289E+118$$

The ratio of compressive and expansive stress is in the same order of the three modes, as given above:

$$Px^7 = 1.77E+9 \quad [0.97]$$

$$(C^{1+x} / C^{1-x})^7 = (Gs \times k^3)^7 = 2.018E+73 \quad [0.98]$$

$$(Ce / Cc)^7 = Si^{2 \times 7} = 1.173E+36 \quad [0.99]$$

The product total of the three ratios must equal the maximum stress density in the coherent domain if the Pho state is:

$$[Px^7][Si^{2 \times 7}][Gs^7 \times k^{3 \times 7}] = 4.19114E+118 \quad [0.100]$$

There is a considerable excess over the maximum which necessitates a revision in the resonance parameter, in the Si ratio only, as the other ratios cannot be changed from its axiomatic base.

$$[Px^7][\frac{100}{(k-1) \times 1.02249621}][Gs^7 \times k^{3 \times 7}] = 4.073E+118 \quad [0.101]$$

Therefore the impedance Si is corrected for resonance and is a final proof that during transmigration the resonance must be broken but instead of making an arbitrary choice of the Rs factor, the equation of balance yields 1.02249621 as the correct rate when maximum stress levels are reached in the coherent state. The modified Si value is:

$$Si1 = \frac{100}{k-1 \ 1.02249621} = 376.2676 \quad [0.102]$$

The value of the maximum electric field permittivity  $\epsilon$  as  $1/Cc$  and the magnetic field permeability  $\mu$  as  $1/Ce$  is:

$$\epsilon \max = 8.96E-12 \dots \dots \mu \max = 1.268E-6 \quad [0.103]$$

Since CL is used in Physics instead of the axiomatic C, applying the correction Fc gives the measured values:

$$\epsilon \max / Fc = 8.854E-12 \dots \dots \mu \max / Fc = 1.25663E-6 \quad [0.104]$$

Therefore the nuclear domain has the highest level of 118 orders of interactively stressed states that increase the intensity of Gs and Si as the constants that change the interactive stresses from simultaneous to resonant state. It also provides the maximum coherent potential for the three modes of stress as the density Dp, Pd and Dm for the Mps, PM and Mee particulate states respectively. Hence there is only one potential source for all the three accelerative stress transmigration characteristics as gravitation when stress density changes as mass; electromagnetic when flux density varies as charge; accelerative transmigration when interactive count rates vary. There are two transition stages. Firstly, when the simultaneous states stress density as mass, changes to a resonant state stress as flux density and vice versa, by altering its coherent symmetry to attain resonance, it has 2 modes of change. When expanding, Tc is the constant that breaks the coherent symmetry. In the reverse mode of compression, Tc is modified by Ke=7/k-1 but logarithmically as:

$$Tcn = Tc \left[ \frac{k-1}{7} \right] = 5.6398 \dots \dots Tcne = 10^{1/5.6398} = 1.50422247 \quad [0.105]$$

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*Tc and Tcne have extremely great relevance to the Pho state balance at every level. Tcne affects Cosmological and Nuclear states with equal validity. The maximum compressed density Dp at minimum relative volume Lp<sup>3</sup> of the Mps mass and the maximum expanded relative volume RU<sup>3</sup> at minimum density DD of the MU mass, provide a ratio of the extreme limits. The median resonant density Pd and volume Rp<sup>3</sup> has a dual but balanced relationship to the ratio of the maximum and minimum extreme limits that provides a control to keep the Pho state perpetually in dynamic balance, through Tcne. The Mps, Dp, Lp<sup>3</sup>, PM, Pd and Rp<sup>3</sup> states have been derived through rigorous axiomatic logic above but MU is the overall mass of the Universe, DD is the critical space stress density and RU<sup>3</sup> is the relative volumetric state of the Universal boundary. Since the latter are connected, through proportionate ratios to the former group, its values can be derived using combinatorial mathematics. Using the principle of self-similarity and scale-invariance the three parameters are derived combinatorially below to establish the connection to Tcne.*

*The ratios of change in the compressive-simultaneous, resonant and expansive-sequential state respectively are as Crs:*

$$Crs = \left[ \frac{10}{KV} \right] \left[ \sqrt{\frac{2^3}{1-(2/\sqrt{5})}} \right] \left[ k^7 \right] = 7.7036516 \quad [0.106]$$

*The following combinatorial ratios would enable the derivation of all three parameters:*

$$MU = \left[ \frac{Rp}{Lp} \right]^3 \left[ \frac{Mps}{Crs} \right] = 7.817E + 52 \text{ kgs...OMU} \quad [0.107]$$

*OMU is the maximum observable mass of the Universe.*

$$RU = \left[ \frac{Rp^3}{Lp^2} \right] Crs = 5.99334E + 25 \text{ metres...ODU} \quad [0.108]$$

*ODU is the maximum observable distance or radius of the boundary.*

$$DD = \left[ \frac{Lp}{Rp^3} \right] \left[ \frac{Mps}{RU} Crs \right] = \left[ \frac{MU}{RU^3} \right] = 3.63E - 25 \text{ kgs / cu.m..Critical .density.} \quad [0.109]$$

*The critical volumetric density of interactive stresses in space is the vital parameter that sustains the Perpetual Harmonic Oscillatory state everywhere in space.*

*The time period of the observable distance TT:*

$$TT = \sqrt{Gs / DD} = RU / C = 2.02084E + 17. \text{sec} \quad [0.110]$$

*The observable time period of the stress transmigration boundary is:*

$$TT / \text{yr} = 6.4E + 9 \quad [0.111]$$

*RU is the distance that transmigrating stresses can reach with the available potential Ps, on the basis that the drop in potential per interaction is:*

$$1 - 2 / \sqrt{5} = 1 / (1 + 2 / \sqrt{5}) = .1055728 \quad [0.112]$$

*The ratio of the merged stresses is TT<sup>3</sup>/TT=TT<sup>2</sup> and since the maximum stress intensity in space is St:*

$$\frac{TT^2}{.1055728} = 3.868E + 35 = St \quad [0.113]$$

*Proof of the above is in fact due to the merged state (Ps / TT)<sup>2</sup> that drops potential resonantly as*

$$Ps^2 / (TT^2 / .1055728) = Rs = 1.02040816 \quad [0.114]$$

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Therefore the stress quantum or the photon cannot transmigrate further than RU with the stress density it is accelerated with at source as Ks. The proof lies in the Tcne control of the Ps potential and PM state as follows:

$$\left[ \frac{Dp}{DD} \right]^{1/3} \frac{DD}{Pd} = \frac{Dp^{1/3} DD^{2/3} Rp^3}{PM} = Tcne = 1.504235 \quad [0.115]$$

Any change in the three coherent stress density states of Dp, DD and Pd immediately affects Tcne, the log of which is Tcn, the constant that either makes or breaks coherent symmetry to transmigrate an accelerative stress quantum. The density of the space is rigorously connected to the coherent stress density of the nucleus and any unbalance in the Pho state's resonance, can upset the perpetual state of balance. In a static volume the logarithmic ratio of volume to area is 3/2=1.5 but the marginally larger Tcne maintains the perpetual dynamic state of the Universe and the nucleus.

Levitiation occurs when  $2/3 - 1/Tcne = 2/(C^{1-x}) \propto 1/532$ . At 532 RPS lift or floating occurs.

**The most significant proof of unification is shown below in a simple comparative form so that it can be seen at a glance. There are four vital stages of symmetry breaking interfaces in the substratum of space that loop back to control all of them extremely rigorously through a single coupling constant that is applied in both the sequential and simultaneous interactive modes. First is the neutrino to photon transmigration interface where the parameters 7 Ne and Mly apply. Second is the electron to neutrino resonant interface of Mep to 7 Ne. Third is the nuclear / electron boundary, with the resonant to coherent transition interface between PM and Mep. Fourth is the simultaneous high density interface between MU, Mps and PM coherent mass states.**

$$\left[ \frac{7Ne}{MlyC^2} \right] = Tcn = 5.6398 \quad [0.116]$$

$$\left[ \frac{7Ne}{Mep} \right] \left[ \frac{k-1}{7} \right]^2 \left[ \frac{2\pi}{10} \right]^2 \left[ \frac{C}{Pc} \right] = Tcn = 5.6398 \quad [0.117]$$

$$\left[ \frac{7Mep}{PM} \right] \left[ \frac{10}{7} \right]^2 = Tcn = 5.6398 \quad [0.118]$$

The resonant symmetry is broken sequentially in the three states shown above. In the simultaneous state the coherent state is maintained by a logarithmic change in the coupling constant Tcn as Tcne.

$$\left[ \frac{Dp}{DD} \right]^{2/3} \left[ \frac{PM}{Rp^3 Dp} \right] = 10^{\frac{1}{Tcn}} = Tcne = 1.504235 \quad [0.119]$$

$$\begin{aligned} 1/\log(1.50423) &= 5.6398 = Tcn \\ 10^{\frac{1}{5.6398}} &= 1.50423 = Tcne \end{aligned} \quad [0.120]$$

**The symmetry shown above is an extraordinary confirmation that a single law of dynamic interaction operates in the substantial substratum of space in a self similar, scale-invariant mode based on axiomatic foundations. This unique feature in the universal manifestation process has been exposed only because there is only a single parameter of cyclic time operating in two modes of sequential and simultaneous states. Both modes**

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***exist in the substantial foundation of space that follows a combinatorial counting procedure which is rigorous and accurate. The existence of a simultaneous state of interactive phenomena cannot be detected through experimental verification but can only be derived through rigorous logic based on axioms which eliminates uncertainty in formulating a theory.***

*The density values above are consequent to the volumetric parameter, which leads to the derivation of its equality with associated changes at the limiting levels shown above.*

$$\frac{MU}{My} = 5.8136E + 103 \quad [0.121]$$

$$Klp = \left[ \left[ \sqrt{1 + 2^2} - 1 \right]^2 Lp \right]^3 = 5.8133E + 103 \quad [0.122]$$

*The comparison of maximum stress density as mass of Universe with minimum My as a ratio is slightly larger than Klp, the comparison with the relative volumetric expansion ratio to Lp. The difference is due to merging of stresses from a resonant to coherent state, where Ke and Tc govern the ratio and the reduction in stress density as mass is proportional to Kcu:*

$$Kcu = \left[ Ke / \left[ 1 + 1 / Tc - 1 \right] \right]^3 = 1.9924E + 4 \quad [0.123]$$

*Applying the correction the ratio maximum to minimum change in the volumetric state is exactly equal to the merged stress density change in ratio.*

$$\left[ \left[ \frac{MU}{My} \right] - \left[ \frac{MU}{MyKcu} \right] \right] / Klp = 1 \quad [0.124]$$

*A similar merging of stresses in the coherent state takes place due to the synchronisation of the interactions in all three axial directions, where only Ke is involved, as Psr:*

$$Psr = \left[ \frac{Mps}{PM} Ke^3 \right] = \left[ Px \frac{C^{fx}}{2} k \right] = 6.74E + 14 \quad [0.125]$$

*Psr is the unification ratio where mass and charge are at equal states of stress in every cycle. However, in the reverse process, the sequential addition of stress count densities is limited at the PM boundary as the Mee or Electron state. The compressive ratio increase is  $\alpha$ :*

$$\alpha = \left[ \left[ \sqrt{\frac{Si}{Tc}} Ke^2 \right]^3 \left[ \left[ \frac{3}{4\pi} \right] \right] \right]^{1/2} \left[ \frac{Mee}{Pn} + 1 \right]^{-1} = 137.0359893537 \quad [0.126]$$

*The ratio  $\alpha$  is defined as the fine structure coupling constant in Physics. While there is no clear cut derivational process in Physics, as shown above it is linked to Si, Tc and Ke to form the volumetric state. It has the same characteristic gravity field ratio of volumetric stress density change to flux density change or  $(L1/L2)^3 = (T1/T2)^2$ .*

*The accuracy of the above values confirm the axiomatic logic on which Sankhyian principles are based and precision of numerical values through combinatorial mathematics cannot be excelled by any other method of calculation.*

***From the foregoing the incontrovertible and extraordinary proof is given here of the perpetual interaction in space:***

$$\frac{\left[ \frac{Mps}{PM(Px)} \right] \left[ \frac{Mps}{PM(Px)} \right]}{C^3 G_s} = R_s = \frac{P_s \times P_s}{S_t} = 1.02040816 \quad [0.127]$$

*The maximum stress intensity in space is directly due to the sequential interaction of two adjacent nuclei, each comprising 8 space-components bound by the Ah gravitational acceleration, in coherent internal oscillation in the simultaneous state. The unequivocal proof is confirmed by:*

$$\frac{Mps}{S_t} = Tp = 5.696 E - 44 \text{ sec} \quad [0.128]$$

*Tp is equivalent of the impulse interval between two states of stress densities of compression and expansion in interactive space. The substratum of space is in perpetual oscillation at maximum stress intensity within the instant Tp. The stresses transmigrate, due to the perpetual oscillatory state determined by Rs, in a sequential and expansive mode till the primary stress level is expended in time TT as:*

$$\frac{MU}{S_t} = TT = 2.02 E + 17 \text{ sec} = 6.4 E 9 \text{ yrs.} \quad [0.129]$$

*The subsequent harmonics at the second, third level etc will continue at the same interval of 6.4 billion years at every lower level of stress intensity to set its ultimate rate of decay in:*

$$\left[ \frac{\log(S_t)}{\log(2)} \right] = 118.219.....or.....6.4^{118.219} = 2.02 E + 95 \text{ Billion. yrs} \quad [0.130]$$

***Therefore the theoretical rate of decay of its resonant state has a half life of 6.4 billion years, which can extend to 2.02 +95 billion years to completely expend its stress intensity level St, from the instant the perpetual interactions in space ceases but that can never be unless the basic 8 space-components, in a coherent state, are rent asunder.***

The current scientific view that the expansion-contraction cycle will lead to a Big-Bang has no theoretical validity because the axiomatic derivation in Sankhya, which is self generated through axiomatic logic that needs no experimental inputs to complete it, shows the perpetual nature of the phenomenal Universe. There can be no doubt because of the extremely accurate equality of its derived constants with Physic's experimental values. It cannot be a coincidence either. For statistically, that specific method Physics depends on to support its core hypotheses, it is not possible for every constant in Physics to be matched exactly by Sankhyan axiomatic derivations by sheer coincidence. The characteristics of space can never change and hence the components in it are permanent, leading to the classic Vedic phrase **Parama Purusha** or **Nitya Purusha**, for the value of Kx is the Purusha state in Sankhya.

Recalling that the inward gravitational acceleration Ah, at the Mps surface, reduces to Pg, at the PM surface, any outward transmigration of stress requires an expansive interactive state that overcomes the inward force. Therefore Px, which forms the transition resonant state, must be accelerated simultaneously by the Tcne factor. At the PM level any increase in stress levels must overcome the Px ratio instantly or logarithmically. The Px ratio defines the simultaneous stress intensity increase and Pw as a sequential increase in ratio.



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$$P_{\Sigma} = \left[ P_X^{T_{me}} \right] = 97.11994...and...P_W = \left[ \frac{2}{\sqrt{1+2^2}} \left[ P_X^{T_{me}} \right] \right] = 86.8667 \quad [0.131]$$

The simultaneous stress potential Ps is modified by  $P_{\Sigma}$  and  $P_W$  as follows:

$$\frac{\left[ \frac{M_{ps}}{(PM)(P_{\Sigma})} \right]}{\left[ \frac{M_{ps}}{(PM)(P_{\Sigma})} \right]} - \frac{\left[ \frac{M_{ps}}{(PM)(P_{\Sigma})} \right]}{\left[ \frac{M_{ps}}{(PM)(P_{\Sigma})} \right]} = 1.275 \quad [0.132]$$

$$\frac{\left[ \frac{M_{ps}}{(PM)(P_{\Sigma})} \right]}{\left[ \frac{M_{ps}}{(PM)(P_{\Sigma})} \right]} - \frac{\left[ \frac{M_{ps}}{(PM)(P_W)} \right]}{\left[ \frac{M_{ps}}{(PM)(P_W)} \right]} = 1.3718 \quad [0.133]$$

Both the  $P_{\Sigma}$  and  $P_W$  factors are larger than the minimum drop in potential ratio  $P_p=1.2749$  needed to accelerate a stress quantum into a transmigratory mode.  $P_{\Sigma}$  is just marginally greater than  $P_p$  and is equal to the  $h/M\gamma$  ratio for accelerating 7 Ne as Neutrinos. The  $P_W$  state has a large enough potential-drop ratio to accelerate the nucleus, which creates one Me state and 7 Ne at the boundary. The details are in the relevant chapters. In Physics the  $P_W$  is defined as the  $W^+$  - boson and the  $P_{\Sigma}$  the Z boson.

There is a conceptual difference in the principle of generating force or accelerative transfer of stresses between Sankhyan theory and Physics. Balance between high and low density stresses is maintained by keeping the oscillatory count identical. Interactive stresses transmigrate always from a higher count rate to a lower one. However, a higher density stress region can have a lower interactive count rate if many stress counts merge to act as a single unit simultaneously. The  $P_n$  and  $P_m$  states are the compressive and expansive displacements of the dense and rigid nuclear volumetric surface of PM, at a resonant rate C. At the same time the flexible and resonant boundary at an incremental volume, at a displacement distance ratio of plus  $k-1$ , oscillates at the same rate of C. Here the Me and Mee states act as the compressive and expansive states relative to the stable state of Mep. It is coupled to the PM state synchronously through resonance at the Gmr volumetric ratio. Any change in the rate C at both surface levels, initiates stress count transmigration either way but always towards the lower rate. The  $P_n$  and  $P_m$  increase or decrease stress density which is in the simultaneous or merged state. Hence a single interactive count difference can alter many counts that are merged at that instant. Multiple counts as stress densities are varied within the coherent state of the PM ensemble. It is a case of one interactive count varying many counts in the same count cycle as a potential amplification process.

Multiple stress counts merged together do not 'weigh' more but only react on a count to count basis, because the stresses are only the oscillatory state of the components in space. As stress densities increase the oscillatory flexibility of components become less and turn rigid, leading to the concept of the metric elasticity of space. Large bodies of air or water too, behave in exactly the same way but a broad based scientific bias treats these in a generalised mode where interactive stress density is treated as pressure and interactive count rate as temperature.

In the Me and Mee lepton region the displacement is over a  $k-1$  distance ratio and therefore stresses move sequentially. If the number of stress count, in both forward and reverse directions, remain equal the balance is kept. But if for example the  $P_m$  rate is higher, stresses will accelerate towards the Mep state and depending on the count-rate above C in the  $k-1$  region, sequential transmigration begins in that direction. It is a three dimensional or volumetric

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expansion and contraction process that is transferred to the next component in space. It is an extraordinary process of converting simultaneous stress density into sequential count numbers in every cycle and vice versa at the same axiomatic resonant rate of  $C$  across a displacement gap ratio of  $k-1$ . Because the components in space maintain a resonant interactive rate at  $C$ , higher rates transmigrate but lower ones get absorbed.

The stress intensity in space, synonymous with pressure in Physics, is:

$$St = C^3 Gs = Mps / Tp = MU / TT = 3.868E + 35 \quad [0.134]$$

It is highly indicative that the ratios of maximum simultaneous mass to minimum compressive time and maximum sequential mass to maximum expansive time are equal to  $St$ . Unless the ratio of mass/time-cycle exceeds  $St$  there can be no transmigration of stresses and as shown it is not possible in the regions between the limits. Therefore no gravitational 'waves' are possible. However, light from the Sun, as stress transmigration quanta, has a higher ratio stress count rate shown above as  $Fc$ , which is the reason that it transmigrates outwards. Hence any higher rate of expanding stress must transmigrate. The constancy of  $C$ , the resonant oscillatory rate per cycle is ensured in the substratum of space as follows:

$$C = \left[ \frac{Kx(Gm) Tp}{Mps} \right] = \left[ \frac{Kx(Gm)}{St} \right] \quad [0.135]$$

Hence  $Mps$ , as maximum mass, can only reduce. It can then react to increase  $C$ , since  $Kx$  and  $Gm$  are constants.  $St$  has two control modes where  $MU/TT$ , as Universal mass and time, is an extremely long duration mode of 6.4 billion years, which virtually assures constancy of  $St$ . Hence if  $Mps$  reduces then  $Tp$  must also reduce as  $St$  is constant, which instantly brings  $C$  back to its stable level in displacement distance  $Lp$ . Hence it is virtually impossible for  $C$  to increase as a part of the Pbo state and the action is within the  $Tp$  time cycle. Further the process is bootstrapped as  $Gs/Tp^2 = Dp = Mps/Lp^3$ . It is an extraordinarily instantaneous process because it introduces a new concept in Physics which in Sankhya is defined as the third order constraint or damping force. Since  $Lp$  is fixed and  $C$  cannot increase,  $Mps$  can reduce only if  $Tp$  increases. When  $Tp$  increases  $C$  must reduce and along with it flux, volumetric density and mass too reduce appropriately. Since it is at the basic level it affects all levels.

Mathematically Planck length  $Lp = C Tp$  depicts a linear equation. But space is volumetric or three dimensional. The component in space has been shown to  $Lp^3 = C^3 Tp^3$  and therefore when events are dealt with linearly the area aspects becomes submerged or is overlooked. Then the ratio  $Lp^3/Lp = Lp^2 = C^2 Tp^2$  must also be accounted for when dealing only with linear aspects as it is hidden as a simultaneously interacting or merged state that acts as a single unit. In Physics, the experimental approach has been to find a solution without first addressing the principles involved. Since it is a key issue the display of numerically solved expressions given below is to enable the understanding of the crossover in logic, between Sankhyian and current theories, through mere visual inspection. As an example, the correct stress transmigration rate at the Solar surface is shown as  $V$  and  $Vs$  as the ratio  $C/V$  and Solar mass  $MS = 1.97E + 30$  and Solar radius  $= 6.98E + 8$

$$V = \left[ \sqrt{\frac{Rs}{Lp} \frac{Mps}{MS}}^{-1} \right] C = 4.3627E + 5 \dots Vs = C / V = 679.8 \quad [0.136]$$

Since the stress transmigration rate has reduced to  $V$  the time  $Tp$  must increase, as a relative ratio to the merged and undetectable parameter  $Lp^2$ , as both  $Lp$  and  $Lp^3$  can be dealt with explicitly. The expression below gives the ratio of  $Tp$  increase to compensate for the reduction of  $C$  to  $V$  by the ratio  $Vs$ .

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$$\left[ \frac{Lp^2 - Tp^2 V^2}{Lp^2} \right]^{1/2} = 1.0000010819 \quad [0.137]$$

The ratio reflects the increase in time needed to reduce the oscillatory rate of  $C$  by merging  $Tp$ ,  $V$ s times, which is shown above, relative to  $Lp^2$ . Any transmigratory stress in the linear direction must affect the area of each component as the stresses are transferred through colliding interactions where the cross-section is  $Lp^2$ . The averaged and overall view in Physics is that it is a velocity parameter but that cannot be correct in a continuum of high density components where only stresses can be transferred. In Special Relativity and in Electromagnetic theory the above factor is interpreted as a contraction in length and increase in time which is calculated through the Lorentz transformation to justify the change observed experimentally. The solved expression, using  $V$  and  $C$  as above, along with a simplified version with  $V$ s is shown as:

$$\left[ 1 / \sqrt{1 - \frac{V^2}{C^2}} \right] = 1.0000010819... = \left[ 1 + \frac{1}{2Vs^2} \right] \quad [0.138]$$

The Sankhyan transformation shows the logic on which this change comes about and yet its value is identical to the Lorentz formulation. The fact that it is really dependant on the ratio of change from  $C$  to  $V$  simplifies the process of understanding that logic. However, the explanations in SR and EM theories have been based on a tenuous and construed logic where measuring rods contract and clocks slow down, due to the lack of understanding in depth of the structure of space. The apparent reduction in the oscillatory rate of  $C$  due to super-positioning of interactive stress counts on a real component in space with a consequent increase in the time interval has been interpreted as a contraction in length and a slowing down of clock ticks showing a corresponding increase in time. It must be emphasised here that the rate  $C$  is a constant but merges in compressed or simultaneously interactive states that give the impression of reduced counts and therefore the interval of time between two adjacent counts seem to lengthen. The discontinuity in logic is evident when a linear change in time needs a squared parameter for its correction. As shown, only two possible simultaneous variations exist as reduction in the rate  $C$  with a proportionate increase in  $Tp$  as  $Lp^3$  is a constant. Applying it to all three methods makes it clear that  $Lp^2$  is kept constant.

$$\left[ \left[ 1 / \sqrt{\frac{Lp^2 - Tp^2 V^2}{Lp^2}} \right] \right] = 1 / \sqrt{1 - \frac{V^2}{C^2}} = \left[ 1 + \frac{1}{2Vs^2} \right] = 1.0000010819 \quad [0.139]$$

$$\left[ \left[ 1 / \sqrt{\frac{Lp^2 - Tp^2 V^2}{Lp^2}} \right]^2 \right] = \left[ 1 / \sqrt{1 - \frac{V^2}{C^2}} \right]^2 = \left[ 1 + \frac{1}{2Vs^2} \right]^2 = 1.0000021638 \quad [0.140]$$

$$\left[ \left[ 1 / \sqrt{\frac{Lp^2 - Tp^2 V^2}{Lp^2}} \right]^3 \right] = \left[ 1 / \sqrt{1 - \frac{V^2}{C^2}} \right]^3 = \left[ 1 + \frac{1}{2Vs^2} \right]^3 = 1.0000032458 \quad [0.141]$$

The three transforms of 3 orders have relevance and its application is shown in later chapters but in Physics only the first order formula with  $V^2/C^2$  ratio is used as the Lorentz transform.

The foregoing example is a confirmation of the real nature of space. The Newtonian development of gravitation theory was effective because the interactive states of bodies in space occurred in the simultaneous and resonant modes where clock time was ineffective. In

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Electrodynamics however, the measurement of time becomes necessary as a part of the dimensional concept in Physics, from the outer resonant surface of the nucleus that forms the electron or leptons as a category. In Sankhyan space the leptonic states including the electron are the Pbo state oscillatory boundary where resonant stresses oscillate and transmigrate on the components in space. The oscillatory excursions shown before as Mep, Me and Mee, at the compressive, neutral and expansive interactive limits, which do not and cannot occur in the same location and time, has lead to the concept of orbit and spin. Therefore it cannot be an independent object but is a quantum of stress in a holographic state supported by the components.

However, using Sankhyan logic, the problem of the classical radius of the electron, its boundary distance and its gravitational acceleration that keeps it bound to the nuclear PM state is given here, with total accuracy and interactive balance, probably for the first time. In principle if two states with different stress densities as mass remain at the same distance the inward going acceleration must be equal and opposite. The PM and Mep states that maintain the Pbo state remain at the neutral position in the interactive exchanges. Hence the equation that gives that solution is:

$$\left[ \frac{PM}{Gs} \left[ \frac{2\pi}{10Rp} \right]^2 \right]^2 = \left[ \frac{Mep}{Gs} \left[ \frac{7}{k-1 Rp} \right]^2 \right]^2 = Mg = 1.72E-9 \quad [0.142]$$

Both PM and Me have the same accelerative parameter Mg at the modified value of Rp that forms the radial boundary of PM. Using the Newtonian expression the equivalence of the both transmigration rates are as shown as being equal as a force value:

$$\left[ \frac{PM}{Gs} \left[ \frac{2\pi}{10Rp} \right]^2 Mep \right] = Mep \times Mg = 1.569E-39 \quad [0.143]$$

Therefore both PM and Mep can retain its interactive distance of separation constantly. From this equivalence the structural details of Mep can be obtained as follows where Dm is volumetric stress density:

$$Dm = \left[ \frac{7}{k-1 Rp} \right]^3 Mep = 1.35E+17 = \text{stressdensity} \quad [0.144]$$

The radial distance of Mep boundary from its centre is Rm:

$$Rm = Rp \frac{k-1}{7} = 1.8896E-16 \quad [0.145]$$

Its stress transmigration time at its boundary is Tm:

$$Tm = \sqrt{Gs / Dm} = \sqrt{Rm / Mg} = 3.313E-4 \quad [0.146]$$

Therefore stress transmigration rate per cycle C is Ct:

$$Ct = TmC = 9.8266E+4 \quad [0.147]$$

The potential available for stress transmigration in its Pbo state is Stm:

$$Stm = \left[ \frac{Ps-Dm}{h} Mly \right] = 1.00083 \quad [0.148]$$

The Dm value is just enough to allow Stm as just one quantum h to transmigrate either way in its normal state of balance. It is indeed the finest state of balance that has already been confirmed in Sankhya as the parameter Ls, or the Lambshift in Physic. Since C can only reduce with a consequent increase in time Tm the density Dm drops ( $Gs/Tm^2=Dm$ ) and volume expands thereby increasing Stm to initiate transmigration. When C returns to its correct value the Mep goes back to its coasting state. The Sankhyan derivation of the electron states is simple, balanced and equates with Physics, especially if Ct is recognised as the Faraday or coulomb constant.

Further proof that the derivation above is correct is given by the ratio of Pn to Pm. The differential value is:

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$$Q = P_n - P_m = Mee(\frac{Si}{Tc}) = 2.3E - 30 = 1.295 \text{ Mev} \quad [0.149]$$

The Neutron  $P_n$  gains only the fraction  $Q$  of Mee as incremental stress density which is equal to the merged spin angular momentum component of Gmr that keeps both  $P_m$  and Mee in the balanced Pho state. As shown in the derivation of the Pho interactive exchange,  $P_n$  is the compressive part of the cycle or to be correct it is the limit of stress density reached in the oscillatory PM state and is not a separate particle or independent entity. Similarly  $P_m$  is the limit in decrease in stress density due to expansion of the Pho cycle. Again Me and Mee are similar changes of displacements due to decreased stress levels through expansion. Because the Mps to PM coherent oscillatory state is already at the limits of compressive density change, as potential and the expansive volumetric change limit from Mps to Me states, as charge. Therefore the significant part of the Mee state  $Q1$  remains in the region between the PM surface and it's Mep boundary across the 'k-1' gap, in a resonant and undetectable state.

$$Q1 = \left[ PM \left[ \frac{Tc}{Si} \right] \right] = 6.61E - 28 \text{ kgs} = 370.813 \text{ Mev} \quad [0.150]$$

As shown above,  $Q1$  has an undetectable relative mass equivalent of 313.64 Mev, consisting of PM or Mep interactive stress ratios. It therefore has a compressive stress at the PM surface and an expanded boundary stress at the Mep surface, both with the same relative value but could transmigrate either way. In Physics this hidden state is defined as an Up Quark associated with  $P_n$  and a Down Quark with  $P_m$ . Since it is in a transition phase (resonant to coherent and vice versa), its interactions are not countable.

The expansion of the interactive states of the 8 component-agglomerate in space follows a logical interactive process that enables the derivation of the ratio of relative expansion per change in unit incremental volume. It is a constant ratio in Physics which is called the Boltzman's constant of change in energy per change in volume defined as a temperature rise. Volumetric ratio of change sequentially along all three axes per cycle is given in the expression below in terms of Mly, which is almost identical to Boltzman's constant:

$$\left[ \left[ \left[ \frac{2\pi}{6} + \left[ \frac{7}{k-1} \right]^2 \right]^{-1} + 1 \right] 2 \right]^3 7^3 C^3 \text{ Mly} = 1.380658e - 23 \quad [0.151]$$

The Pho state expands and contracts volumetrically in a resonant mode that synchronises and resonates with 7 volumetric expansions, within the same time that the primary volume expands by one additional volume over a radial displacement  $k$  or  $2^{1/3} = 1.2599$ . Unless the coherent state changed over to the resonant state no transmigration of stresses could commence. Hence the the fractional ratio needed to initiate transmigration is  $1 + 1/7^2$ . Applying it allows the axiomatic derivation of the volumetric ratio of change for each unit increment in displacement equal to the Centigrade temperature scale in Physics as Tk:

$$Tk = \left[ 2^3 - 1 \right]^3 + \left[ k + \frac{k}{7^2} \right] \frac{1}{k} = 273.259688 \quad [0.152]$$

The measured value in Physics is obtained by deducting the  $1/7^{th}$  fractional value needed to obtain a reading or result as Tkex which is the absolute temperature measured in the laboratory:

$$Tkex = \left[ \frac{Tk}{7} - \frac{hc}{Kb} \right] 7 = 273.15897 \quad [0.153]$$

The displacement per unit temperature change involves 7 volumes as a coherent group and the relative displacement per interactive interval would be:

$$T\lambda = 1 / \left[ 2^3 - 1 \right]^3 + \left[ k + \frac{k}{7^2} \right] = 2.904565E - 3 \quad [0.154]$$

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*It is a transfer in the Pho mode and hence is in two parts as (Pn-PM) and (PM-PM), the ratio of which is Gmr that keeps the coherent state in perpetual oscillation resonantly with its boundary states of (Mep-Me) and (Me-Mee). The Pn state exists always, in a state of balance which is confirmed by the activity of the electron Mee.*

***It has been shown that in substantial space the agglomeration or binding of 8 components, each volume  $V_p = L_p^3$  with the maximum coherent density, initiated the gravitational acceleration Ah. It led to the development of the Pho state that kept the substratum of space in perpetual dynamism. The Pho state provided the interface to convert sequential interactive stress transmigration as a kinetic phase into a simultaneous state of merged interactive stresses at higher densities to provide the negative potential for sustaining gravitational acceleration. Therefore the entire nuclear state ensemble provided the dynamic 'potential well' to balance two modes of interactive states in perpetual dynamism while maintaining an interface where sequential time was merged into its simultaneous counterpart through time independent operation of tunnelling through this conversion barrier. The existence of this barrier as an axiomatic process in nature is the deciding proof for the logic of derivation of the entire process of manifestation as defined in Sankhya. The resonant separation of the nuclear core PM and its boundary Me by the factor Ke as  $(k-1)/7$  &  $1/k-1$  and the ratio of increase in compressive stress to normal stress is derived below to demonstrate the axiomatic, accurate, tunnelling state of the Pho region or the potential well.***

$$\left( \left[ \frac{1}{k-1} \right]^3 C + C^{1+x} \right) \left[ \frac{k-1}{7} \right]^3 \left[ \frac{1}{7Ck} \right] = 1 \quad [0.155]$$

*In the foregoing the coherent, resonant and transmigratory states were derived from fundamental derivations based on axioms and yet its precise numerical equivalence values obtained through experimental verification confirms the logical basis of Sankhyian derivations of how and why interactive phenomena function in the way it does. In Physics the measurement of transmigratory phenomena, (essentially electromagnetic in nature) have been accurate and transparent because it could be quantised due to the existence of an interval time between two successive interactive events. However, in the coherent and resonant regions, inconsistencies have cropped up that has compelled Physicists to introduce hypotheses that apparently seem contrary to the quantum ideas. Further, the inconsistencies grew by several orders of numerical difference that forced Physics to categorise that region into weak and strong forces. Even then the problem did not end for, gravity as the so called weakest force seemed to be the link everywhere and in fact clearly formed the base for all macro phenomena. In short there was no explicit logical connection that could provide a rational mathematical connection to the operational uniformity of the entire spectrum of phenomena. But it is not so. There are two major conceptual differences in Physics that has led to a mathematical and logical dead end which prevents unification.*

*The Sankhyian intellectual process based on axioms provides a clear clue to redirecting Physics to the path of true unification. That clue is already strongly evident in the fact that electromagnetic phenomena leaves no hidden parameters in the radiant spectrum yet its source of origin in the inelastic and elastic interactive region hides the entire process. The conceptual differences lies in the fact that space has identifiable qualities which inexorably leads to the necessity of understanding the behaviour of the time parameter in a real three dimensional space. Three dimensional space is compulsorily operated by the three mutually dependant aspects of time*

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*too. Intellectually and logically time cannot be introduced into the derivation of phenomenon as an independent and isolated parameter. Because the human concept of time is merely an observable aspect of changing phenomena whereas real time is an inherent and qualitative factor in a space that is perpetually dynamic due to specific axiomatic numerical factors that control it. Physics must reorient its views that time exists or is born because space is and must be perpetually dynamic. Creating dynamism from a static base needs an external input whereas plurality of components in freedom leads to dynamism spontaneously at a particular axiomatic ratio. Sankhyan logic and combinatorial mathematics shows the invincible process.*

## **INTRODUCTION**

### **Background of axiomatic derivation.**

Sankhyakarika, in Sanskrit, is essentially a mathematical presentation of the scientific cause of phenomenon. Part 1 of this book contains the entire set of theorems interpreted in a standard way that would be expected by a scientific reader. The original Sanskrit version is transliterated and explained in detail in part 2. While it is the more important section, its real meaning is conveyed transparently in part one. Part one has been written with the aim of conveying its scientific meaning, devoid of complexities, in an easily understandable way. The axiomatic principles, on which Sankhya is based, do not form a part of the vocabulary used in Physics and Cosmology today. Considering the typical resistance the scientific academia displays towards concepts that conflict with its foundations, the focus of part one is on a wider spectrum of scientifically minded youth, who will form the backbone of tomorrow's Physics. As far as possible, description of phenomena and its related activities are limited to using commonly accepted terminologies. Since the entire theory is based on axioms and interactions are merely counted, the mathematical complexities of trigonometry, solid geometry, matrix algebra, calculus etc are eliminated. Moreover, every mathematical aspect is logically derived from axiomatic principles and no empirical or measured inputs are needed to initiate or support this theory.

Part 2 contains a more detailed and rigorous analysis of the original information in Sanskrit, leading to a complete field theory that unifies both the field and quantum concepts mathematically, through one axiomatic law, the Tri-Guna states. The single and unique 'Principle of Simultaneity' defines the process of simultaneous interactions among a field of elementary components within any confined environment. Conceptually, it encompasses an extremely simple principle that detectable time and activity are



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synonymous while stored activity or undetectable time provides the perpetual potential or rest mass to maintain a dynamic state. The interactions are maintained continuously through a scale-invariant process of exchanging energy proportionately without any external intervention. It is defined as a self-similar process where-in an interaction can continue perpetually. Stating it differently, when the interval between neighbouring interactive states reduce to some minimal value, the entire surface, though acting randomly, gives the appearance of a synchronous or simultaneously active unit. The expanding surface of a rubber balloon due to increasing pressure depicts the simultaneous nature of the moving surface.

Sankhya theory is difficult to comprehend unless one learns to assimilate the meaning of the Sutras (or theorems of logic) through the Siddhi process of meditation, recommended in it. The normal thinking process involves a sequential mode of assimilating information that is described in medical terms as a left-brain activity. The right brain sums up a variety of sequential information in a simultaneous or parallel mode to derive meaningful conclusions which motivates the individual to act on it further. The letters C A T read by the left brain does not become meaningful till the right brain equates it to the picture of feline pet stored in memory. Under normal mental states, the parallel summing up process in an individual is limited to handling only a few facts at a time or simultaneously. According to the first verse in the Atharva Veda and Sankhyan theoretical & axiomatic logic, the human cerebral systems are capable of processing 343 sets of information simultaneously and still derive meaningful conclusions that could be verified through combinatorial mathematical procedures.

The capacity to process information simultaneously allows one's mind to analyse dynamic processes in 'real time' and experience it. Attaining proficiency in Siddhi is a dedicated process that may be outside the ambit of the average individual. Hence the purpose of part one is to specifically breakdown the logic in a way that would allow the reader to mentally process such information sequentially, as our present system of education and mathematical procedures are primarily focused on a serial 'cause & effect' mode of cerebral operation.

The algorithm developed through combinatorial mathematics, based on the rules of self similar interactions in confined domains,

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provides the proof for the existence of perpetual harmonic oscillations or three dimensional vibrations that decay in infinite time. Self-similar interactive laws lay the rules for sharing interactive energy simultaneously, within a cycle, such that there is no loss or decay, which eliminates the need for an external source to maintain the interactive process. Cause & effect and action & reaction, interactively exchange potential and kinetic forces in a way that maintains the energy balance, at every instant. Newtonian laws defining inertia, momentum and reaction were framed to suit a concept comprising infinite space and independent time. Surprisingly, as will be shown later, the same principles support the Sankhyan concept of a dynamic space continuum comprising elemental components in a perpetually dynamic state through a confined environment.

The logic of adding one elemental cubic component to another creates a time disparity in the longitudinal direction. Equalising it in all three directions creates an object of  $2^3 = 8$  value. It also includes the addition of 7 unit components to form a larger scale-invariant form of an expanded unit within the same time cycle. Within this simple transformation, all the laws of Physics and Cosmology are inherent as axiomatic states and therefore in the ensuing derivations every manifest phenomenal state would be equated through combinatorial mathematics to the primary eight units forming the dynamic field unit in the continuum of space.

The Principle of Simultaneity, based on axiomatic mathematical laws of self-similarity and scale invariance, identifies precisely when a field of continuing action turns into a quantum of unitised activity and similarly when sequential time turns into a quantum that describes simultaneity. When interactive states act simultaneously or synchronously the interactive count reduces locally (recall the clap example) which is the only reason a force is generated due to the unbalanced count rate in a dynamic field.

All forces, be it electric, magnetic, thermal, gravitation etc are simply due to the reduction in interactive count in that locality from the stable harmonic count rate prevailing in the field around it. It uniquely defines the point or moment within a cycle when simultaneous interactions become a sequential process. It identifies the precise moment and reason when mass (a contained field of simultaneously interacting stresses emanating from colliding

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components) turns into energy (sequentially interacting components, the stresses from which transmigrate across the field) and vice-versa. The unification of the two complementary states as stated above, leads to resolving the enigma of relativistic phenomena logically polarising into space-like and time-like characteristics. It derives the cause of all phenomena, from gravitation to cosmic states through combinatorial mathematics using this single principle based on axioms.

The logic of unification, based on a perpetual source of oscillatory power in the continuum of space with specific characteristics, unifies not only Physics and Cosmology but also aspects of phenomena classified as spiritual, leading to mathematical concepts of divinity and divine forces. The unification paradigm eliminates the need for separate theoretical algorithms, as in Special & General Relativity, Quantum mechanics, Black-hole physics and other such formulations. Sankhya theory unifies all Universal phenomena through one axiomatic law. The fact that a single law (as demonstrated further below) can operate, at all the apparently diverse levels, emphasises the connectivity existing in space. It gives credence to the substantial nature of the universal substratum.

While the current advanced and accurate mathematical structure in science is centred on calculus in all its variations, it has an unbridgeable gap in regions of high density (or where the infinitesimal displacement interval turns to zero) that could only be analysed by principles based on simultaneous activity where the concept of measured time disappears. As a result there is every possibility that despite the profoundness of Sankhya derivations, the scientific academia may find it difficult to comprehend its invincible foundation and may take decades before it finds ready acceptance.

The need for 'Simultaneity' as a specific principle can be emphasised with a simple example. The volume of space occupied by the Earth before it was formed could be treated by sequential or relativistic mathematics. Once the Earth exists, every point inside it behaves simultaneously or all the activities inside have the same time value relative to the space outside it. Yet inside the Earth, millions of interactive states separated by large distances adjust the various changing parameters in a way that gives no detectable

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evidence to an external observer in space. The cause and effect based activity-cycles, at every instant, cannot be treated by sequential or relativistic time relationship but must be based on quantifying the accumulation and release of interactive space-like stresses, within each moment, if no reactions are to be externalised. The truth of the above description can be verified by just observing a volcanic eruption.

In Physics there is no algorithm to predict the state of a single interactive activity inside a coherent volume, whereas sub-particle physics is replete with formulas to even predict events occurring in femto-seconds. Sequential phenomena can be derived through a continuous calculating procedure but simultaneous interactions need parallel processing of sequential algorithms and if a complete phenomenological and numerical description of the Universe is to be obtained then  $10E+18$  calculators need to be used simultaneously.

‘Sankhyakarika or Sankhyayoga’ is generally understood to be a philosophical system. However the Sanskrit term Sankhya is translated as numeration, number, count, logic, reasoning etc. In the context of its systemic approach, it referred to a process of numeration, counting, logical structuring or reasoning. Through a rigorous application of such a process it derived the entire structure of the manifestation process in the Universe. Since its fundamental logic is derived from axiomatic statements, it is applicable to every aspect of natural phenomenon. Its logical validity cannot be doubted, as every derivation of phenomenon up to the Universal limit, is just an iterative process of counting interactive events based on an elemental algorithm, using rigorous and axiomatic logic.

Most intellectuals agree that any theory, capable of precisely deriving the cause of all phenomenal processes, must be radically different from everything that has been tried in the past history of organised research. The significant conclusion from our leading scientific researchers and seekers of truth today is that the fundamental problem in formulating a unified principle is a theoretical one, not experimental. The real problem facing scientists is to intellectually formulate a complete theory whose predictions could be verified with the vast amount of experimental

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data and experiences validated outside the laboratory, already in our possession.

There is no reason to doubt that every researcher seeks a world in which the cause of all phenomena is explainable in understandable terms. There would be no greater satisfaction than to know how, why and when the immense variety of phenomena occurs. It would give rise to an even greater sense of achievement if the entire variety of manifestation could be derived through one principle, law or formulation. Further, the very knowledge, that a unified paradigm exists, is enough to remove that uncertainty science, philosophy and religion is burdened with currently. Unfortunately, historically a trend has been set in motion that the primary purpose of gaining knowledge of nature was to vandalise it. Vedic thought, epitomised in Sankhya, focused on gaining knowledge to harmonise with nature and gain the maximum benefits already existing in it.

The logical process of deriving a unified structure eliminates the polarisation or duality in human understanding, by exposing the complementarities of apparently opposing concepts, ideas and definitions. It shows for instance that religion and science are in search of the same goal of ultimately understanding how the Universe functions. Though the two goals seem to be at variance semantically, logically it is just the single search for the ultimate power that moves this Universe. Hence any unification process in science cannot be considered complete unless it has a method to justify holistic and para-psychological events (normally considered a part of religious activity) that manifest and are experienced by the public. Understanding the unified structure leads the researcher to formulate a more effective and precise language for communicating difficult concepts between the apparently conflicting viewpoints.

Language, as a means of expressing logical thought processes, is to be viewed as just a method of codifying a basic activity into recognisable symbols. Clipping a light or sound source into a variety of long and short pulses forms a code. Decoding vocalised codes leads to spoken languages. Changing a monotonous background like a white paper with a contrasting system of dots leads to scripted or written language. The letters of the alphabet mentally decoded through logical rules conveys its conclusions as a language. Therefore the validity of language is not in question but

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the dependability of its arbitrarily structured meanings. On the other hand numerical codes, structured by a rigorous and logical framework, make it reliable, like in computer software.

There are no absolute meanings associated with a set of letters. The meanings of words are derived by people and its usage over a period of time established its effectiveness. Languages have the capacity to describe events and objects in many ways but because of this very flexibility it lacks precision. Absolute numerical values on the other hand are precise but lack the flexibility of the former. However, a numerical ratio combines preciseness and flexibility to quantify objects and events unequivocally. For instance the ratio half can be presented numerically in countless ways as 1 by 2 or 50 by 100 and could be made to mean numerous things precisely. The proof lies in the binary code forming the foundation of computing theory.

Though intellectual research may yield many new principles or mathematical formulations, its universal acceptance is dependent on seeking external verification or experimental confirmation. That however does not increase the confidence level that such a theory could indeed be correct. On the contrary, if the formulations and derivations are either based on or lead to axioms the theory becomes readily acceptable. Axioms are obvious or transparent facts that need no verification or its premises cannot be disproved. For instance the statement that 'one plus one is two' is a perfect axiom based on the accepted meanings of the terms used. It cannot be disproved unless one doubts its semantic structure. Hence if for example a theoretical derivation leads to a precise solution in the form of a ratio as  $1 / 2$ , then regardless of the complexity involved in processing it mathematically, the proposition must be accepted if the same ratio is predicted as its solution.

The concept of time is the most difficult parameter to integrate into phenomena. Obviously 'time' is an observable aspect of phenomenon which is taking place in space that can be described economically, only in terms of volumetric, cubic or 3 dimensional form. Analytical methods using one/two dimensional paradigms are fraught with hidden errors that cannot be sorted out. Further, clock time is not measurable or accountable directly. The pointer on a clock or a pendulum completes a circular set of discrete moves going back to the starting point, indicating a cycle. In reality

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the scientific concept of time reduces to counting the number of times a 'unit' displacement moves to complete a standard length like the circumference of a circle. The critical factor here is the identification of the completion of a cycle. Any measurable or observable change is associated with duration or time sequence and its value as a meaningful measure can be derived only after comparing it with another similar process.

Basically the concept of 'time' is a comparative ratio of two dynamic displacement activities, with the added proviso that one of them should conform to some acceptable standard. But an accurate standard could be established by relating any change in sequence as an axiomatic ratio to some aspect that does not change. There is a caveat in the measurement of time. While time can be measured as a ratio between two changing activities, simultaneous changes too would indicate the same time ratio or interval. Hence if discrete units of time are used as a measure of activity it has the built in error that one cannot infer the total number of simultaneous activities that have occurred within the same time ratio or interval. In simultaneous activity the interval separating activities disappear. However, despite the conceptual confusion, Sankhya uses cyclic time as the only parameter to define phenomena.

If an elemental object is to be derived simply and logically, it must be in the form of a cube that remains constant at every instant. Two cubes placed longitudinally when compared to its height give a vector ratio of 1 to 2. The foregoing statement is an axiomatic derivation because the first interaction can be only with a similar adjacent unit. Solving the vector ratio gives the constant, consistent and accurate ratio of change at the very fundamental level. Counting ratios of such changes as distinct events would provide the most logical scale invariant and theoretically correct process. Sankhya derives such a ratio and constructs the entire gamut of phenomena from it.

Time is essentially a ratio of two or more activities. For instance if 10 people clap one after another then 10 claps can be counted and equated to 10 units of an identified interval. But if the 10 claps occurred simultaneously (or at the same instant, that is within the time taken by one clap) only one clap could be counted. Thereby an anomaly is created where the 9 hidden claps vanish and become unaccountable but indirectly introduces another parameter

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like intensity, density, mass or simultaneous number of claps that are not directly accountable. Therefore, just counting claps is not enough, for the hidden factor of density, intensity, inertia or mass has to be integrated into the measuring process through some form of mathematical comparison in a simultaneous mode. Further it needs an unequivocal numerical definition to identify when exactly a close-set sequence of events can be considered as being simultaneous. While defining space in three dimensions as the product of length, breadth and height has no built in caveats, time as the dynamic ratio of length by displacement must be treated with logic that is able to discriminate between the two modes of sequential and simultaneous behaviour where interactive counts vanish by merging. Simultaneous interactions with merged counts indicate a potential state whereas the same value forms the kinetic activity in a sequential form.

In a large group of crowded objects, with a restricted degree of freedom to move, only interactive stress transmigration would display cyclic time periods where the activities repeat in the same way. It's a fact that two objects cannot crossover in a restricted environment unless either of them 'give-way, accommodate or share space at the same time'. In this situation there is no evidence of the existence of an external force. The restricted freedom imposes a constraint if the constituents initiate a change. Though the objects cannot move away, the stresses caused by the cyclic activity spreads as a sequence of repetitive actions. A stone thrown into a pond would create similar ripples that move away in cyclic fashion in all directions, without moving the water. If the ripples are close enough and rate of repetition high enough, such a form acquires the characteristics of a 'stable' object despite the fact that it is composed of ripples moving in water.

The classification of what is mobile or static depends entirely on the cyclic interval. It is obvious the ripples form a ring of simultaneous activity. There is no way to detect, decipher or mathematically predict whether the simultaneous rings of ripples turn in a left or right handed direction. The ripples move outward from a centre of impact, yet form a continuous, circular ring regardless of the interactive characteristics at the origin of the event at the centre. While the interval between ripples give a measure, its height indicates the number of water molecules piled on top of



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each other at any one moment or simultaneously as a potential. Defining that transition point mathematically unifies the duality seen in particle-wave phenomenon. In a tank of water nothing moves unless stirred, yet there is a continuous activity of propagating the pressure variations in two modes as velocity and potential difference.

The treatment of time as an observable, which can be reliably accounted for, has hidden traps that can lead to misunderstanding the real nature of phenomenon. Static objects can be counted reliably but sequential or cyclic activity carries with it the caveat of hidden simultaneous counts that makes interpretation extremely difficult. Such a possibility can be exposed only through an intellectually derived theory, for experimentally it cannot be detected. It makes it doubly vulnerable when it is realised that all of science is built up on only counting vibrations as frequency of energy transmission in the form of electromagnetic waves.

As an example, a researcher watches a worker, putting groups of items into each of ten storage units placed in a row. The energy spent by the worker cannot be evaluated merely by counting the ten intervals. Only after knowing the number of identified items existing in each group, can one arrive at the correct value of the total work done by him. Suppose he moves in a sequence and puts a number of items simultaneously at every stop. From the researcher's observation point, his rate of movement can be evaluated each time he moves but not when he has stopped. In reality that person is indeed expending energy through the work he does at each halt. It can be classed as activity carried out simultaneously. In fact the halt introduces the concept of a node or the crest in wavelike phenomena or the moment of impact during a collision.

Analysing the 'scenario' further, the researcher observes that the worker moves from the first to the second rack in a certain time but this time period gets progressively shortened as he proceeds sequentially. If it is shown that the person was carrying a stack of 100 objects and laid out 10 at every halt, the researcher would be able to justify his observation by realising that as the load of objects decreased he was able to move faster using the same energy. Viewing his action backward, the researcher would notice that the person moved quicker towards the end and slowed down

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as he approached his starting point. Because the stack of objects and its associated actions at each halt were hidden, it could only be calculated by equating the energy balance. There is another hidden aspect not recognised in the measurement of oscillatory phenomenon. It is an axiomatic fact that real waves have a saw-tooth waveform or have a 'relaxation-oscillator' pattern of behaviour. Waves cannot travel in the sense of objects moving smoothly across a surface but transmigrate, crawl or hop from point to point or node to node. The problem of evaluating hidden time as a simultaneous event exists in science.

Light from a distant stellar body does exactly the same type of work in reaching the earth. When leaving the stellar source it carries a heavy stack of photons as simultaneous interactive counts but at every halt it dishes out a hidden set of counts for a very good and axiomatic reason. The stack of hidden counts, increase with distance (photons from distant stars) and delays the delivery. Hubble discovered the delay but it was interpreted differently, as an expansion of space. Such a conclusion was likely for two reasons. The concept of space devoid of substantiality provided no reason to conclude otherwise. Further, Maxwell's electromagnetic field theory showed that photons of light travelled without expending any energy. But an axiomatic view of phenomena proves that time, distance and work are synonymous. Photons must expend energy because it does work for otherwise perpetual motion without involving energy expenditure would be a common feature in nature.

Rigorous logic forbids reliance on concepts that violates spontaneous intellectual acceptance. Many centuries ago Count Magdeburg proved that atmospheric air was under pressure by his famous experiment, which showed his colleagues that even horses could not pull apart, two metal hemispheres joined by vacuum but split by itself when the vacuum was destroyed. Even his sceptical colleagues were then forced to admit that suction was not an intrinsic phenomenon in nature. All movements and forces are caused by a difference in pressure or stresses. Pressure can be caused by continuous or vibratory interactions. Deep inside the ocean it would take a tremendous force to create a 'hole' in it. While it is illogical and impossible to conceive a really 'empty' space, it would be even more difficult to conjecture a void in

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substantial space. The use of the term void in space should be interpreted as an absence of activity. The restful and coherent states exhibit static characteristics which can be described as a location devoid of observable or detectable activity.

An analogy would explain the meaning of coherence in oscillatory states. In a room lined up with clocks around its walls, the observer would hear a cacophony of ticks that could not be counted. If the clocks are reset to click at exactly the same rate, the cacophony would reduce to a rhythmic beat but would still not be countable. Resetting the clocks to start at the same instant and tick at exactly the same rate, would allow the observer to count the beats but not the number of clocks that caused it, which represents the synchronisation of phase and frequency in the coherent state. If the phase drifts beyond a minimum, such that all the clock ticks are accommodated within one ticking period, the number of clocks involved can be estimated by analysing the period of one tick and it represents the concept of frequency in Physics. If the observer observes that the number reduces, then he can conclude that many clocks are ticking simultaneously, but would reduce in twos or  $2^n$  values, if the beats are in step as a harmonic.

Starting any hypothesis from a conceptual base of 'nothing' is truly the most dangerous and unruly process for it implies that it need not subscribe to any axiomatic logic. One has the freedom to invent any process, for after all it has only come out of nothing. The concept of a substantial space medium would eliminate all such conundrums in physics, if the analytical mathematical procedure too is based on realistic concepts. Calculus, geometry of surfaces and trigonometric concepts cannot resolve problems mathematically at the boundaries of a real three dimensional space. Simultaneous processes must be necessarily based on innovative logarithmic procedures. Only a combinatorial counting process can unite all these diverse methods used in science today, because real three dimensional phenomena is modelled on its logic.

The simplest process is to count, in terms of a unit entity, the very substance the universal space is made up of. Similarly, science must substitute a positive set of concepts to replace ideas like empty space, action at- a-distance, force of attraction, geometry without objects, fields without sources, energy-less radiation and an expanding Universe. These are beset with logical conundrums that

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undercut the foundations of a rigorous logical derivation. Contrived mathematical support for such concepts cannot eliminate instinctive intellectual dissatisfaction. The Sankhyan concept of depending on axiomatic factors eliminates intellectual confusion and its consequential resistance to creative derivations.

Meanings of words established by long usage must be considered axiomatic, for no word has an absolute reference associated with it as an intrinsic part of its structure. Then its logic is easily understood and accepted without the need for extenuating proof or experimental confirmation. Naming new discoveries with adhoc nomenclatures leads to seeking definitions devoid of historical connections that invariably ends up with fuzzy interpretations. Any theory based on arbitrary or empirical postulates, as against axioms, is bound to fail when the assumed or conjectured boundaries in logic are exceeded. Therefore the goal of a correct theory must be to start from a simple axiomatic relational base that is mathematically extrapolated to both the maximum and minimum limits without violating the axiomatic and logical source relationship. It must then lead to describing and defining natural phenomena as a consequence of applying permutations and combinations of its rigorous fundamental logic, in all possible ways.

The axiomatic process of deriving the cause of phenomenon is an intellectual one, normally considered an exercise in abstraction. But derivation from an axiomatic source establishes its connection to reality, unambiguously. The process of counting, starting from one, as an elemental object, enables the identification of all the larger conglomerations in terms of this numerical ratio, devoid of dimensional complications. Using a ratio of two discrete elemental states is a comparison of 'like with like' that removes the complications in dimensional bookkeeping and the ensuing uncertainties in connecting multidimensional concepts in the real world of three dimensions

Counting is a repetitive activity. Increasing a count from one to two involves an activity cycle. It can then be iterated endlessly to reach the maximum value. Therefore, by correctly defining all the aspects in the very first cycle needed to reach count two, the complete set of laws needed to understand how the manifestation of phenomenon occurs, could be derived. It can then be applied to all other levels just by iteration. Since only discrete states or forms,

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can be counted as objects, defining its elemental state or form establishes the first unit count. It then enables all aspects of real phenomena to be presented accurately and unambiguously, without dimensional parameters, as mere relative numerical counts of interactive states.

The counting operation on an abacus gives a visual example of the process. Transferring each bead from one end to the other gives the object count. Transferring each bead at the same rate over the same distance gives the sequential period count. Transferring a set-number of beads together within the same period as a single count displays the simultaneous nature of this action. Hence observing or detecting a cyclic process must include a method of identifying the number of units acting simultaneously as a set. Since a set cannot be counted unless the individual units are separated, evaluation of such simultaneous sets by comparison is necessary. Comparison is time dependent and a cyclic process must be evolved, where the beginning and ending is identified by the same bead count. Counting is not dependent on the quality of the bead but only its distinctive state as a stable object.

The major problem in science is in defining that minimum distance between objects that categorise it as one or two. If two units act together, perfectly in step, it is treated as one object but bonded by some force. However the same type of force can be created by compression but then space should be defined as consisting of substantial components. A 'single' nucleus turns out to be composed of many quarks, which in turn comprise gluons and so on. The inability to separate such particulate states necessitates the introduction of a compressive force originating from the outside rather than justifying it as an internally attractive force.

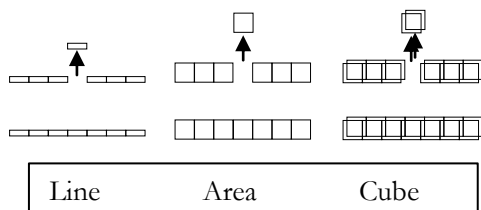
The essential principle needed to understand the counting process is that only a change can be measured but again, only after it is identified by its discrete, stable and consistent state as an object. A change may be detected but not quantified. The hands on a clock provide the medium of change while the dial of the clock establishes the discrete, stable and consistent relational background. In an interaction or vibration, the moment of collision or the point when action is reversed become countable or detectable and are identified as nodal states where all vibrations act at a point or a

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centre. The moment of impact between two objects necessarily form a static interval, which also logically identifies the smallest distance associated with it in space and defining this level provides certainty.

The 'point' in geometry is the smallest object recognised as a valid component to describe parameters in science. Therefore defining a real point in terms of a count cycle establishes the discrete object that can be counted and at the same time provide the logical numerical connection to a continuum concept as consisting of a field of points. All changes in a continuum can be accounted for accurately as it is a contained system. It then provides the rationale to unify both the field and quantum concepts through the simple process of counting discrete states of objects axiomatically composed of points. Any field theory must necessarily be a description of objects as points behaving in a continuous mode of action which, turns into a quantum of activity beyond an identifiable constraint. Further the connection of the field to its point source establishes its relational characteristics. In Physics, the lack of a physical connection of the field to its source in space has created the greatest enigma in science.

In principle the point as a three dimensional 'object' source provides the correct logical framework for unifying all phenomenal processes unequivocally. The concept of using single or two dimensional mathematical artefacts is unreal in a universe that has length, breath and height as an intrinsic, axiomatic and real description. Therefore a combinatorial mathematical process of counting changes in states of objects during an integrated and countable activity-cycle would provide the correct ansatz in physics. The process of counting can be applied only to activity connected with objects or three dimensional states for there is a caveat in accounting two and single dimensional states shown below.



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### Fig: The caveat in counting dimensional states.

The activity of lifting off one unit line, area or cube will take the same time but both line and area are not real for they don't exist in nature. But an abstract presentation of a line, area or cube on paper, equates all three numerical values identically which hides the true nature of the activity. Hence the problem of dimensionality has to be dealt with specifically in a counting process.

At the elemental level the smallest object or unit could be defined as a point in space and at the maximum level, the axiomatically bounded Universe forms the unit in which all the elemental points exist simultaneously but interact with each other sequentially. Describing the Universe as consisting of N number of points does not violate any concept in science. Defining the space occupied by two such adjacent points acting simultaneously as a unit count, from one discrete state to another discrete state, covers all the possible gaps needed to perfect the process of unification intellectually. The perfect answer lies in defining the point in terms of a precise numerical relationship that leads axiomatically to a precise numerical limit of a bounded Universe. The interaction between two objects or points at the fundamental level would be no different in principle from those at more complex or denser levels. Then defining the interaction at the basic level in terms of simple or elemental counts would provide a standard or constant base that would be applicable at all other levels.

It is recognised that the ubiquitous phenomenon of gravitation pervades everything and cannot be shielded or obstructed. The scientific description is "*Gravitation* is by far the weakest of the four interactions. Nevertheless, it is important for macroscopic objects and over long distances for the following reasons. Gravitational force has, unlike the strong and weak forces, an infinite range; is the only interaction that acts universally on all matter; is permanent. It can neither be absorbed nor transformed." Sankhya logic has identified this important aspect of phenomenon at the very first and fundamental level of theory. It shows that at the elemental level, that by synchronisation, two sequential interactive events can be made to act simultaneously or behave as though both were bonded. The combining of two independent interactive counts reduce the reactive count to one by super-positioning or synchronising or acting simultaneously or merging. It is seen as a process of bonding

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where the reduction of count is identified as a coupling constant. In other words every time two active objects combine to act simultaneously the two activity counts merge to become a single activity count, thereby losing one count that gets hidden by synchronising but surfaces as an increase in density count. When the number of interactions, that were keeping the opposing interactive elements in balance, on a one to one basis, reduces by synchronising, the latter drift or gravitate towards the region where the reaction counts have been lowered by merging and becoming simultaneous. Electromagnetic and thermal equilibrium depends on voltage and temperature which are indicators of the potential level of interactive rates of oscillations as simultaneous stacks of interactions. Similarly, gravitational acceleration depends on the coherent state of interactions collectively at rest, which is indicated by its mass. In this state interactive counts superpose and 'disappear' by acting simultaneously thus reducing the count rate, which is seen as a lower potential state. This simultaneous state of lowered count rate becomes an absorber of interactive counts.

The process of synchronising activity in all directions into a coherent state, reduces the individual interactive counts, which then constitutes a region of lowered reactive response or a 'negative potential', towards which the higher rate of interactions transmigrate or gravitate. Higher pressures and temperatures drift towards lower ones for the same reason. It is not a reversible process. Because energy is counted as quanta, when the count rate is lowered or made to vanish it is interpreted as a loss, whereas it need not be so. The counts could just superpose and act simultaneously as a group. The transition of energy into mass by the reduction of  $C^2$  can be shown to be a case of interactions along two axes acting exactly in step with the third axis to form a coherent and centred state, thereby reducing the interactive reactive count. The foregoing logic eliminates the mystery surrounding gravitation as a unique or special phenomenon.

Any measuring process requires a yardstick that is real, remains constant and dependable. Linear measuring rods unfortunately carry a hidden error. While every effort has been made in science to keep the length aspect accurate, constant and dependable, the breadth and height aspect of the same rod has been completely neglected. For, the entire spectrum of analytical mathematics is



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strictly confined to using the length aspect totally. Because the geometry of Reimann and Gauss dealt with surfaces as though they were real surfaces without a thickness and the theory of tensors used a single dimension as a real state, its mathematical extrapolations too were considered real. The hidden depth and breadth aspect, totally ignored in the accounting process in today's physics, has surfaced ultimately in strange forms and in stranger places. The theory presented here corrects that lacuna, accurately and logically. Sankhya underlines a fact that constants cannot be derived arbitrarily but only axiomatically and it must be a ratio. The first or real constant is the interactive period between two adjacent components that can be represented as an axiomatic ratio of one by two.

Perfect control of any interaction must require three modes of varying parameters in the correct ratio. That is expansion, contraction and the reversal of actions, must be carried out simultaneously or within a cycle that cannot be broken up. It implies that the activity creating the elements of control must be a continuous process, which needs the concept of a perpetually active state to justify it mathematically.

The most profound aspect of Sankhyan logic is that the maximum and minimum aspect of any theory can be accurately derived through the principle of self-similarity in a constrained environment. As a result, every derivation has at least two modes of verification. For instance the solution can be verified by a derivation using the compressive regime within the maximum limit while a similar process can be carried out using the expansive regime within its minimum limit. Compressive interactions must reach a static limit, which when precisely identified, provides a base for certainty. Since the two modes form a reciprocal, splitting one of them provides three alternatives. Adding it's reciprocal but derived through alternate methods totals it up to six, which can be represented diagrammatically, as a hexagon with a common centre. Then 12 radial intercepts emerge, each of which can represent a scale invariant formulation leading to a central factor that confirms the verification at unprecedented level of accuracy. The correctness of the solution is established if the same value, with required degree of accuracy, is arrived at through all the twelve alternative or different equations.

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A complete theory should be capable of predicting all phenomena so that researchers could seek their goal of investigation with confidence. There is overwhelming evidence for the existence of parapsychological phenomena yet scientists have been forced to go on the defensive for there is no theoretical leeway in current derivations in Physics to accommodate it. Sankhya identifies the principle and provides the numerical basis to calculate the cause of all such phenomena. Events in nature seem to take place continuously, simultaneously, in real-time and there is absolutely no evidence for a 'stop and calculate' activity that all human endeavours are compelled to follow. Therefore any complete theory must derive a mathematical model where in the action-reaction cycle in an interactive state is self regulating, self similar and self sufficient, which would totally eliminate the need to account for time as an independent parameter. It leads to the principle of accepting certainty as a necessary criterion in accounting for natural events and uncertainty exists only due to the inability of obtaining facts that deal with it. Any time delay without an apparent cause creates the need for inventing new principles, like the Heisenberg's principle of uncertainty, which does not exist as an operating feature in the real world of interactive phenomena.

There is a glaring error of concept in the process of analysing and understanding phenomena and science must focus enough attention on this aspect so that the underlying concept of space is revised. If a pilot of an aircraft takes evasive action to avoid an obstruction the inevitable conclusion would be that he saw a possible accident, analysed and then altered his flight path deliberately and consciously to make a detour. The sequence of detection, analysis and correction involves a time-oriented process, which forms the basics of the principle of control. On the other hand if a rock is thrown at a target and it deviates significantly from its course at some point, the unequivocal conclusion would be that there was a physical impediment in that location which acted instantly or simultaneously. In the case of the human pilot, sequential analytical time became a cardinal determinant of the cause and effect cycle in the control process. In the simplistic case of the rock it had to be a simultaneous or instantaneous cause & effect cycle and such a conclusion would not lead to any divergence of opinion among researchers.

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The Earth goes around the Sun consistently which implies that some process of control is involved. Current scientific theory establishes that light as the medium of communication has a velocity limit which fixes the time of any type of signal transmission between Earth and Sun near 500 seconds in a space considered to be a void. If the Earth's course is determined by solar gravitational characteristics then it would take 500 seconds to initiate a correction and another similar interval for the next sequential corrective action as has been already established in interplanetary orbital flights. In the meanwhile the Earth with a velocity of 30 kms / second would have travelled about 30000 kms in 1000 seconds without any form of control that had a direct relevance to the first corrective input. Human intelligence and logic forbids accepting such a process for even a snail must court disaster in '1000' seconds. If signal velocity is limited then solar characteristics can have *no direct and immediate* bearing on the path that the Earth follows. Therefore, rigorous logic requires that the cause of deflection of the Earth, the equivalent of the rock, into its regulated orbital path must be only due to an interactive cycle that has a source locally or at the point of deviation. Such a concept must leave present day physics in a quandary for there is no way to resurrect a local source of hindrance in a space that is considered a void.

Newtonian concept of gravity implied that the sequential corrective action was instantaneous. It became unacceptable due to the theoretical limitations placed on signal velocities and led to the derivation of General Relativity (GR), where the 'needed correction' was made locally through the geodesic 'infinitesimal displacement' as the property of a space that had been proven and accepted to be a void. The negation of 'space with properties' was doubly confirmed in Special Relativity consequent to the so called failure of the Michelson Morley experiments. The implication that Newtonian 'instantaneous action at distance' was a 'logical blunder' is countered by an equally serious faux-pas in GR that begs the question "from where and how did the geodesic infinitesimal displacement and acceleration come from, in a space that is defined as a void?" Mathematics can be used only to describe reality not replace it.

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The progress in physics and cosmology has wandered away from the factual state of the Universe in a bid to solve anomalies resulting from pursuing unitary logic as opposed to a holistic view of phenomena. While it seems science is progressing along more sophisticated paths, it actually is undergoing a process of multiple divisions in concept because of a lack of a unified foundation. In Sankhya, super-symmetry, total unification, quantum electrodynamics, super-string, quantum gravity and blackhole dynamics as concepts are all inherent and form an indivisible part of it. Hence Sankhyan conceptual logic can provide the answers to all the anomalies in physics. Further, Sankhya exposes new areas of phenomena totally unknown in current Physics. There can be no surprises in a perfect theory and it forms an axiom in Vedic concept.

A notable aspect of Sankhyan logic is that it's very first theorem defines in Sanskrit the qualities needed to establish the observed dynamism in space, as an axiomatic state.

*"Investigating the triad of interactive stresses shows that such interactive modes of stresses exist but it would not have been detectable, had it not been for the existence of the coherent and synchronised - perpetual - dynamic but unmanifest state (of existence of the substratum of space.)"*

It describes a space that is substantial, real and dynamic, but due to the coherent state of perpetual harmonic interactions it remains undetectable, for the observer can only detect changes that transmigrate or radiate as stresses. Radiation of stress depends on the transformation of static potential into kinetic acceleration. Hence the absence of radiation ensures the existence of a maximum potential. Physics and Cosmology graduated, from a concept of space described as "static ether" to that of a "dynamic vacuum". However, the concept of space in Sankhya can be defined axiomatically as the "dynamic ether". Therefore it is entirely pertinent to emphasise here that every idea, thought, word, numerical formulations and equations in this book are based on the concept of perpetual dynamism in a substantial field populated with identifiable components that exist eternally. The exotic state considered impossible in Physics is derived and proved to 50 decimal place accuracy, in a number of different ways in later chapters.

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A cube can be defined as  $L^3$  but a sphere must be equated to  $(\pi/6) L^3$  in absolute terms. However if an elemental cube or sphere is compared to larger ones of identical shape, the relative ratio remains  $N^3$  in both cases as number counts. Curvature or a spherical shape is not an intrinsic property of space but a cubic shape attains that form as the result of dynamic activity like rotation or spin. An infinitesimal displacement can never be 'curved' but only a sequence can follow the path of an arc. Hence the transformation hides the cube in the spherical form. While the cubic form in space can be treated axiomatically as stable, the spherical shape would disappear when rotation is stopped. Therefore such transformations involving time must be treated through explicitly identified logic and not through mechanical application of equations where simultaneous states of activity vanish. It will become evident from the derivations of dynamic states that sustain real phenomena, in the following chapters.

The classical formula for a spherical volume is  $4\pi r^3/3$  if  $r$  is the radius. Yet  $2\pi r$ , which forms a circular distance, if cubed to obtain its cubic content, results in a difference. If  $2\pi$  is defined as cyclic time, as it really is, then the intrinsic meaning of the difference leads to defining simultaneity in conceptual terms.

$$\frac{3}{4\pi r^3} \left[ 2\pi r^3 \right] = 2\pi^2 \left[ \frac{3}{2} \right] = \text{time}^2 \times \log \left[ \frac{\text{volumetric.density}}{\text{surface.density}} \right]$$

In a spherical shape the two parameters determining the 'central location' and 'radial circumference location' maintain a constant distance as radius while completing the cycle. The 'centre' remains in the same location  $N$  times while the other end of the radius displaces sequentially the same number of  $N$  times in completing the cycle. The centre, acting simultaneously, merges with the hidden  $N-1$  count values, while the sequential displacements remain countable as  $N$ . The spherical volume boundary acts simultaneously with the centre. Hence simultaneous interactions merge  $\text{time}^2$  in the simultaneous ratio of  $\log(3/2)$ . This is an axiomatic approach that gives the same result obtained through differential calculus but does not expose the principle of simultaneity. Later on the foregoing factors are derived from axioms to show that combinatorial mathematics can deal with simultaneous activity accurately and logically whereas differential

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calculus fails in regions where clock time disappears in high density environments.

The intrinsic strength of Sankhya is that it creates the logic to mathematically support the existence of a real, substantial and dynamic space. It derives the logic and rationale of how and why phenomena get camouflaged and the process by which it can be equated with detectable manifestation. The hidden high density spectrum originates within the nuclear boundary and hence needs a special mathematical approach which Sankhyan logic provides, whereas existing mathematical systems deal accurately only with phenomena outside or up to that limit. It is a well known fact in Physics that every proven equation needs at least an infinitesimal displacement interval for it to produce an accurate solution. The coherent state is a super-symmetric and stable ensemble, which cannot be defined through any of the equations known and used in Physics today, for the reason mentioned above. Whereas in Sankhya, the entire spectrum of 18 orders of coherent states from the Planck mass to the Nuclear boundary, can be defined precisely and accurately in terms of total and absolute symmetry through combinatorial mathematics. The detailed derivation will be shown in a later chapter and would provide the primary basis for acceptance of Sankhya as a correct theory if the scientific academia is truly dedicated to establishing Physics on a factual foundation.

The reader is cautioned to remember, that the existence of the state of perpetual dynamism (proven in Sankhya) in a substantial medium forming the continuum of space, provides the initiative to change, otherwise it may not be easy to follow the run of rigorous and axiomatic logic that Sankhya has specifically created to understand its complete and unified theory. Further, as the maxima and minima of spatial parameters are axiomatically derived as ratios and proved by equations, any and every ratio, used to factorise those limiting values, provides an accurate and meaningful numerical solution that defines an aspect of real and detectable phenomena. Stating it another way, it is possible to identify every location of cubic objects packed inside a large cubic box, with a specific volume and with specified numbers of cubes that fit exactly in it. Further, derivation of formulas can be as many as the number of cubes in it, for every cube has different identification parameter in a volumetric space. There is no uncertainty as there is

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no space that is not accounted for. Sankhya has derived this theory based on such logic. Further, the reader is reminded, that the derivation of an enormous number of factual, precise and accurate parameters in one book, may make it read like a patent specification but there is no alternative if facts are to be presented cogently and consistently.

Note: The author is compelled to state that scientists are likely to wonder if the Sankhyan logical scientific structure detailed out below has any connection with the Physics they deal with normally. The primary reason would be the introduction of a substantial medium forming the continuum of space and secondly, due to the combinatorial mathematical principles used in its derivation that establishes intellectual connectivity with reality at every instant and all numerical values are strictly dimensionless ratios. While the mathematical analytical process in Physics is accurate, the logic of application to phenomenon is laboured, tenuous, lacking transparency; but scientists, having come a long way with it, may find it difficult to mentally break with that habit. The most important transition for scientists to pay attention would be to the mathematical concept when coherent states break symmetry to initiate the radiative process. Planck's two constants, Boltzman's constant, Nuclear charge constant, the fine structure coupling constant etc. having been derived empirically (in Physics), did not provide the opportunity to analyse from first principles, the most important symmetry breaking interval which has created confusion worse confounded in the hidden spectrum. The serious, open minded and unbiased researcher in Physics will find literally, numerous ways to prove the correctness of stable constants that are applicable to interactive states, in the fundamental continuum of space. As an aid to comprehending formulations that prove fundamental theoretical concepts, worked numerical answers are provided with every formula so that the reader can understand its significance at a glance. It is another unique and important feature in combinatorial mathematics that every formulation has a precise answer as no coefficients are required to balance ratios, unlike equations in Physics.





### Axiomatic Concepts.

Sankhya theoretical logic is based on axioms. The elemental axiom, as one plus one equals two is iteratively progressed to its limits, dictated by combinatorial mathematical principles, to cover the entire gamut of phenomena in the universe. While the details of the mathematical procedures are given later, the logic leading to that process is covered in this chapter. Axioms are statements that are obvious, evident and acceptable at its face value. An axiom need not be proved for it cannot be disproved. Hence, using axiomatic concepts to base a theory allows no choice in following an alternate method. The derivations from axiomatic statements cannot be disproved, for the very meaning of the words used to frame it will then have to be questioned. Conceptually any process of analysis is based on some reliable method of quantification. All life processes have depended on a numerical counting process to assess an event or quantity. For instance even animals intuitively made a decision to fight or flee depending on numbers or size of opponents.

Human observation of nature has emphasised the substantial and discrete characteristics of every phenomenon they experienced and the simplest and most logical method was to rely on it. Any and every observer, regardless of the level of literacy, will confirm the reality of all that is experienced in the living process and hence becomes an axiom. At the local level objects in its natural state exhibited no stress, pressure or force unless constrained by events. It depicted a change, which either continued or stopped over a period of time. Such varied characteristics made the process of quantification, by numerical counts, a difficult and uncertain intellectual procedure. Nevertheless the discrete counting process had the merit of certainty attached to it, for anyone can count and verify an analytical procedure.

Only changes can be observed, detected or measured. A process of change necessarily involves a period or duration, which is an intrinsic part of that process. When time is involved in any operation, work has to be done, only which, can be measured. Therefore theoretically derived constants will not match experimentally measured values, because the cost of measuring is a loss of a quantum of work. Continuous changes can be compared with some standardised form of change to evaluate an interactive

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state. Periodic or cyclic changes can be counted on completion of the process as cycles. While counting discrete cyclic events in integer numbers is accurate the detection of the completion of a cycle is a necessary part of this procedure. The refinement to detect when exactly two cycles are separated or merged into one depends on a complex theoretical and mathematical derivation. The derivation of that cycle must be related to the interactive process that caused it.

Interactions occur between objects or real things and it is impossible to support a concept of such activity in a vacuum or region that is considered empty. Interacting objects create vibrations, which in turn produce stresses of various kinds that transmute all around it. The collision between two objects creates a reaction that separates them and this cyclic process continues unless it is stopped by some means. During the period between the collision and expansion there exists a period of simultaneous activity that is critical to defining the static or stationary state. In a region where a large number of elemental objects interact the reactive vibrations are transferred as stresses in every direction, in various ways.

The process of detecting an object is an interactive cycle. A signal like a beam of light collides and rebounds from the object being measured. Collision is a compressive action and rebounding is an expansive one and the combination creates a cycle of stress. The change from compression to expansion is mediated by a reversal of action and the whole process is described as a vibration or oscillation. It simultaneously reverses the nature of the stress at the point of collision, which is a real stationary point relative to the colliding objects. If the collision is cyclically repetitive the impact location forms a stationary point that occupies a discrete volume of space. Time wise the impact duration defines an elemental interval while the point of space that remains stationary at that moment equals the volume of space occupied by interactions. Stating it differently the time interval indicates the cyclic rate of impact or frequency whereas the space occupied describes the density of the rate of change of impact. It is an integrated cyclic event that creates stress in three phases. Time-cycle wise, the compressive mode is a simultaneous interaction whereas expansive action is a sequential time cycle. The change from compression to expansion

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is a reversal of action within a comparatively short time. All interactive cycles follow these three phases. The concept of a force arises only as a reaction to interactions that are in the state of regaining the balanced state.

If this interaction is not influenced by events from outside then the motivation for these changes must be derived internally. The only logical way it can be done is to share its internal resources simultaneously. It can be described as a process of borrowing and returning within a very small period that can be defined as simultaneous. While the origin of the principle of uncertainty is due to this delay during stress reversal, an axiomatic analysis shows that there is no uncertainty for all factors up to the point where a sequential period becomes simultaneous can be identified mathematically. In other words a new principle is needed where the smallest period can be equated to a simultaneous state. Or it can be defined as the smallest movement that is considered to be a real static state.

If the smallest period is one cycle then borrowing and returning needs two cycles that must be considered as a simultaneous event. Since it is not sequential it can be defined as a product of two identical parameters which can be represented only as a logarithmic factor of 2 to some base. It becomes an axiomatic constant to define simultaneity. (The electromagnetic coupling constant in Physics too is .303 approx.  $\log 2 = .301$ ). The rebounding period has two phases as an in-going compressive one and an outgoing expansive stress. In the real world of objects, simultaneous action needs to be understood from the diagram given below.

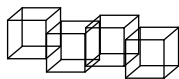


Fig: Simultaneous activity.

Even though the cubes are not exactly in line, its action would be considered simultaneous if all of them move together as one unit, provided the deviation from a true match is not greater than a specific ratio. This interval in space or time forms a critical value. Even though 4 cubes are there, when it acts simultaneously it forms a single interactive movement as though performed by a single cube. It forms 4 interactive counts when each one acts

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separately but turns into single count in the simultaneous mode which gives the impression of three counts having vanished. (Recall the simultaneous clap example). If four cubes were interacting sequentially with 4 other cubes at different times, then the four one-to-one interactions could be counted as a balanced activity.

Another graphic example is given below to show why simultaneous interactions in a dynamic space merge and reduce the reactive counts, which induces 'gravitation'.

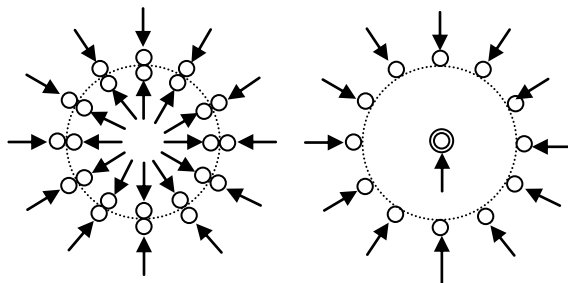


Fig: Merging counts initiate 'gravitation'

The left side shows the 'one to one' correspondence of interactive collisions that maintains the position of the compressive stress counts in a 'stationery' location. The right side shows the merging of counts at the centre in the entire region due to attaining a coherent state where all the interactive stress counts act simultaneously and project a common or unitary centre of action or response. The twelve internal 'outgoing' arrows in the left side have all merged into the centre having just one 'direction' thus leaving the eleven inward going arrows freedom to move towards the centre. As the arrows move inwards it gets closer and 'denser', which portrays the significance of why inward acceleration increases interactive density that attains a 'centre of mass' status.

In a hard collision classified as inelastic, the rebounding or scattering period would be relatively instantaneous and such an action could be described as a simultaneous event. The energy balance would show a shortfall due to the simultaneous state, because only interactive changes are counted. Hence one count could hide an infinite number of simultaneous counts. If  $I_{min}$  is the axiomatic minimum distance and  $v_{max}$  is the axiomatic maximum displacement rate then

$$\frac{l_{\min}}{v_{\max}} = t_{\min} \quad (0.156)$$

$t_{\min}$  must be the smallest interval, for any period less than it, must be described as a simultaneous period. That is any two (or more) such intervals would seem to occur at the same time. Or the cause of two interactions would be calculated as a single event.

In the Sankhyan concept of space the ratio of two different lengths in space as  $l_1$  and  $l_2$  also represents the ratio of their respective time intervals  $t_1$  and  $t_2$  for the maximum rate of displacement is the same in both:

$$\frac{l_1}{l_2} = \frac{c_{\max} t_1}{c_{\max} t_2} = \frac{t_1}{t_2} \quad (0.157)$$

As a result, only interactive time in the simultaneous and sequential states become the important parameter to define and describe all phenomena. The Universe can be defined by the merged states of cyclic time alone.

The concept of simultaneous events forms the cornerstone of the logic that equates density with super-posed time of activity. Since this concept has not been exposed in physics, either implicitly or directly, an axiomatic example is detailed out below to demonstrate that it is a real state in natural phenomenon. It will highlight the urgent need for an algorithm in Physics to solve the problems hidden in this region.

The archer's bow provides a simple but classic model of a simultaneously interacting state. When bent, the outer surface of the arch forming the bow expands while the inner one contracts at the same time or simultaneously, thereby contributing to a stressed state. Since the expansion and contraction takes place simultaneously, the mathematical interactive ratio must necessarily be of a single value for both the opposing activity. Further, the expansion changes to contraction when crossing the neutral axis of the material, forming the arch. Hence that ratio must remain the same or else the arch would deform permanently and the bow would not spring back or act as an oscillating medium.

Axiomatically, the crossing over of opposing types of interactive states through the same location simultaneously, introduces a new concept defined as the third order damping stress or force. Conceptually, expansion portrays an incremental time of

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the first order while compression acting simultaneously, indicates a reversal of the former time factor and rises as a second order value. The crossover interaction consequently forms the product of the two former rates of change and therefore must react as the third order constraint.

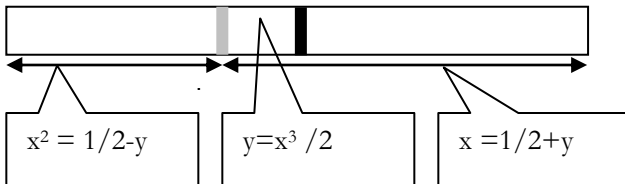
Describing the three modes of interactions in terms of time cycle  $t$  and simultaneous incremental time as  $x$ :

$$\begin{aligned}
 (\text{increase}) &= t^x : \text{decrease} = t^{x^2} \\
 \text{crossover} &= \frac{t^x}{t^{x^2}} = t^{x-x^2} = t^{x^3} \quad (0.158) \\
 \text{When...}x &= \frac{\left( \sqrt{(1+2^2)} - 1 \right)}{2} \dots \text{then...} \frac{t^x}{t^{x^2}} = t^{x^3}
 \end{aligned}$$

The Sankhyan scale invariant principle of self-similarity, applicable to confined domains, has a single constant as the combinatorial mathematical variable  $x$ , the golden mean, to solve the seemingly complex interactive process detailed out above. The principle, derived through axiomatic logic, will enable the derivation of key parameters. An alternate method, where the ratio of compressive and expansive change remains equal at every subsequent level, would provide the same constant variable.

$$\frac{1}{0.5+y} = \frac{.5+y}{.5-y} = x \dots \text{when...} y = \frac{x^3}{2} \dots \text{and...} x = \frac{\sqrt{1+2^2}-1}{2} = 0.618034$$

The third method of deriving the same ratio is to analyse the interactive exchange in a closed cylindrical volume. The addition and subtraction of the same differential creates the expansive ratio  $x$ , compressive ratio  $x^2$  and the simultaneous damping ratio  $x^3/2$ , in a closed volume where the area remains constant.



The self similar principle defines that the ratio of compression will be  $x^2$ , while expansion ratio becomes  $x$  and the  $x \cdot x^2 = x^3$  factor will be shared equally as  $x^3/2$  to limit change simultaneously. Recall the bow example. As a result, the different types of stressed-forces merge into one group or a coherent formation, all of which act differently at varying levels but simultaneously, internally. The concept of simultaneity forms a complex of two opposing activities within the same time period and can be dealt with mathematically only by simultaneous equations that is not dependant on each other's solutions. Since it is a new concept the diagram below shows the conceptual intricacy at a glance:

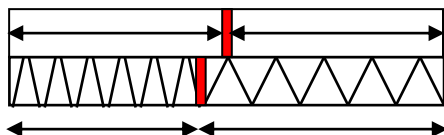


Fig: Self Similar Ratio.

The red strip is fixed in the middle of a rigid container as shown in the top diagram. If that strip has to move left as shown in the lower section, then the arrow on the right side must expand at the same time the left arrow contracts. Mathematically there is only one solution that satisfies it if both expansion and contraction are to be carried out simultaneously. At least three simultaneous equations are needed to derive and check the permutations combinatorially because simultaneity requires the time cycle to be one or the interval to be zero. The equations are shown below. Intuitively the problem can be solved by substituting the golden mean. Recall the bow example.

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$$N := 5 \dots 10 \quad A := \frac{1}{2} \quad B := \frac{1}{2} \quad Y_N := .11 + \frac{N}{1000} \quad X := \frac{\sqrt{5}-1}{2}$$

$$\frac{A + Y_N}{X} = \frac{B - Y_N}{X^2} = \frac{\frac{B - Y_N}{A + Y_N}}{\frac{X}{X}} = \frac{A}{A + Y_N} \cdot X \cdot 2 = \frac{B - Y_N}{B \cdot X^2 \cdot 2} = \frac{(B - Y_N) \cdot (A + Y_N)}{X^3}$$

0.995	1.008	1.013	1.005	1.008	1.003
0.997	1.005	1.009	1.003	1.005	1.002
0.998	1.003	1.004	1.002	1.003	1.001
1	1	1	1	1	1
1.002	0.997	0.996	0.998	0.997	0.999
1.003	0.995	0.992	0.997	0.995	0.998

The concept of rest mass in science, defines the coherent form. Within the coherent state the interactive activity conserves all parameters. Change in linear or angular momentum in the coherent state results in changes in phase or resonance, but without radiating or absorbing energy from external sources. Hence if the coherent state breaks up it reforms into a coherent state at a different level. Axiomatically only seven levels are possible after which it goes into the next order of level.

Harmonic interactive states can remain in resonant decay over the longest period when the quantum of compressive and expansive stresses exchanged are equal thus giving a rate of two. Being simultaneous the ratio of two has to be dealt with logarithmically to some standard cyclic base. A self-similar process remains scale invariant when the oscillatory time cycle has 10 self-similar interactive states (proof is given below). Coupling constants in Physics reflect the ratio of loss of interactive counts per cycle due to merging in the simultaneously interactive state but turns up as an increase in density, potential or mass that cannot be counted directly. (Recall the clap example).

Sankhyan logic identifies quantitatively every stable state through combinatorial mathematics. The notable aspect is, that dimensionless numbers as interactive counts per cycle are enough to define and describe natural phenomenon at every level, without exception. Moreover, there is again absolutely no need for empirical inputs of any kind whatsoever. When the internal checks on principles and accuracy prove correct one can be certain that all phenomena will work exactly in that way. The same type of principle applies to every level of phenomena from the galactic mass to the photon for all are only holographic states of stress,



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resident on the components forming the dynamic continuum of space.

When the interval goes below  $t_{min}$  the interactions must occur in a continuum and the quantised activity disappears. In any contained volume if the rate of change of displacement is maximised then  $t^3$  forms the limit and identifies the static quantum in that volume as the third order damping constraint or **Todc**:

$$\frac{l^3}{v_{max}^3} = t_{min}^3 = \text{centre} = \text{Todc} \quad 1.4$$

The principle of simultaneity is based on the **Todc** constraint and is derived in Sutra 30 in Sankhya. Conceptually equating the compressive and expansive stresses as a proportionate factor, leads to the derivation:

$$\frac{l^3}{t_n^{3/2}} = v_n^3 \times t_n^{3/2} = \text{balance} = \text{unmanifest} \quad (1.5)$$

The left-hand side of the equation shows that the compressive, dense state equals the expanded and accelerated form of space on the right. At an interval less than  $t$  assuming  $l$  the distance is real and unchangeable,  $v^3$  equals  $\beta$  and  $t$  vanishes, for the cubic space has become a rigid, coherent & simultaneous state of a frozen and inert object in the dense state.

$$\frac{l^3}{t_n^0} = v_n^3 \times t_n^0 \dots \text{then} \dots l^3 = v^3 \quad 1.6$$

Any departure from the 3/2 log index initiates the accelerative exchange of interactive counts and the formula changes to:

$$\frac{l^3}{t_n^2} = v_n^3 \times t_n^1 = \text{acceleration} \quad 1.7$$

(It reflects the concept behind Kepler's orbital rule in space and Einstein's effort to determine critical space density that defined an open/flat/closed Universe.)

It has become a unified, centred state with a count of one or a unit density.

$$\text{Density} = \frac{l^3}{v^3} = 1 = \rho = \frac{n}{n} = \text{ratio} \quad (1.8)$$

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All higher counts must drift, transmigrate or gravitate towards it because it is at the lowest interactive count rate. Balance is upset in a continuum of components when the interactive rates of adjacent units differ. Gravitational acceleration commences from that state. The logic is elementary, for two adjacent interactive states will remain balanced if the count rates are identical but when it becomes unequal the higher state will migrate towards the lower one because of the longer interval between interactions. In a dynamic environment unequal interactive counts initiate accelerative states.

A coherent volume  $L^3$  can be factored as  $L^2$  and  $L$ , wherein the volumetric aspect of space remains a real constant while the area and length parameters can change in inverse proportion. The linear parameter can be detected and measured directly whereas the other two can only be estimated or calculated indirectly. The coherent volume being a constant the change in linear parameter alters the area parameter inversely and if velocity is constant then change in the linear time factor alters the area time factor in inverse proportion. If a linear time  $T$  increases by  $n$  then area  $T^2$  reduces by  $n$ . The linear change in  $T$  has velocity characteristics while the  $T^2$  represents an accelerative change and displays flux density or force or pressure characteristics. The coherent volume being a constant, its density too stays constant but as time/distance increases the flux density reduces confirming the observation that acceleration reduces with increase in orbital radius. The foregoing provides a simplistic and logical definition of gravitational mechanics in a space that has substantial characteristics.

If the equality is upset, by destroying the coherent state, the classical gravitation equation emerges as  $\rho t^2$  (product of density and time<sup>2</sup>) and is a constant of simultaneous activity in Gsankhya, which will be shown later through axioms to be equal to the reciprocal of Newton's Gravity constant:

$$let \ l = r = vt \dots\dots and \dots\dots mass = m$$

$$m = r^3 \rho = rv^2 (\rho t^2) \dots\dots but \dots\dots \rho t^2 = G_{sankhya}$$

But the reciprocal of the Newtonian gravity constant is:

$$Also \dots\dots \rho t^2 = \frac{1}{G_{newton}}$$

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Rewriting the equation in terms of Newton's constant  $G_{\text{newton}}$ , then the classical gravitation equation emerges:

$$mG_{\text{newton}} = rv^2$$

The gravity constant at unit density reduces to the simultaneous rate of activity along two axes as shown by the analysis of a dynamic volumetric space. Because of attaining coherence, the ratio  $t^2$  (or a density increase to log two), becomes hidden or vanishes, as countable interactions and therefore the interactive states surrounding that volume drift or accelerate towards its centre where the interactive response is just one. The description of gravitational action in Physics, that mass attracts and therefore other masses accelerate towards that centre is semantically correct but is not a factual statement defining the activity in the field of space. The left side of the equation shows the mass value is reduced by  $G_n$  and therefore the interactive flux density at the surface is also reduced by the same factor which yields  $v^2$  as the ratio  $(r/t)^2$  needed to maintain a balance. Rewriting the formula by retaining  $r^2$  at the surface because it cannot be changed in a 'solid' object, the unbalanced factor shows up as an acceleration of interactive counts towards the centre of that mass as g:

$$m = r^3 \rho = gr^2 (\rho t^2) \dots \text{where} \dots g = \frac{r}{t^2}$$

$$mG_{\text{newton}} = r^2 g$$

Ratios of interactions in the coherent state are only valid when the comparisons are made at the same instant or simultaneously because any variation in  $t$  alters  $g$  logarithmically. The axiomatic approach has demonstrated that the fundamental cause of acceleration or force is only due to super-positioning or merging of interactive activity that reduces the reactive count and creates an unbalanced state, in the continuum space. Contrarily such a reaction is impossible in 'empty' space. The value of  $G_{\text{sankhya}}$  in Sankhya is derived axiomatically in the following sections and it matches  $G_n$ , which was derived in Physics empirically, using measured input parameters. An important point to understand is the fact, that time as ratio  $t$  can be measured or counted by comparison but not the hidden or merged  $t^2$ , for it can only be calculated.

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The start and end of the interactive cycle can be detected only by the change registered at the end of each cycle. In a large group of objects the interactive cycle continues as cause & effect and action & reaction phases. If the compressive increase in stress is equal to the expansive release no change will be detected. If the interacting objects are identical then no change can be detected either as the cause & effect of stress creation and release is of the same ratio. By the previous definition of simultaneity, when no change is detected the cyclic period must be equal to or less than  $\log 2$ . This definition creates the concept of when exactly a quantum or a coherent unit is created axiomatically.

If the interacting objects are not identical, which can happen if one set of twin objects act together simultaneously, the interactive count changes to half. The change in object counts per cycle will alter the characteristics of the cyclic activity according to proportionate ratios. The process of detection is a measure of count changes in the interactive-cyclic-activity involving three phases of change in stress, identified as compressive, rebounding and expansive. The important point established in detecting and counting is the need for at least two objects to initiate the interactive cycle. Next, since detection depends only on a change in count, the real nature of the point, object or space does not affect the outcome of the evaluating process. It only needs to retain its fundamental nature always. Hence the term "THAT" is often used to identify the components forming space in Vedic science to emphasise the fact that all manifest phenomena is created from a base that has different characteristics to it and which is permanent.

As the concept of combinatorial counting of interactive events is new, many of its operating principles would form new theorems. Since only interactions can be counted meaningfully, deriving the axiomatic limiting period of its cycle enables all cyclic periods to be counted as dimensionless numerical ratios. The axiomatic limit is identified as the interval when two objects collide, stop and reverse to separate. The stopping period is a static limit that can be derived through the application of the third order limiting constraint rule. It then leads to the 'time-indicative' term simultaneous which has the meaning of many events happening within the period of a single event.

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One can visualise forces from all directions colliding at a point forming the centre but in Physics just six forces all at right angles to each other are enough to create the same colliding point at the centre through a mathematical process of vector resolution. Combinatorially the same results can be obtained by modelling the point of collision into a small cube. Hence 6 equations, each defining a side of the cube, are enough to mathematically obtain the same results that resolve the sum of many forces from all directions.

Therefore if the numerical value of each of the volumetric or three dimensional objects, involved in the collision, can be derived as  $C^3$  then the value of the 'limiting simultaneous' event is the product of or log 2 value as explained earlier. It's reciprocal then gives the axiomatic limit as:

$$\frac{\text{object} \times \text{object}}{\text{smallest period}} = \frac{c^3 \times c^3}{\text{one}} = \frac{c^6}{1}$$
$$\text{reciprocal} = \frac{1}{c^6}$$

Applying the *Tode* rule then the smallest period and cycle time must be:

$$\text{smallest.cycle} = \frac{t^3}{c^6} \text{ .....and .....cycle.time} = \frac{t}{c^2}$$

The numerical value of the smallest cycle depends on the value of  $C$ , which is derived in the appropriate section through axioms. Activity on the surface of a sphere is simultaneous time wise and area wise, though not in terms of location. The term sequential depicts events following one after the other. The term coherence is used to define many events that happen simultaneously and also maintain the same physical form and phase relation-ship with a common centre of activity in space. Coherence in form is broken when phase-periodic changes occur along the three axial directions at differing intervals of time or space. Simultaneous activity changes to sequential process when the interval of time between adjacent objects or axial directions becomes greater than the smallest cycle time. Then interactions along two axis fall out of step, and the event becomes detectable as a process involving sequential time. Expansion depicts sequential changes in spatial and

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time intervals. Shuttling, resonance and oscillation depict periodic changes in the same location in the same interval.

The accepted meaning of words from long usage is used to define and derive numerical values and eliminates the need for pedagogical definitions. In order to highlight the simplistic and axiomatic nature of Sankhyan logic, scientific terminology has not been used here to identify equivalents so as not to cause confusion in identity but later on the equivalents will be identified. The Sankhyan concept emphasises that all dynamic states follow a single interactive law which underlines the fact that intellectual activity too follows the same law. Therefore the all laws of phenomena should be intellectually transparent, understandable and reproducible, which is an axiom in Vedic science.

The concept of a field is that of an aggregate of elemental components forming the continuum of space. It aggregates into objects with characteristics. When such aggregate objects attain an elemental status for the next level, it in turn behaves like the basic field. The laws defining both these fields must be the same. There is an axiomatic limit to the number of such levels, which therefore identifies the minimum and maximum limits possible. In principle the minimum volume can be defined as the space existing in the centre between eight cubes forming a resonant aggregate. Such a space has six square areas as sides and eight points forming the corners in the centre while fifty six corners define the form

When eight cubic objects interact simultaneously it represents a 'bound' or 'frozen' state, for the interactive count rate reduces by merging from 8 to one, which induces inward acceleration of stress. Being simultaneous the reduction takes place logarithmically. It indicates that the interactive counts along all three axes are in step or the difference in phase is extremely small or below the axiomatic level that changes sequential action into a simultaneous one. Being in step the count numbers vanish or disappear, causing inward accelerative, gravitating or transmigrating action. Since counting is possible only on completion of the state of coherence, only the reduced number count can be detected. Then every count has a hidden value associated with it and emerges as inertia or mass in a work / energy balance equation.

When a coherent state (frozen, 'solid' and unified) is broken and if the two objects still interact synchronously, it is a

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harmonically resonant state of cyclic activity. The completed cycles can be assessed only after being able to count it as a ratio. If cycles are not completed, the stress counts merge into the continuum which is in a coherent state. The merging or absorption represents a process of decay over an identifiable period of cyclic time. The onset of an expanding or radiating or trans-migratory movement cannot be counted but only the changes as discrete differences in ratio can be assessed. At such discrete locations the super-positioning of stress-forms create nodes or points that remain in a stable relationship to its origin. An interaction that cannot be counted loses significance as it does not have the potential to create a change and is in the process of getting absorbed or decaying into the continuum of space.

Reiterating, when two objects act simultaneously or in step, the physical gap separating them is very small or both seem to be bound to each other. In other words bonding is 'time' dependent. Extremely small separation in time or distance is caused by high compressive or inward going stresses. Cumulative vibrations cause stresses transmitted from cyclically interacting objects. Therefore objects, as points in space, can act independently as a continuum or a field forming a quantum, controlled by the compressive stress caused by interactive vibrations transmigrating in complex ways.

The three states of water can be used as an analogy to explain the previous statement more lucidly. Water vapour remains in an ever-expanding state, unless it is contained. Its molecules remain in constant motion in all directions or there is complete freedom to wander in all three axial directions. As the freedom is reduced either by a diminishing volume or conversely increasing pressure, the molecules fall into step or synchronise to act in a simultaneous mode. When its freedom is reduced severely, many are forced to interact together, in a simultaneous mode as groups and the interactive counts merge to vanish. When the space between each molecule becomes very small it displays fluid characteristics.

The vanishing energy count emerges as latent heat or hidden energy content. It is pertinent to point out here that temperature can be measured but latent heat can only be calculated from an energy or work equation of balance because it constitutes merged counts contributing to density of form. Further restrictions eliminate the flexibility to act in any direction and it attains a rigid

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static state as a solid or frozen object. Consequently the interactive counts reduce, indicating a drop in energy level reflected by a reduced temperature. But the regrouping into simultaneously interacting states turns up as latent heat at each level. In dealing with the molecular state of water, parameters like volume, pressure, temperature, specific heat, latent heat etc must be brought in to equate the changes. But in space, counting the interactions in a cyclic period gives an indicator of the state of stress the components are in, which enables the derivation of equations of balance. Here, the concept of counting interactions simplifies understanding and unifies the calculation procedures to deal with all phenomena uniformly.

It may be appropriate to explain here that both the 'Boltzman paradox' and the 'Ultraviolet catastrophe' could have been avoided by understanding the Sankhyan logic that incremental frequencies were created by merging interactions, which showed an increase in interactive 'density' per cycle, with the consequent change in specific heat values, both linearly and logarithmically as in thermodynamic interactions.

Work and time are related in a specific way in the real world. Assume a man takes a day to make an object and 100 of these are needed. There is a choice to make all 100 in one day by employing 100 men. Accounting after the event, indicates that 100 objects /100 men is at a rate of one a day. Using 200 men cannot reduce the rate to 2 per day because of a limit in the work cycle but unless this aspect is known, the derived rate would seem correct. Applying the work cycle limit indicates that 2 men have been working to produce one object in one day. As another classic example if 365 cars are manufactured in a year it would be rather naïve to take the rate of one car per day as factual. Similar anomalies in energy calculations exist in physics that compels the researcher to draw wrong conclusions. Even though the Plank's energy constant has an extremely small numerical value it hides 17 orders of interactions or the smallest time interval as  $t/C^2$ , for reasons spelt out earlier. The photoelectric effect is a classical example of nature's limits on work-cycles. The lack of awareness of this aspect has surfaced as the 'dark-matter-energy' conundrum in a space that is considered to be empty. The principles of simultaneity and self-similarity eliminate these caveats.



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The concept of counting interactions, confine the process of accounting to merely identifying changes in time, in terms of states of objects. In that process the object itself becomes only a passive identifier of its change in state. The beads in the abacus can be anything but its changes in state either separately or together influence the count in terms of a discrete quantum. As long as the associated logic is adhered to rigorously and consistently the counting process can yield accurate and dependable results.

Summarising, interactions between objects cause vibratory stresses in three modes of compressive, transitory and expansive states, (colliding, rebounding and radiating) which transmigrate from a higher to a lower count per cycle. The permutations and combinations of the various states of stresses in both sequential and simultaneous modes provide numerous combinatorial values in terms of countable 'object-states' that define the spectrum of manifestation witnessed by the observer. The process of counting interactive states of objects in a comparative cycle is a dimensionless one. The only rule in this theory is to add stress counts in a sequential & time oriented process and to multiply stress count numbers (logarithmically) when interactions occur simultaneously within a cycle.

The interactive stresses arise out of a lack of freedom to move in a space comprising real objects and thereby eliminate the anomalous concept of 'force acting at a distance'. In a space populated by a continuum of real points nothing can move except stresses as vibrations caused by interactive states. Since only cyclic stresses are counted the permutations and combinations become innumerable. Hence it offers limitless possibilities in investigating phenomena in space where only one interactive law following self-similar rules operate at all levels. Therefore the theory derived here applies to space in its natural state of freedom. As a consequence both the maximum and minimum limits of space can be derived precisely, which automatically provides a dual process of checking its accuracy. The colliding interaction must stop at the meeting point, thereby identifying the region in which parameters could be derived with certainty. Hence the first set of derivations is extracted from the compressive region to define the smallest point in terms of both time cycle and therefore space volume. As a result of setting logical limits, it facilitates the mathematical extrapolation of

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results easily and accurately, for logically, within a precisely confined domain any and all ratios have a derivable solution that is relevant.

Due to a large value of inward going acceleration the interactive stress-forms in space become undetectable. Hence groups of space points interacting simultaneously reduce the count rate and act as an absorber of stresses or a potential sink. The important point to note here is that no stresses will transmigrate to a higher stress-count rate. Changes in temperature and pressure as interactive stress-counts, transmigrate only towards lower count rates. The reason is that simultaneous interactions increase the gaps by superposing or decreasing the number of reactive interactive states in that region, thus allowing higher rates to drift inward, merge and equalise. It means that even a higher count-rate-object can become the absorber, through the process of synchronising, super-positioning or cohering, the interactions along two or three axes to act simultaneously. Stating it differently, the interval between counts become longer, hence oncoming interactions escape a possible confrontation. Another important and significant point must be understood when dealing with a substantial space field and that is activity, energy and work are synonymous with time. Time hidden is energy, work or activity saved as potential that could be used later. As a case to point, when steam, in the highly active state is condensed and frozen into solid ice, activity time vanishes but is calculated as latent heat which cannot be measured directly. On expanding it the hidden activity time is released as work as in thermodynamic cycles applied to engines. It applies to all phenomena for it is only stresses transmigrating in three states of compression, transition and expansion. Objects are created by high compressive stress count rates that support a coherent, rigid state. Transition states of stress support flexibly bound states. Expanding stresses eliminate or overcome pressure that causes the bound state.

The mechanism of how stress act on objects to move it, can be explained in terms of vortices. Interactive oscillatory stresses along all three axis forms a vortex when the time interval between two axes becomes less than a critical value. Since the activity along all three axes then becomes identical it attains coherence and maintains a stable form with an active centre. As a visual aid, the

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tornado or twister follows the same logic in becoming a moving object with tremendous force that damages so called solid objects. The vortex transmigrates with characteristics of a three dimensional object. It is only a holographic state of stress form on the components in space but due to high occupation number or density of interactions the 'solidity' seems real.

As explained in the introduction, the concept of space as a static but substantial entity could not be sustained in Physics for the observed dynamism had to be contrived through mathematics that became inoperable in simultaneous domains. The Michelson Morley experiments were aimed at detecting relative velocities that did not exist in real space, for only stresses transmigrated in the form that the observer detected as 'waves and particles'. The experimental failure gave credence to the Special Theory of Relativity (SR) which actually dealt only with the sequential interactions in the expansive phase of the oscillatory cycle identified in Sankhya. The superposition of interactions and its consequent reduction in count during the change from expansive to compressive regime has been dealt with in SR by using the Lorentz transform, supported by the concept of shrinking rods and slowing clocks, to justify the experimentally observed change. It is important to emphasise that unless an infinitesimal movement is introduced, the equations in SR lost its significance. As is well known, differentiating with zero displacement/interval can only lead to the so called hierarchy disease.

Further, the sharp conceptual and derivational difference between GR and SR gave an important clue to a hidden barrier. SR did not deal with density or mass directly but in GR the sudden transition to higher density regions needed bringing in concepts not based on derivation but on equivalence. The Newton's 'gravitation constant G' was introduced arbitrarily into GR as an equivalent and not derived. It was further compounded by concepts of gravitational collapse with densities rising to unanticipated levels. The Sankhyan concept of stress holograms forming 'matter' states (on the elemental components forming the continuum is space) with both particulate and wavelike characteristics, eliminated surprises as it was quite logical to anticipate stress densities and forms of any level. Further gravitation as a phenomenon in

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Sankhya is conceptually simplified by equating a real volumetric state to its parametric states of length and area.

In fact the Planck density of 94 orders could never be explained logically or mathematically but for the Sankhyan concept of coherent states of stress acting in decreasing cyclic intervals. Hence the Sankhyan concept of a transmigrating holographic stress vortex with substantial properties, observed as 'wave-particulate' states in the continuum of space, avoids the pitfall of supporting a system based on mendacious logic. Further, acoustic stress in both fluid and gas mediums follow the same Sankhyan principle. It would not be out of place to state here that if the fluid medium, needed for the transmission of acoustical stresses, vanishes into a void, there would be no option but to bring in GR, SR and Lorentz based mathematics to understand it. Physics recognises that sound waves transmigrate without moving the 'medium of stress transmission'. In Sankhya the same concept prevails.

Experiments should have been tailored to detect relative changes in phase and frequency of the perpetual harmonic oscillatory state of dynamic space and not relative velocity. If the Michelson Morley type (M&M) of experiment is conducted again with the aim of detecting the change in potential as an axial phase distortion or change in wavelength/frequency/phase-shift, the error would be eliminated. In the bargain it would also provide the basis for detecting gravity waves as coherent form 'rotations', for electromagnetic waves are the result of a second order break in the coherent state of space. For, numerically the gravitation constant turns up as the 'electromagnetic charge' constant but this fact is hidden by the dimensional classification. The proof already exists, in Hubble's and several other cosmologists' finding, of the red-shift in wavelength proportionate to distance in deep space. The change in phase would be logarithmically proportionate to distance and therefore time too. This aspect is derived in the appropriate section further on. The misinterpretation of the M & M results created the proverbial conceptual pendulum to swing to the other extreme and Physics was compelled to abandon the reality of space to justify an erroneous interpretation of an important experiment. As a result Physics and Cosmology has lost its moorings to logic and common sense.

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Note: The foregoing emphasised the need for a paradigm shift in our intellectual focus, on concepts that science was founded on. In the next chapter, the definitions are based on mathematical derivations that cannot be changed as it follows rules or laws inherent in nature as axioms. In the subsequent chapter the mathematical derivations lead to more complex phenomenon based on these axiomatic definitions. Since both chapters consist of mathematical derivations it could have been combined but the next one would have lost the status of a definition.

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### Axiomatic Definitions.

#### *Combinatorial Mathematics.*

The number one or unit written as 1 has an absolute significance but a ratio of 1/1 too becomes one. It then has the flexibility to present a unit ratio as  $N/N$  or even  $\infty/\infty$ . Sequential addition is a process of adding one count after another or adding the space (equal to a defined object) to the previous one.

Numerically it is:  $1+1+1+1+1 = 5$ . Etc.

However, objects occupying real and dynamic space, one after the other, would be as shown below. It can be described as having 5 units placed sequentially or longitudinally and constitutes its length, with the implication that it has remained constant in volumetric space. It can also be interpreted that a single object has existed for 5 unit intervals.



Fig. Sequential count

Simultaneous combinations are objects added or aggregated together at the same time and place. Conventionally, as time is shown as a horizontal sequence, the diagram below shows simultaneous placement as a vertical presentation. The simultaneous aggregation or combination is a multiplicative or logarithmic process as both the duration and position are one. Hence, the product of 5 units simultaneously has only a unit value.

Numerically it is:  $1 \times 1 \times 1 \times 1 \times 1 = 1$ .

Fig: Simultaneous counts

Here the five objects are shown together as a simultaneous unit



in one location, at the same time. The place is shown in colour and the vertical arrangement portrays the simultaneous nature of the summing up process. Here the significance of density becomes

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evident. It is the same as 5 objects merged into the same volume at the same time. Only vibratory stresses could merge and maintain that form as a hologram. When a change is presented repetitively at the same location it is 'seen' as a stable form

The significance of simultaneity in a dynamic space is that, while counting is a sequential process, events occurring together get hidden or camouflaged. The number above can be interpreted that 5 units of interactive counts had occupied the same space 5 times where one unit normally existed. It can be also interpreted that the stress density of that unit of space was 5 times the normal rate. One can count ten people clapping one after another as ten claps but if all of them clap together exactly at the same instant, only one clap will be counted, but the intensity of those ten claps would be different from the individual levels. It is important to note that the nine claps vanish only when all the claps start at the same instant, which is the equivalent of defining the phase angle between two subsequent events as being zero. Hence any ratio between two parameters holds that value only at that instant which forms the simultaneous state. Therefore the 5 simultaneous combinations could also be represented as the red coloured cube occupying one unit volume of space but its intensity of occupation or interactive density would be 5 times the normal unit level. Then the possibility of equating density, with occupation volume, as a change in the length, breadth and height aspect of the space it normally occupies, becomes an axiomatic process. Time or period, detected as an increase in density can be made proportional to a volumetric change. Therefore simultaneous states having duration, interval, time, delay, inertia, mass, density and such aspects are hidden in its combination.

The process of addition is time oriented while multiplication sums up the increments within the same time as the addition of one unit. Hence in a real life process one object exists in time that is additive whereas combinations of objects too exist in the same mode. Therefore a dynamic process of quantification in a three dimensional reality must derive a process to include both aspects simultaneously. Both the sequential and simultaneous combinations can form a series of number counts. The unit incremental series is formed by adding 1's to the previous numbers as:  $1+1=2$ ,  $1+1+1=3$ , and  $1+1+1+1=4$ , as a sequence of 1's. It represents the

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common numerical sequence as: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 etc. It also contains the simultaneous number counts, if 2, 3, 4 etc are taken as a single unit which, cannot be separated. Combinations can be extracted from the common series as  $0+1=1$ ,  $1+2=3$ ,  $3+3=6$ ,  $6+4=10$ ,  $10+5=15$ ,  $15+6=21$ ,  $21+7=28$ ,  $28+8=36$ ,  $36+9=45$ ,  $45+10=55$  etc. That sequential combinatorial series is given by

$$S_n = \frac{n+n^2}{2} \quad (0.159)$$

The simultaneous combinatorial series can be formed by adding the present unit count to the previous or existing unit count, as follows:  $-1+1=0$ ,  $0+1 = 1$ ,  $1+1=2$ ,  $2+1=3$ ,  $3+2=5$ ,  $5+3=8$ ,  $8+5=13$ ,  $13+8=21$ ,  $21+13=34$ ,  $34+21=55$ , etc. shown as  $B_n$  below. The 10<sup>th</sup> combination in both the sequential and simultaneous series equals 55. Since the  $S_n$  and  $B_n$  series coincide at the tenth sequence, it indicates that a natural time cycle exists where the sequential increment matches the simultaneous one. It is a point at which future and past events and external and internal combinations, compressive and expansive state, exist at the same level (or incremental ratio), simultaneously.

Analysing both incremental series leads to a predictable ratio of combinations of objects. The sequential series increase by the normal numerical incremental rate of 1, 2, 3 etc. The simultaneous series increases by the addition of the existing value which in the very first event is  $1+1=2$ . The value 2 is a simultaneous number but the next additive value 1 is sequential and hence it must be added as a vector value, because the incremental time values are not of the same order. Hence that ratio  $x$  is:

$$x = \left[ \frac{\sqrt{1+2^2}-1}{2} \right] = 0.6180334 \quad (0.160)$$

The value of  $x$  is the golden mean. The simultaneous combinatorial series can be derived through  $B_n$ :

$$B_n = \frac{1}{x^n \sqrt{5}} \quad (0.161)$$

Comparing the two combinatorial series, the ratios between both show a non-linear relationship in figure “The Combination Well.”



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At  $n = 10$  both ratios equalise while at  $n=4$  the ratio of difference between the two series maximise. It acts as the turning point where combined ratios, both inward and outward only increase. The ratio at  $n=4$  is .30652 and forms the most favourable bonding, coupling or combining position in a space where both sequential and simultaneous combinations take place. At  $n=4$ ,  $2+2$ ,  $2 \times 2$  and  $2^2$  all equal 4 and the ratio .30652 is approximately  $\log 2$  thus indicating that simultaneous states follow the logarithmic process explained in the earlier chapter. The interactive counts reduce in simultaneous combinations.

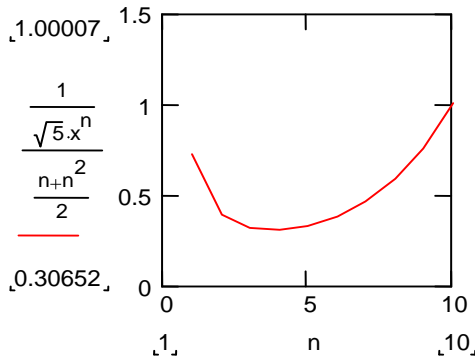


Fig: The combination well

The graph below, comparing both the sequential and

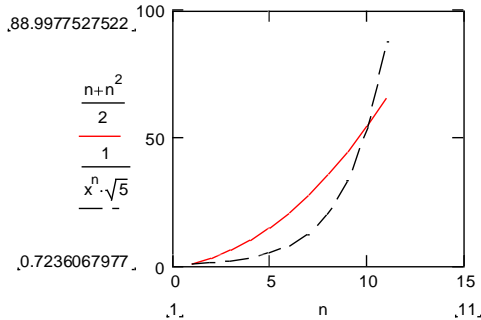


Fig: Sequential and simultaneous ratios.

simultaneous series, coincides at the tenth sequence. The interpretation of this coincidence exposes three aspects that influence combinatorial functions. Within ten interactions a cycle is formed where both sequential and simultaneous states combine to form a coherent state. The sequential increase continues steadily at

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an exponential rate but the simultaneous increases at an accelerative rate, by combining with existing combinations and overtakes the sequential rate beyond the 10<sup>th</sup> by a ratio  $1+x = 1/x$ .

The ratios at B<sub>10</sub> and S<sub>10</sub> are equal but at B<sub>11</sub> it is 89 whereas at S<sub>11</sub> it is 66. The expansion in B series displays a symmetry that has an important significance in terms of self-similarity and scale invariance.

$$\frac{B_{11}}{B_{10}} = \frac{88.998}{55.0036} = 1.6180334 = 1 + 0.6180334 = \frac{1}{0.6180334} \quad (0.162).$$

The significant ratio  $1+x$  is a sequential increase whereas  $1/x$  is a simultaneous one and both are equal at this point. Within constrained fields only self-similar laws can be applied. The ratio  $1+x$  defines the sequential increase that is exactly equal to the simultaneous one at the tenth interactive sequence, thus forming a cycle. It provides the point at which a coherent interactive rate equals the expanding phase. Both incremental time (simultaneous ratio) and incremental space (sequential displacement) equalise at this point and initiate an unique resonant state. Both types of incremental rates equalise at this location and provide the unique self-similar mathematical ratio that forms an infinite series as  $1+x$  or  $1/x$

$$\sum_{n=1}^{\infty} x^n = 1.6180334$$

Sequential increase dominates up to the 10<sup>th</sup> level and the simultaneous rate becomes predominant later. It indicates that the increase will be in a coherent form. Up to the 10<sup>th</sup> the  $S_n$  factor forms combinatorial sequences. Pursuing the scale-invariant and self similar properties of the golden mean  $x$ , the entire sequence covers the spectrum of interactive ratios found in a coherent state. The unit one can be divided by the self-similar variable  $x$  combinatorially, to infinite levels.

Axiomatically the unit one can be factored by the golden mean to any smaller level in a proportionate and scale invariant way.

$$x + x^2 = 1$$

The difference too is represented in the same proportion.

$$x - x^2 = x^3 \quad (4)$$

The product and quotient too is proportionate at each level

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$$x \times x^2 = x^3 \quad (5)$$

$$x \div x^2 = x \quad (6)$$

The additive increment is equal to the reciprocal of the incremental value. It signifies that a sequential or additive increase in time or ratio is exactly equal to its simultaneous or instantaneous ratio. Incremented value equals its reciprocal as a ratio, which is a unique relationship that simultaneity changes to a sequential process thus providing the point at which, frequency, phase and instant of change from compressive to expansive states are all identical in value. The simultaneous interactions that create stress in the bow example can be solved using the variable  $x$ . The conditions mentioned ensures the initiation and maintenance of a coherent state.

$$1+x = \frac{1}{x} \quad (7)$$

The logarithmic or product value similarly maintains the same ratio. It forms an equation in a binomial form and can also be represented in a polynomial form.

$$(1+x)^n = \frac{1}{x^n} \quad (8)$$

Any unit value can be factored to any level accurately and precisely without any uncertainty. The difference between any two indices is just one more than larger one. The process is transparent.

$$(1+x)^n x^n = 1 \quad (9)$$

$$(x+x^2)^n=1 \tag{10}$$

The expanded process follows simple combinatorial methods of calculating coefficients to any level.

$$(1+x)^n x^n = x^n + a_1 x^{n+1} + a_2 x^{n+2} + \dots + a_2 x^{2n-2} + a_1 x^{2n-1} + x^{2n} \quad (11)$$

The coefficient  $a_n$  can be derived simply by systematically adding pairs of numbers at each level as shown in Pascal's triangle.

$$\begin{array}{c} (1 \_ 1) \\ (1 \_ 2 \_ 1) \\ (1 \_ 3 \_ 3 \_ 1) \\ (1 \_ 4 \_ 6 \_ 4 \_ 1) \\ (1 \_ 5 \_ 10 \_ 10 \_ 5 \_ 1) \\ (1 \_ 6 \_ 15 \_ 20 \_ 15 \_ 6 \_ 1) \end{array}$$

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The derivation above represents the range of numerical ratios possible within a closed domain that can be identified as a unit state. Coherent states in space can be analysed using these formulas. It is proportionate and scale invariant at every instant of time, for only then a region can be termed to be in a coherent state where super-symmetrical parameters are needed to analyse it. Each level can be represented by:

$$A_n = \frac{n+n^2}{2} \quad B_n = n \quad C_n = \frac{n^2-n}{2} \quad F_0=0$$

$$F_n = C_n + F_{n-1} \quad G_n = F_n + G_{n-1} \quad H_n = G_n + H_{n-1} \quad (13)$$

$$F_n \xrightarrow{\infty} Z_n=1 \quad \text{and} \quad A_{nk} = F_n \xrightarrow{k} Z_n$$

The graph below shows the coherent state curves upto 20 levels . These curves display the characteristics of Planck's Black Body radiation spectrum. The curves represent the simultaneous interactive states occuring within the period of a single cycle and indicates the density of coherent interactive states.

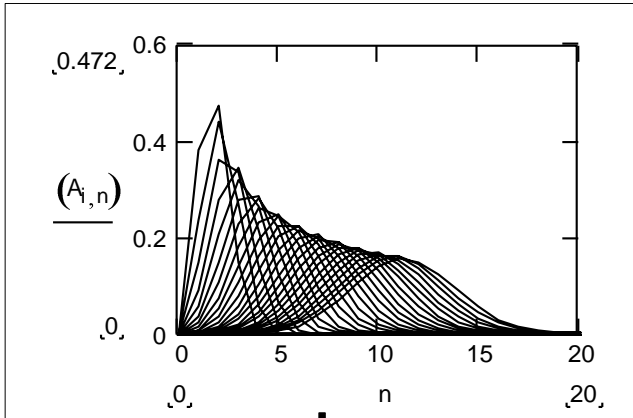


Fig: Density of simultaneous interactive states.

If the graph is rotated, with its centre at 0, along the x axis, it represents the coherent stress form of nuclear quark region, black-

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hole, galactic centre, ferromagnetic, superconductive and all other massive or high density states in a simultaneously interactive mode. The high density stress countours form a 'shield' that provides a region of very low counts, which provides a 'sink' to all higher count states to gravitate to. Dynamic space retains the form shown below, which provides the near 'zero' activity level towards which all higher interactive states migrate to and get absorbed.

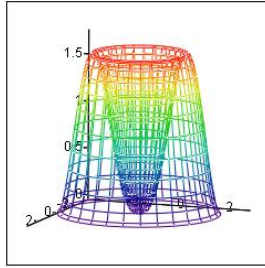


Fig: High stress density potential sink

The interactive density of the core region remains low while at count 3 the coherent density of interactions rises to a maximum and falls off gradually. Within confined regions the interactive states merge or superpose sequentially and become coherent at discrete intervals or periods when the cycle is completed. A cycle can merge only if it remains static or the location does not change. Two opposing interactive displacements in an oscillatory cycle will meet at the same point repetitively if its rate, distance and time are identical. It defines the midpoint of the interactive displacement and forms the centre in a three dimensional interactive state. The centre will remain stationary even if the displacements are progressively halved:

$$\sum_{n=1}^m \frac{1}{2} + \frac{1}{2}^m = 1$$

Therefore in an interaction that increases in oscillatory rate to any limit, defining the centre in terms of  $(1/2)^m$  ensures that the location of the centre does not change despite the increasing rate of oscillations. The displacement value must necessarily relate to the numerical value of  $(1/2)^m$  and that at the very first level of  $m=1$

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it will be  $x/2$ , which forms quantum displacement ratio of both linear and spin factors.

$$\left[ \frac{\sqrt{1+2^2}-1}{2} \right] \frac{1}{2} = 0.309017 \text{ (0.163)}$$

The value of the cycle when sequential increment equalised with the simultaneous one was shown to be 10 both graphically and derivatively. Hence the total increment during the first cycle is::

$$\frac{x}{2} \times 10 = 3.09017$$

As  $m$  increases to  $n$ , since the centre remains static, the vector ratio of the displacements reduce relatively, as:

$$A_0 = \frac{x}{2} \quad A_{n+1} = \frac{\left[ \sqrt{\left[ 1 - \sqrt{1 - A_n^2} \right]^2 + A_n^2} \right]}{2}$$

The total increment at the  $n$ th cycle, in proportion to  $(1/2)^n$  tends to equal  $\pi$  as:

$$A_{n \rightarrow \infty} \left[ 2^{n \rightarrow \infty} \right] 10 = \pi$$

The derivation provides the proof that in confined domains, the simultaneous interactive cycles axiomatically contains itself in a circular boundary of ten interactive counts. It is a unique interactive state where the relationship of centre and surface boundary maintained a constant relationship simultaneously. The trigonometric proof is:

$$\cos \left[ \frac{2\pi}{10} \right] = \frac{1}{x+x} = 0.809017$$

$$\left[ 2A_n 2^n \right] + \left[ 2A_n 2^n \right] = \frac{2\pi}{10} = \left[ 2A_n 2^n \right] - \left[ -2A_n 2^n \right]$$

The self containment is ensured by the term  $(1/2)^n$  because the interactive process is centred in the same location. Another reason is that every  $(1/2)^3 = 1/8$  position represents a third order constraint level of simultaneous interactions in a coherent state which makes it a self-similar and self organised ensemble. The centre of form, mass and activity remains firmly in the same location. The harmonic factorisation of  $\pi$  as ratio of a simultaneous cycle formed

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by self similar sequential numerical values provides the axiomatic base for interactive oscillations, quite surprisingly, new to Physics.

The term  $2\pi/10$  represents the cyclic displacements forming the self contained coherent cycle in one axial direction and its reciprocal  $10/2\pi$  gives the time or cyclic interval in each axial direction. Therefore the vector constant as an invariant in axial directions in a three dimensional oscillatory state is:

$$\sqrt{\left[\frac{10}{2\pi}\right]^2 + \left[\frac{10}{2\pi}\right]^2 + \left[\frac{10}{2\pi}\right]^2} = 2.756644771$$

The ratio forms a limit along each axial direction and its **Todc** value provides the constraint to form the coherent state constant as Px:

$$Px = \sqrt{\left[\frac{10}{2\pi}\right]^2 + \left[\frac{10}{2\pi}\right]^2 + \left[\frac{10}{2\pi}\right]^2}^3 = 20.947986$$

Therefore any and every coherent state in space has a simultaneous interactive count **Px** that is hidden or which cannot be detected. This new ratio forms the coupling constant in the language of Physics whenever a coherent nuclear state is formed by simultaneous interactions at a centred location. The perpetual harmonic oscillator, derived in the relevant chapter, is confined within this ratio and as the interactive counts increase the density increases as mass.

While the **Px** ratio forms the stable and minimum coherent state count that vanishes to unity, its actual value is not one but Kx as derived below. It was shown that the sum of all the stable centred states comprising  $(1/2)^n$  equalled one but it did not include the odd numbered states. The algebraic sum of the odd numbered states approaches a value called Catalan's constant, as:

$$Cat = \sum_{n=0}^{\infty} \frac{-1^n}{(2n+1)^2} = 0.9159656$$

The Cat like  $\pi$  is a transcendental number that approaches a value of 0.9159 at infinite level and is not 1. The modified value of Cat is Kx, relative to the first interactive increase in the coherent simultaneous state of  $2^3=8$ . Its value as the harmonic state constant Kx, is derived below as:

$$Kx = \left[ \frac{10^{1+x}}{2^3} \right] \left[ \frac{2^{1/3}}{2^3-1} \right] \left[ \frac{10^2-2}{10^2} \right] = 0.9149879388$$

The first bracketed ratio covers the rate of cyclic expansion relative to a  $2^3 = 8$  count stable form, as a result of third order constraint formed at the very first interactive level. The continuum of space changes interactively into the elemental field with a simultaneous count of 8. The second bracketed ratio shows the displacement per cycle and the third gives the ratio of reduction in cyclic time in which the interactions occur. Hence no simultaneously interacting cycle can have a cycle-time of one because every cycle goes through the three phases of compression, expansion and resonance all of which must create a delay, inertia etc.

Modifying **Px** by **Kx** gives the Universal constant as a ratio, of the interactive counts per cycle that forms the perpetual harmonic oscillator in a coherent but un-detectable state. It provides a stable holographic foundation for a dynamic space with field properties:

$$Uc = \frac{Px}{Kx} = 22.8943$$

The Uc, derived from Sankhya is new to Physics, is a Universal coherent state constant, which influences and affects every observable, detectable and measurable process in reality. The cyclic time limit of Kx is a perpetual oscillatory state constant. Further, the process of detection in the real field of a perpetually dynamic space affects the perpetual resonance by a factor RS.

$$RS = \frac{10^2}{10^2-2} = 1.0204081632.$$

The RS value is a transcendental ratio and equates the rate of decay in a perpetual oscillatory state. Later, in the perpetual oscillatory derivational process the reason for the infinite decay time will become clear.

When measurements are made, the stable count value is registered only on the completion of a cycle of 10 counts. In a three dimensional environment where all real phenomena occurs, the measured value of a cycle is  $10^3 = 1000$ . Combining these



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factors allows the derivation of the axiomatic and dynamic molal volume.

$$Mv = \left[ \frac{Px}{Kx} \right] \left[ \frac{1}{10^3} \right] \left[ \frac{1}{RS} \right] = 0.0224363901$$

The first volumetric change in volume is 2 and the corresponding radial change is  $2^{1/3} = 1.259921 = k$  and the increment is  $0.259921 = (k-1)$ . The breakup of the coherent state is initiated by the incremental value. Setting the increment to a unit status, the relative radial ratio of the coherent volume, forms the reciprocal of  $1/0.259921 = 3.8473221$  and its third order constraint provides the constant of change KV when a volume doubles.

$$KV = \frac{1}{2^{1/3} - 1} = 56.947628372$$

The ratio of the expansion volume constant KV and the coherent state constant Px provides the density change constant Tk when the coherent symmetry of the simultaneously interacting state is broken to initiate the sequential interactive state that transmigrates as a thermal phenomenon. When the coherent state, exemplified by the three axial symmetry imposed by the **Todc**, is broken, it reduces to simultaneous interactions along two axes which changes interactive density from mass to that of flux, and can be classified as a thermal form of interactive stress. While the distinction is clear in Sankhya, in Physics the Boltzman constant sets the change-over energy value as different from that of Planck's constant.

$$Tk = \frac{KV}{Px} = 2.718525213$$

The transcendental number  $e = 2.71828183$  as the base of the natural logarithm is applicable to the concept of simultaneous interactions. The simultaneous increase in volumetric ratio maximises at  $e$ , whereas in sequential expansion it would certainly exceed that value.

$$\left[ 1 + \frac{1}{n} \right]^n \rightarrow 2.7182818285$$

Hence  $e$  is an axiomatic model of simultaneously increasing volumetric interactive state and therefore the coherent state ratio of

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change too must be governed by e. Since **Px** is a coherent state, **Tk** is a measure of the thermal potential needed to double the volumetric interactive rate. The breakup of coherent symmetry introduces a shift in phase of interactions, resulting in an angular change in timing cycle. The break in symmetry is created through changing interactive count rate between 1 and 10 which forms the cycle. Each step goes through an angular displacement of 1/10<sup>th</sup> of a cycle or 1/2x as (cosine (2π/10)) but affects the entire set of cycles forming the simultaneous state. Using the angular displacement ratio **Kx** as a parameter to define radial movement, the value equal to **Tk** is derived, at an interactive rate of 2, as shown below. Its significance is that the **Tk** value is reached in both the simultaneous and sequential interactive modes at a resonant interactive rate of two when doubling its volumetric state.

$$Tk = \left[ \frac{1}{KxRS} \right] \left[ \left( \frac{1}{2 \cdot 2^2 \cdot A_2} \right)^2 \right] = 2.7185252132$$

If there are 100 interactive cycles acting as one, each of those cycles will go through a phase shift simultaneously of only 1/1000 of a cycle. It can be visualised as a twist in the coherent state alignment, similar to a straight line, drawn on length of tubing, twisting when a torque is applied to the pipe.

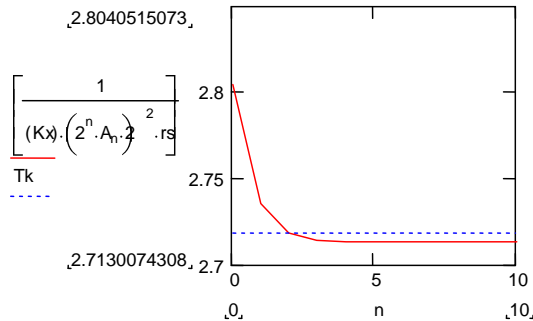


Fig: The Resonant Thermal Control

Hence the difference, in numerical terms, will not be equal but proportionate to the density level, as shown, because it is a change in potential:

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The  $T_k$  value (blue dashed line) crosses the red phase change curve at  $n=2$ , which is the resonant interactive rate. It displays an extremely precise mode of control of the resonant state in two interactive modes. When the interactive oscillatory rate falls below 2, the reactive  $T_k$  potential rises steeply, first because of the decreasing rate and second the decrease of radial distance increases the density by the **Todc** rule as  $\rho$ . When the interactive rate rises above 2, the reaction is in the expansive mode, with a reducing flux density, proportional to expansion, conditioned by cross-section as  $\rho^2$ , which displays a gentle gradient proportional to distance.

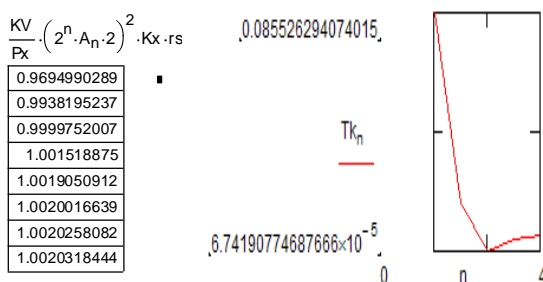


Fig: Interactive Thermal Gradient.

The limit in rise of the  **$T_k$**  potential at 2.80405 is reached when the phase angle has maximised to  $2\pi/10$  and the displacement maximised to  $1/(x+x)$  thus conserving total linear/angular momentum, while the oscillatory rate drops to 1, signifying the attainment of the coherent state. The oscillatory rate of 1 per cycle of 10, is phase locked, indicating simultaneity is reached. The interactions always take place as a linear transmigratory movement but on breaking coherence, the change in phase angle of the interactive cycle, gives the impression of spin to the observer. Hence there are two modes to maintain maximum potential, one by increasing flux density flow inwards and two by reducing interaction rate to less than 2. Both these factors happen under certain conditions that are explained in the chapter on derivation.

Reiterating, the balanced interactive rate of 2 (320/180 degrees) keeps compression and expansion activities equal in cyclic time and that rate slows down when the phase angle increases with increase in density. Similarly, the rate increases above 2 because the phase angle decreases with density which is decreasing from a coherent to an expanding flux state. Climbing 'uphill' increases the

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stored potential, over a 'shortening base-line or time cycle', which stops at the peak , as a simultaneously interacting state. Running 'downhill' decreases the flux rate over a 'lengthening base line', thus balancing all three factors.

The control parameter, as rate of change of phase angle, has arisen from within the coherent state that has stored the angular momentum change, resulting from the self similar equality and balance between linear and radial displacements. The above is due to the three phases of an interaction, locked into a synchronous state, by the third order constraint shown below.

$$n := 0.. 10$$

$$Tk_n := \left\| \left\| \frac{KV}{Px} - \frac{1}{(2^n \cdot A_n \cdot 2)^2 \cdot Kx \cdot rs} \right\| \right\|$$

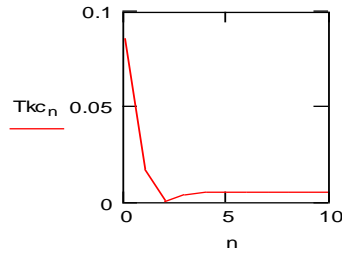


Fig: Thermal Well at critical thermal potential Tk.

The graph above shows, three new significant aspects from Sankhya, important to the concept of space in Physics. The graph above is identical to that of the strong force existing between nucleons. But the derivation here is from axiomatic concepts at the fundamental level in the continuum of space well before nuclear states are presumed to exist in Physics. The graph shows the characteristics of the breakup of coherent states leading to sequential phenomena.

The volume constant KV has radial ratio  $2^{1/3} = k$ , at which distance the coherent and expansive potentials become identical at a resonant interactive rate of 2 per cycle. Therefore at a relative displacement interval of  $1/k$  the dip forming the well identifies the balanced, resonant and relatively static position towards which all higher count rates must drift, to equalise. The mechanism of how oscillatory count rates from both the simultaneous (coherent) and

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sequential (expansive) states transmigrate towards the potential well, can be explained as follows. The coherent state has a number of counts aligned in the simultaneous state as density and at count 2 it decreases by half, thus initiating the drift to a lower density state. Thermodynamically, it is equivalent to pressure reduction due to volume expansion at the same temperature that results in a change in latent heat or entropy. In the sequentially interactive states, the higher count rates 'sees' the count rate of 2 as a 'lower' reaction rate with a longer reaction time and the oscillatory counts migrate towards it. The rate of 2 is dynamic and low enough to act as a dynamic absorber of higher count rates. It is similar to thermal flow from higher to lower temperature states.

The intrinsic change above can be obtained by dividing  $t^3$  by  $t$  to release  $t^2$  as the ratio of change from simultaneous to sequential state. Therefore the value of the perpetual interactive exchange in space releases  $Tc$  as the rate of volume change per cycle, taking  $t = 10$  in terms of cycle counts:

$$Tc = Tk \left[ t^2 \right] = 271.8525213193$$

The value of  $Tc$  is the theoretical ratio of expansion in space in the totally balanced state of the perpetual harmonic oscillator. The process of measurement breaks the coherent symmetry and therefore the correction for the ratio of change is  $Kt$  as:

$$Kt = \left( \left( \frac{2\pi}{7} \right)^4 \right) 2 = 1.2982469442$$

Up to the third power the inward transmigrating stresses meet at a point and form the constraint, while acting as a single unit. The fourth power provides accelerative displacement for the entire unit as whole, as an oscillatory movement, twice in a cycle. The 'fourth power' measured value of the absolute rate of change of volume per cycle, at a resonant rate of 2, is  $Ta$ :

$$Ta = Tc + Kt = 273.1507682636$$

The measured absolute temperature in the laboratory is  $Ta$  but if measurements based on resonance can be carried out without breaking coherence,  $Tc$  is the correct limit. The entire interactive process is 'simultaneous' and exists in the coherent domain of space. Recall, that though simultaneous interactions merge and reduce counts, it causes an inward transmigration of stresses

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towards an apparent centre of response in a coherent state. Similarly the **Tc** region is in the transition state where merged interactions along two changes to three axes. Hence it is a negative stress absorbing state just as coherent mass exhibits a low count level of one. Hence the coherent state of space acts as an absorber of all stress counts in excess of its resonant count state.

The mechanism of how and why a perpetual harmonic oscillator sustains its oscillatory rate has been shown through an exhaustive derivation that also defines a number of factors known in Physics experimentally. Here the derivation has been conducted from a basic concept using axiomatic ratios to arrive at the real nature of space forming the foundation for all phenomena. While the thermal characteristics of space has been doubly endorsed by an axiomatic and dimensionless approach, the ultimate proof, for the holographic nature of all manifestation in a substantial but dynamic medium as space, is given in the chapter on axiomatic derivations where the formulation for the perpetual harmonic oscillator is presented.

There are three basic resonant oscillatory count rates applicable to volumetric as S, surface as V and expansion as C. While the derivation and proof for perpetual oscillatory states will be given in the next chapter, the resonant oscillatory rates S, V & C are a direct consequence of continuing dynamism. Since the derivation is based on simultaneous interactive states, it is based on logarithmic formulation. It implies that it is a self similar interaction in a contained field. Resonant interactions taking place in a confined domain remain in a coherent state unless it is disturbed by an accelerative displacement. Coherent states retain the full potential but when it is broken the displacements commence and transmigration of interactive stresses is initiated proportionate to the drop in potential values. Substantial components in space provide the pressure as interactive stresses to maintain coherence.

The coherent state resonant base count **S**, for a cycle of 10 interactions is:

$$S = 10 \sqrt{\frac{1}{1^2 + 1^2 + 1^2}} - 1 = 23.2287266737$$

The sequential state resonant base count per cycle of 10 interactions is **V** as:

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$$V=10\sqrt{\frac{1}{1^2+1^2}}-1=259.5455351947$$

The linear transmigrating resonant base count per cycle of 10 interactions is **C** as:

$$C=10\sqrt{\frac{2}{1^2+2^2}}-2=2.9657596692E+8$$

The constants **S**, **V** and **C** form the base for stable resonant oscillatory rate needed to sustain three dimensional stresses created from interactions in space. It is essential to note that the cycle is an axiomatic state in nature and removes the need to specify a clock time cycle. **S** is the resonant oscillatory rate inside a coherent spherical space and on the Earth it forms the seismic ‘carrier-wave’ transmigration rate, derived theoretically, where **C<sup>x</sup>** is the compressive factor derived later.

$$\frac{EarthRadius}{C^x} \frac{2\pi}{10} \frac{1}{S} = 1 \quad S \quad V \quad k \approx 8000...metresvelocity \max$$

The derivation is based on the assumption that the stresses in space provides the parameters that control the Earths volume, which imposes a conclusion that all stellar bodies in a constant oscillatory state. The maximum transmigratory rate due to an impulse cannot exceed 8000 metres / second on earth. Later the terrestrial relationship to stresses in space will be of an electro-magnetic nature.

**V** forms a resonant oscillatory rate at the surface or boundary thus providing the base for transmigration of acoustic waves that are controlled by pressure or flux from interactive stresses and is derived below theoretically, where **C<sup>1-x</sup>** is the expansive factor derived later, which is intimately connected with electromagnetic phenomena.

$$\frac{EarthRadius}{C^{1-x}} \frac{2\pi}{10^2} \frac{1}{V} \left[ \frac{2}{\sqrt{1+2^2}} \right] = 1$$

**C** forms a resonant oscillatory ‘carrier’ rate for expansive or radiant transmigration of interactive stresses in space. All the three resonant oscillatory rates are derived as a property of the substantial continuum of space.

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Simultaneous interactions in a coherent state have a net zero displacement and it commences only when the axial symmetry of phase and/or interactive rate differ between axis. In a real field stresses can only transmigrate but space being considered a void in Physics, it is seen as the 'velocity of light' at a wavelength or displacement of 1 meter. It is an axiomatic fact that interactive stresses can only transmigrate 'through or across' a medium, as do interactive acoustic stress through liquid & gas mediums or seismic stresses through terrestrial mediums.

Since **Tk** forms the lowest volumetric oscillatory rate at resonance, all other transmitted stress wave forms being higher in sequential and / or simultaneous interactive counts, merge and get absorbed into the perpetually oscillating state maintained at **Tk**. Free space acts as an absorber of volumetric stress counts higher than **Tk**. As a corollary, any accelerative interaction must be initiated by an increase in rate of **S, V or C** but the increase must be of a logarithmic ratio so that the potential is increased.

The field of space around the Sun is conditioned by the gravitational acceleration caused by the solar mass proportional to distance. The transmigration rate of interactive electromagnetic stresses on and around the Earth is modified proportionate to its distance from the solar centre and therefore cyclic time too varies accordingly. The transmigration rate for electromagnetic or light waves at 1 meter acceleration per second is therefore  $C_L$  as:

$$C_L = 10^{\log(C) + \frac{R_s}{R_o}} = 299792458$$

Where  $R_s$  is the relative radius of the solar boundary and  $R_o$  is the Earth's orbital relative radius, forming the potential gradient between source and receiver as:

$$R_s = 6.9598E+8 \quad R_o = 1.48562955925181E+11$$

The  $C_L$  value is confirmed by experimental measurement conducted by many and confirmed through laser measurements experiments of the lunar distance. *According to Sankhyan derivation, the measured value shows a blue shift in frequency consistent with the log value of distance as  $C_L/C = 1.010845$ , confirming the 'real or substantial' nature of the field in space.* The blue-shift in frequency of light, logarithmically proportionate to distance, is a constant factor in Sankhya space and is defined and derived from basics later. It is pertinent to state that the first verse in the Rig Veda is a numerical acronym giving



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the volume of light formed in one second, where the same  $C_L / C$  ratio is introduced in terms of a 365 day solar cycle instead of the orbital radial ratio. The red-shift observed by Hubble and other astronomers is relative to  $C_L$  but would have shown a blue-shift had it been compared to  $C$ . All light received from any stellar source must have a higher simultaneous count density for it can only transmigrate to a lower count state through the continuum of space. The lowest count possible is the resonant state of  $C$  which becomes the absorber at  $T_k$  level in the case of sequential interactions and  $T_c$  for simultaneous states. The reason and mechanism of absorption will be defined and proved mathematically in the following chapter. There are a number of anomalous findings in Cosmology on the behaviour of the red-shift factor in light received from distant galaxies but the derivations in the appropriate chapter will show that it is to be expected from the definition of space in this theory.

The number of interactions in a cycle of 10 interactive counts is  $C$ . It has both compressive and expansive interactive states. It was shown that the sequential and simultaneous interactive rates equalised at  $1+x = 1/x$ . Hence  $C^{1+x}$  as  $C_s$  show an increase in count density per cycle in the compressive phase. Similarly  $C^{1-x}$  as  $C_e$  indicates the decrease in count density within the same cycle or simultaneously.

$$Cs = C^{1+x} = 5.1074477509E+13 \quad Ce = C^{1-x} = 1722.1381097982$$

The simultaneous cyclic permutations and combinations are limited to the product and ratio of  $Cs$  and  $Ce$ . The product of  $Cs$  and  $Ce$  entails a colliding interaction and the reciprocal of the meeting point indicates the fractional period of the simultaneous interactions involved and the third order damping constraint equals its cubed value. The universal harmonic state constant  $Kx$  forms the comparative base for all cyclic value for no perpetual harmonic oscillator can have a unit value as stated in its derivation. The  $My$  ratio forms the universal fundamental unit interval of an interactive count:

$$My = \frac{Kx}{Cs \times Ce^3} = \frac{Kx}{C^6} = 1.34462022485257E-51$$

There can be no smaller ratio of a cyclic interval or interactive count ratio. The figure below gives a conceptual view of the

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principle of deriving the Moolaprakriti state or the fundamental unit of interaction in Sankhya but is new to Physics, as **My**.

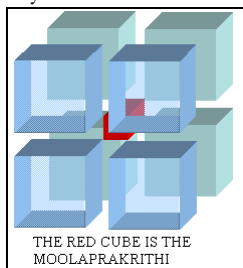


Fig: Moolaprakrithi My concept

The eight cubes interacting simultaneously has a shielded cubic point as the red cube, which forms the natural colliding limit for all the stresses acting inwards from all six axial directions simultaneously. The space separating the two blue colliding cubes forms the linear 'length' of the red cube and forms the smallest or limiting point. The cube of that spatial distance forms a real point in a space populated with cubic components. Stresses from six axial directions meeting at a point will form a cube. The derivation and definition of the fundamental unit interval of one interactive count has been carried out through combinatorial mathematical procedures based on axioms, without any inputs from any source outside the field of space. As will be shown later, it has cyclic time, inertia, mass, intensity and other indicators of stress.

All phenomenal states, manifest or hidden can be counted in terms of the unit **My** ratio that defines the field of points which constitutes the continuum of space. **My** forms the dimensionless, self-similar, scale invariant limit of a point forming the minimal ratio of an interaction to its cyclic time of formation. The uncertainty in the counting procedure is limited to one **My** unit in space, that extends to the magnitude of the Universe. Therefore the accuracy of derivations can be set to 1 in  $10^{50}$  decimal places. Every phenomenal state in the Universe can be defined in terms of **My** number count that is dimensionless, scale invariant and self similar. It is the compressive limit of simultaneous activity that defines the point in space. Colliding interactive event defines the spatial limit at the meeting point, which has zero time difference or forms a simultaneous event.

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The simultaneous interactive ratio **Cs/Ce** provides the crossover numerical value between compressive and expansive modes of interactions. In the example of the bow, the hidden domain provided the physical model of simultaneous interactive states where the compressive and expansive states merged to provide the third order constraint. When the coherent state is broken, the third order constraint reduces to the second order because the  $t^3$  factor gets reduced by  $t$  to  $t^2$  as follows:

$$\frac{Cs}{Ce} = \frac{C^{1+x}}{C^{1-x}} = \left| C^x \right|^2 = 2.9657596692 \cdot 10^{10}$$

However the resonant perpetual oscillatory rate always remains at 2 as shown in the derivation of **Tk** parameter. Therefore the ratio of **2 or k<sup>3</sup>** and **(C<sup>x</sup>)<sup>2</sup>** gives the change in interactive density at the moment of break in coherence as the gravitational constant that initiates the acceleration when coherence is broken as Gsankhya:

$$Gsankhya = \frac{C^x^2}{2} = \frac{C^x^2}{k^3} = 1.4828798346E+10$$

The reciprocal of Gsankhya or **Gs** forms the empirically derived value of Newton's gravitation constant, after correcting for the blue-shift as **C<sub>L</sub> / C = 1.010845** in electromagnetic wave (EMW) propagation rate.

$$G_{newton} = \frac{1}{Gsankhya \cdot C_L} = 6.671281904E-11$$

The dimensional characteristics attain significance if the electromagnetic wave (EMW) rate is defined as having an acceleration of 1 metre / sec<sup>2</sup> and the oscillatory change of rate from 1 to 2 has an interactive rate increase equal to a kg of force per change in unit volume, or a Newton. The derivation of **Gs** above is of signal importance, for it shows that Newton's gravitation constant varies as the log ratio of distance from its source, the solar mass that causes the accelerative state.

As has been shown, the important, core derivations have no specific relationship to dimensional parameters. The main reason is that all derivations are arrived at as ratios of interactive counts to an axiomatic cyclic unit count of **10** which is equivalent to  $2\pi$ .

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Every interactive count rate is only a ratio of two parameters involving cyclic time and therefore has no dimensional bearing on the result. The observer is free to set dimensional standards based on his own choice and experience. The concept of mass, charge and the resonant balanced state need be defined only in terms of rates of interaction. There is no doubt that dimensional parameters enhance calculative procedures but as shown it does not form an intrinsic property needed to define dynamic phenomenon.

The definition of mass is a coherent state in which the interactions are centred by the third order constraint and act simultaneously as a single unit. The charge is the resonant state created by the breakup of coherence and synchronised by the second order constraint. Radiation is expansive transmigration of interactions with a first order constraint and is accelerative as it. The constraints are created when interaction counts vanish along the three, two or single axial directions due to synchronisation & merging, at identical phase and oscillatory rates. The axiomatic rate of interactive harmonic oscillations can only be equal to **C** because the interactive ratio with an adjacent unit can only be two or half.

Within the coherent boundary **time**<sup>3</sup> parameters vanish to emerge as density or mass. Between the coherent boundary and the radial boundary the **time**<sup>2</sup> parameter vanish to emerge as charge or flux density. Before coherence is broken, the net displacement remains at zero for all the oscillatory excursions are contained within the coherent boundary. However, when coherent symmetry breaks, the transmigration commences at a rate **C** and the net displacement begins to increase, which in Physics is interpreted as a fall in frequency or an increase in linear displacement 'density'. In Sankhya **C** is the perpetual rate of oscillation and not a velocity but that aspect is displayed only when progressively-increasing displacements are created by an accelerative interaction from an adjacent component.

The diagram blow will expose the conceptual difference between Sankhya which derives a single law of manifestation from the definable continuum of space and that of Physics with a space that is a void. The simultaneous interactive state is coherent and hence it does not initiate any displacement because the net internal oscillatory movement is zero. The oscillations provide the instant potential to initiate a displacement that is seen as frequency by

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observer. In a scale invariant theory the coherent state diagram represents an atomic nucleus or a stellar body like the Sun, while  $C$  being a constant the  $D$  and  $T$  parameter is based on the observer's chosen yardstick. When  $C = D$  and  $T = 1$  the potential state reaches its minimum displacement distance becomes a maximum. When  $T$  decreases proportional to harmonics of  $2^n$  the interactive density increases which is detected as a rise in frequency by the observer.

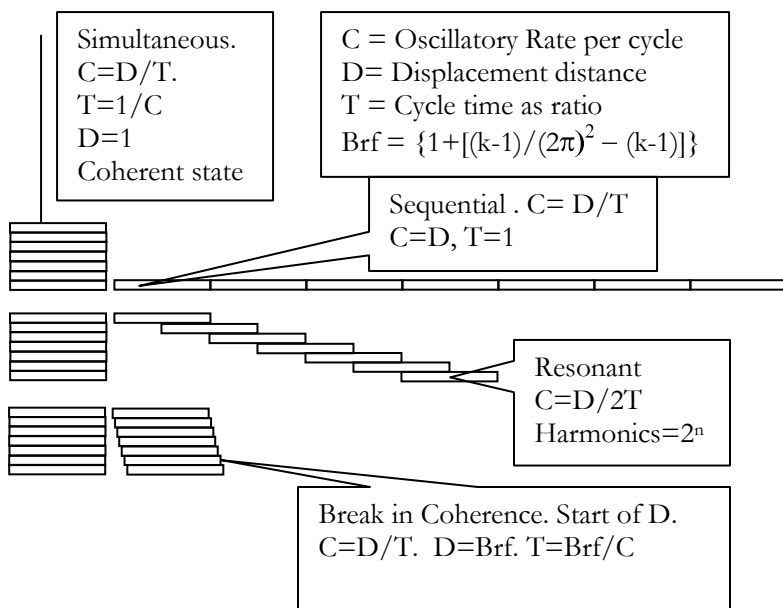


Fig: Stress Transmigration principle. (Light velocity)

The most important factor  $Brf$ , (derived axiomatically in page 112) determines exactly the moment when detectable displacement commences at the highest interactive density or detectable frequency, at which point the equivalent of Planck's constant emerges as the minimum cyclic displacement that differentiates the coherent state from the radiative one. Physicists must appreciate the fact that a quantum is not a natural phenomenal state of matter in a space continuum, but it is only an indicator of the change from a simultaneous interactive state to that of a sequential or

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transmigratory state of stresses. At less than the Br interval the state is deemed to be in a simultaneous state of the continuum of space. When Br is exceeded and sequential time begins it constitutes a real displacement that initiates transmigration. Hence at time interval ratios less than Br the interactive stress in space act as continuous 'wave' giving the characteristics of a continuum. It will be shown in a later chapter that all stellar and planetary body density is equal to  $(1 / (Brf-1))^2 = 2.2766641909E+4$ . Stellar planetary bodies are not 'solid' as conjectured but are an agglomeration of space components in the holographic state and the solidity of the body surface is displayed when the oscillatory interval is less than the Br ratio. As a result, the minor planetary body 'solid surface' radii are as observed but the Sun and major planetary body radii as observed are that of stratospheric or outer envelope boundary. The latter groups real 'solid surface' boundary are at a density corresponding to  $2.276 E +4$ .

As shown above concepts of self-similarity, scale invariance and relativity requires that all parameters should be derived only as ratios. Hence time must also be dealt with as an associated value. Frequency is 'second' dependant but time cycle is based on self similar interactive limit of  $2\pi = (2^n A_n 20)$  and can be applied to all scale levels. The constant oscillatory rate **C** determines the time period as a ratio of displacement caused by an accelerative interaction. On application of the revised concept the simultaneous merging of displacements show that frequency becomes an interpretive consequence of establishing the second as an independent unit of time. There is no direct equivalent of the 'second' in natural phenomenon and hence cannot be used as a yardstick in a three dimensional manifestation in the continuum of space, comprising real components.

The explanation given above is likely to set Schrodinger's cats among the relativistic pigeons. It may be interpreted as reverting back to an 'ether' concept but as explained in the introduction and proved later, the components in space are perpetually dynamic and therefore transcend the need for the derivation of a theoretical source with potential characteristics, like Newtonian gravitation, Einstein's twin relativity principles or Maxwell's field formulations. Dynamic three dimensional interactive states among any two components in the continuum of space has it all as an axiomatic

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state that even human intelligence cannot negate. Such an axiomatic presence gives credence to religious concepts of divinity and divine forces too. Axiomatic numerical ratios arise out of combinatorial principles as a natural consequence of a numerical sequence. It is indeed the source of Physics.

Beyond the resonant boundary at twice the radial distance (or eight volumetric states) the interactive stress-vortices transmigrate at rates that decay in distances proportionate to loss of potential. Only the state of the elemental components in space is relevant and not the components itself in this theory for it is in a perpetual oscillatory state, as shown later. It does not contradict concepts in science for the calculated proton decay time is about  $10E+31$  years, which is about 20 orders more than scientific estimates on the life of the Universe, Hence that period can certainly be considered an eternity.

In a contained field of substantial components in space, the perpetual interactions remain in a balanced and un-manifest state and only the changes created by any obstruction is manifested as an observable parameter. The oscillatory state is kept in balance by the interactive exchange of compressive and expansive stresses in a three dimensional space that does not change its inherent parameters. The cause and effect cycle can be observed only in the sequential interactions whereas the simultaneous activity merges as density and cannot be counted as distinct interactions.

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Axiomatic Derivations.

Researching, measuring, detecting, analysing, evaluating, comparing, proving and all other similar activities can be classified under a single process of accounting interactive states, without losing the intrinsic meaning of the investigative spectrum of activities it involves. Since the fundamental unit of interaction has been defined as **My**, all the derivations can be carried out in terms of its relative ratio to other interactive states, as dimensionless numbers, since only oscillatory states are compared with a similar unit as a standard. When radial ratio increases to two the volume becomes eight but the incremental difference equals 7. Since cyclic interactive count is C, the unit count value per cycle will be **My** times. Therefore the value of the minimum displacement per cyclic period is **tp**, for **My** defines the real 'point' in space.

$$tp = \frac{2^3-1}{CMy} = 5.69688633326322E-44$$

The minimum displacement distance or length per cycle is displacement **tp** times interactive count rate **C** as **Lp**:

$$Lp = Ctp = 1.68955957273183E-35.$$

The **Lp** parameter defines the minimum distance formed in the continuum of space. All the oscillatory displacements are in a continuous and contiguous state and this distance cannot be shortened within a cycle. It acts as a rigid rod and defines the minimum displacement distance and therefore the maximum density of interactions per cycle and is the equivalent of 'Planck length' in Physics. The relationship of **My**, **tp** and **Lp** can be rewritten in an invariant accelerative form **Ap** as follows:

$$Ap = \frac{7}{My} = \frac{C}{tp} = \frac{C^2}{Lp} = 5.20593091686353E+51$$

The foregoing relates to linear displacements ratios. When it changes its direction in sequential propagation, it forms curves, spirals etc. The circular path however reaches the ratio  $\pi$  when centre and boundary maintain a constant relationship from which behaviour the constant **Px** was derived. The ratios of parameter **Lp** as the limit of cyclic displacement and the limit of a cycle as  $2\pi$  provides the displacement rate per cycle at the boundary. The ratio of **Todc** value  $2\pi^3$  and the incremental expansion  $2^3 - 1 = 7$



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similarly provides the displacement rate at the centre. In the coherent state both these interactive ratios occur simultaneously and the numerical count relationship displays the state before coherence is broken. It is a resonant state before the Br displacement takes place and transmigration begins. It is given by the neutral state **Ne** as follows.

$$Ne = \left[ \frac{Lp}{2\pi} \right] \left[ \frac{2\pi^3}{2^3-1} \right] = 9.52873405E-35$$

The **Ne** state marks the point of transition from the continuum to the quantum state in space. Later, it will be shown that when 7 **Nes** act simultaneously within a critical cyclic interval a quanta is radiated and its numerical value equals the 'Planck's Constant' of energy radiated per cycle or frequency. Recalling that ratio **My**, is the fundamental unit of interaction, the resonant interactive state of the field in space can be derived as a neutral field in the simultaneous state in which the expansive potential **My C³** and compressive potential **Kx/C³** are identical and equal, as follows:

$$My = \frac{Kx}{C^3 \times C^3} \dots \text{therefore} \dots My \times C^3 = \frac{Kx}{C^3}$$

Recalling that the constant **Px** is a coherent value that cannot be detected because of its symmetry, modifying the coherent neutral potential **Kx/C³** by **Px**, will establish its relative interactive count rate per cycle as **PM**. It cannot be detected as it is in the coherent and perpetual oscillatory state:

$$PM = \frac{Kx}{Px C^3} = \frac{My C^3}{Px} = 1.67442317907687E-27$$

The compressive and expansive oscillations in a resonant state can change by 2 cycles, inward and outward respectively. As it is a simultaneous interaction (within one interactive cycle) the ratio of change in both phases will be **Vc** as volumetric compression and **Ve** as volumetric expansion:

$$Vc = \frac{1}{2^{1/3}-1} = 3.8473221019 \dots \dots Ve = 2^3-1=7$$

The total ratio of cyclic time involved in the simultaneous interactive exchange from compression to expansion and vice versa is the product of **Vc** and **Ve** as **Tce**.

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$$Tce=Vc \times Ve=26.931254713$$

The change in compressive volume ratio is 2, the expansive ratio is 7 and the perpetual resonance period is **RS**=1.0204081632. Therefore the ratio of cyclic period to change expansion to compression etc is **Gmr** and is the equivalent of the gyromagnetic ratio in Physics, where it is derived empirically through experimental methods. Recalling the archer's bow example the **Gmr** ratio displays the mechanics of cyclic conservation of two opposing modes of volumetric stress as a simultaneous activity proportionate to a single interactive period:

$$\text{Simultaneous cycle} = \text{SMC} = 10^2 = 100$$

$$\text{Sequential cycle} = \text{SQC} = [7 - (-7)] + [7 - (-7)] = 28$$

$$\frac{\text{SMC}}{\text{SQC}} = \text{PR} \quad \frac{10 \cdot 10}{[7 - (-7)] + [7 - (-7)]} = 3.5714285714 \text{ PR} = 3.571428571$$

$$Gmr = \frac{7RS}{2} = 3.5714285714$$

Defining the compressively changed state as **Pn** and the expansively altered state as **Pm**, then three sets of equations can be created to derive the relative values of **Pn** and **Pm** that would sustain the perpetual oscillatory state.

$$Gmr = \frac{PM - Pm}{Pn - PM} = \frac{7RS}{2}$$

Rewriting the equation in expanded form:

$$2PM - 2Pm = 7RSPn - 7RSPM$$

$$PM(2+7RS) = 7RSPn + 2Pm$$

Since the interaction is simultaneous and the cycle time is Tce the ratio of **Pn** / **Pm** cannot exceed **Tce**<sup>2</sup>. Hence rewriting **Pn** in terms of **Pm**:

$$Pn = Pm + \frac{Pm}{Tce^2} = Pm(1 + \frac{1}{Tce^2})$$

Inserting **Pn** into equation **Pm** :

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$$PM(2+7RS)=Pm\left[\left(7RS+\frac{7RS}{Tce^2}\right)+2\right]$$

$$Pm=Pm\left[\frac{2+7RS}{\left[\left(7RS+\frac{7RS}{Tce^2}\right)+2\right]}\right]=1.672621512E-27$$

Therefore the value of **Pn** is :

$$Pn = Pm + \frac{Pm}{Tce^2} = Pm\left(1 + \frac{1}{Tce^2}\right) = 1.6749276458E-27$$

The experimentally measured values of Proton as **Pm<sub>ex</sub>** and Neutron as **Pn<sub>ex</sub>** in Physics are given below :

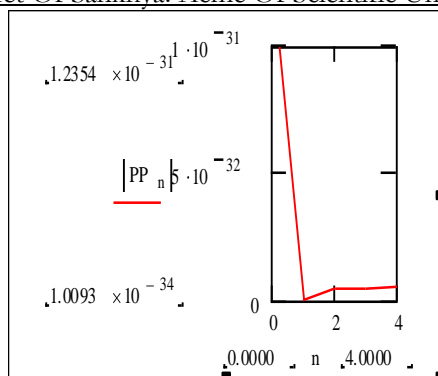
$$Pn_{ex} = 1.6749286-27.kgs$$

$$Pm_{ex} = 1.6726231E-27.kgs$$

The error between the derivation here and the experimental measurements are 1 in 10E+6. The perpetual oscillatory state is shown graphically as **PP<sub>n</sub>** by applying the three states as **PM**, **Pn** and **Pm**:

$$PP_n = \left[ \frac{PM-Pm}{7\left[1+\left[\frac{2}{100}\right]^n\right]} - \frac{Pn-PM}{2} \right]$$

The **RS** resonant decay ratio maintains balance but if the oscillations tend to stop, break in resonance causes the interactive state density to rise sharply, thereby providing the coherent potential to keep up the dynamic state perpetually as the Perpetual Harmonic Oscillator state or **Pho**.



$PP_n =$

1.235429 · 10 <sup>-31</sup>
1.009337 · 10 <sup>-34</sup>
5.044709 · 10 <sup>-33</sup>
5.145561 · 10 <sup>-33</sup>
5.147579 · 10 <sup>-33</sup>

Fig: Perpetual Harmonic Oscillatory Tunnel

First, the derivation here is based on a combinatorial method based on axiomatic values and as shown there is no latitude for any change. Second, it exposes the **PM** value to Physics for the first time and is accurate as it is axiomatically related to the accepted values of the Neutron and Proton. Third, equating the gyromagnetic ratio to both the Proton and Neutron states establishes the oscillatory characteristics and therefore the logic of a perpetual oscillatory state is conceptually verified. Fourth, the constant but enigmatic ratio of the masses of Neutron and Proton is derived from axioms here and it equals the measured values closely, thereby providing a logical reason for it. The Neutron mass increase is in the nature of a potential due to the compressive merging of interactive stress counts. The Proton mass decrease from **PM** is of a sequential or kinetic decrease of potential through expansion of interactive stress counts. There is always the cost of measuring any parameter in terms of loss in cycle time as the process of measurement is an interactive state, hence there would be a difference between the derived and measured values. Fifth, the

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concept of mass and energy have been shown to be a superfluous dimensional adjunct and only relative cyclic time is the correct parameter needed in analysing universal phenomena. Sixth, the concept of simultaneous and sequential interactions, operating in self similar modes, has been proved to be correct and accurate. Seventh, the accuracy of the derivation in the core stage confirms the concept of a substantial continuum in space and the subsequent derivations will give precise conceptual, logical and numerical confirmation. Eighth, the treatment of phenomena as a holographic ensemble has proven to be correct and confirms that only interactive stress vortices transmigrate as 'particle and/or wave' depending on the phase of interactions. When phase and oscillatory rate are identical along all three axes the holographic form is sustained repeatedly in the same place, displaying particulate properties. When phase breaks the magnetic properties are displayed. If oscillatory synchrony too breaks up the wavelike transmigration commences. Ninth, since the entire harmonic oscillation is within the coherent state, all the three states are not detectable until the symmetry is broken, through accelerative forces that upset the balance.

The **PM**, **Pn** and **Pm** ensembles, form the core of the perpetual oscillator **Pho**. The generic formula, derived in a later chapter on perpetual harmonic oscillator will show that every organised state from a galaxy to the atom follows the same algorithm in a scale invariant manner using relative cyclic time in which clock time is a unique parameter specified by the observer as a measurable unit.

As had been stated before, the concept of gravitation originates from simultaneous interactions that reduce interactive counts by merging into a dense state. Pursuing it further, the **PM** state enables the derivation of the maximum interactive mass increase possible during the interactive cycle. It can be viewed as the inward compressive excursion that meets at a point before reversing to expand. At the meeting point the density increase as mass rises to **Mps**. It can be derived through at least nine separate formulations that yield identical values as a fundamental unit cycle, object unit cycle, compression limit cycle, time sequence cycle, volumetric point cycle, acceleration cycle, flux cycle, volumetric

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field cycle and displacement field cycle thus confirming its accuracy.

The coherent **Pho** state can be rewritten in terms of the dynamic **Pn**, **Pm** ensemble as:

$$PM = \frac{2Pm+7RSPn}{7RS+2} = 1.67442317907687E-27$$

As the **PM** state's interactive density increases by the equalisation of phase and oscillatory rate along two axis, the reduction by merging of counts, increase the mass value of **PM** to Mps. Merging reduces the log value by 2 from  $C^{3-2}$  to C, over twice the Gmr cycle (forward and backward) as follows:

$$Mps = \left[ \frac{2Pm+7RSPn}{7RS+2} \right] \frac{C^3 P_x Gmr^2}{C} = 2.20369445381835E-8$$

Rewriting:

$$Mps = \left[ \frac{7KxRS}{C} \right] \dots \text{and} \dots PM = \frac{Kx}{P_x C^3}$$

The following derivation will show that the **Pho** state increases its stress mass from the **PM** state to the limiting **Mps** state only by reorganising the phase of the angular displacement to its maximum compressive limit of 18 orders:

$$\frac{Mps}{PMP_x} = 7RSC^2 = \frac{2\pi}{10} 10^{18} = 2^n A_n 10^{18} \rightarrow n = 4$$

The factors involved in the **Mps/PM** ratio are shown above to indicate the two modes of synchronisation that makes the counts vanish but displays it as the hidden density of the blackhole or quark region forming the nuclear core. It is pertinent to highlight the fact that the ratio of Planck mass to Nuclear mass is equal to cycles of ten raised to 18 orders at 4 oscillations per cycle, which proves that in the coherent domain phase and interactive rate merge to 18 orders thus forming the maximum potential to accelerate interactive stress towards the core at the phenomenal rate of **Ahs** (derived below). None of these factors have been exposed or predicted in Physics.

The limits of both the minimum and maximum of the intractive count rates have been derived through combinatorial mathematics using axioms and therefore there is no possibility of these values changing in natural phenomenon. It gives extraordinary precision in deriving every possible variant in terms

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of **My** within the **Mps / PM** boundary, though it would not be possible to experimentally investigate the hidden simultaneous state which contains the most massive or high density Sankhyan Andhatamishra (blackhole) region as  $Ahs = C^2(Gmr + Gmr)$  interactive counts per cycle. It has been stated that mass is the merging or superposing of many interactive count states within the period of a single interactive cycle in the simultaneous state with a centre of action and proof for it is in the Ahs value as:

$$Ahs = C^2 \text{ Gmr} + \text{Gmr} = 6.2826645825E+17$$

The ratio of the radial and linear displacement has been shown to equalise at  $1/2x = 0.809017$  with its vector value as  $2\pi/10$ . Further it has also been shown that  $2^n A_n = 2\pi/10$ . Therefore dividing Ahs by  $(2^n A_n)$  must yield the number of cycles as a logarithmic value to establish the criteria of simultaneity.

$$\frac{Ahs}{2\pi/10} = \frac{6.2826645E+17}{(2^n A_n)2} = 10^{18} = 10^{2 \ 3 \ 3}$$

The  $10^{18}$  gives a precise proof that the simultaneous state is established when the index  $n = 3$  or  $4$  and that 18 orders of cycles are merged within the same period as a single interactive cycle of  $2\pi/10$  or  $\cos 36^\circ$ . The merging of three axes in sets of two indicates the conversion of flux into mass density and the final merging of all three axial states into a coherent state at 18 orders. The coherent state is dynamically maintained by an interactive rate as low as 3 to 4 interactions per cycle. It signifies that it is equivalent to the concept of winding numbers in complex topology in Physics. The  $\cos(2\pi/10) = 1/2x$  indicates the angular momentum is quantised as a ratio between the linear and circular displacements within the same cyclic interval. It is pertinent to state that every interactive displacement moves only in straight lines but the 'curvature' arises only due to the compaction of stresses within a cycle due to accelerative compression surround the transmigration path.

The 18 orders of merged interactions are generally applied in Physics, to superconductive, ferromagnetic domains and the quark regions in asymptotic freedom that are hidden by symmetric interactive states but in the Sankhyan derivation every component of the continuum of space is defined by the coherent symmetry of the Ahs factor. It represents a potential state of 18 orders that

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would externalise as interactive stresses in an accelerative transmigratory mode only when the coherence is broken at a rate below 3 interactions per cycle. It is pertinent to recall that the Tk state is maintained at 2 interactions per cycle and any reduction in rate raises the density of interactive stresses in space to bring it back into a balanced control. Another important fact exists in Sankhyan logic that the stability of states are proved if the ratio  $(1/2)^n$  forms a factor in its derivation. The number of interactive counts in the sequential state remain the same when merged in the simultaneous state but the observer would be able to count only the reduced value, which surfaces as a mass etc in the equations of balance.

The published values of **Mps** as the Planck Mass is 2.177E-8, due to the hidden simultaneous state constant Px as:

$$\text{Planckmass} = \text{Mps} / \left[ 1 + \frac{k-1}{Px} \right] = 2.17721E-8$$

The interactive stress variations that occur beyond the Px boundary is at a radial distance  $k=2^{1/3}$ . Recalling the Tk expansion (absolute temperature) rate at  $(k-1 = .255921)$  ratio, the coherent stress density changes to flux density in the lepton or electron state. The electron as Mee can be derived by the same algorithm used to obtain the **PM**, Pn and **Pm** nuclear states. The equivalent lepton states are Me, Mep and Mee respectively. The value of Mee is known in Physics but the Me and Mep are transitory states and cannot be measured experimentally. Me is related to the **PM** state and is derived as follows:

$$\text{Me} = \text{PM} \left[ \frac{2^{1/3}-1}{(2^3-1)} \right]^2 \left[ \frac{2\pi}{10} \right]^2 = 9.110233722E-31$$

The Mep value is derived from the boundary of the Mps and **PM** interaction. The rise in interactive density is calculated through simultaneous activity while the compensatory exchange is derived from the expanding state. When a radius doubles the volumetric ratio rises by 8 but the difference causing the increment is 7. The rate of compression in the simultaneous state is  $C^{1+x}$  and the rate of expansion within the same cycle is  $C^{1-x}$ . Since the incremental volume change is 7 both simultaneous compression and expansion



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rates will be  $(C^{1+x})^7$  and  $(C^{1-x})^7$  respectively. In the case of the compressive mode the ratio of displacement during the interaction will be  $1/2^{1/3}$ . But the corresponding expansive ratio will form a vector ratio with 7 expanding states, as the coherent state will be broken, which is  $(1 - (2/\sqrt{5}))/7$ . The unit of interaction being **My**, the Mep state can be derived as:

$$Mep = \left[ C^{1-x} \right]^7 \left[ \frac{1 - \frac{2}{\sqrt{5}}}{7} \right] My = 9.110233722E-31$$

The gyromagnetic ratio Gmr is modified by the displacement ratio as  $(7 RS / 2)(2^{1/3} - 1)$  and therefore the perpetual oscillatory interaction comprising Me, Mep and Mee states follow:

$$Gmr = \left[ \frac{Mep - Me}{Me - Mee} \right] \left[ \frac{1}{2^{1/3}} \right]$$

Since Mep and Me have been derived, the value of Mee by rewriting with  $k = 2^{1/3}$  is:

$$\left[ \frac{Mep - Me}{7RSk} \right] \left[ \frac{2}{Me - Mee} \right] = 1$$

$$Mee = \frac{[2 + 7kRS] Me - 2Mep}{7kRS} = 9.1093897E-31$$

The measured value of Mee, the electron state, is 9.1093897E-31 kgs and is close to the derived value. The Sankhya derivation shows that the lepton group of Mep, Me and Mee are the synchronous ratio of compressive and expansive interactive stresses that have merged along two axes, to form the flux density states at the boundary of **PM** with a displacement ratio  $(k-1) = 0.259921$ . The nuclear coherent state of **PM** forms a stable core but at a distance ratio of  $1/(k-1)$  the boundary expands and contracts in resonant harmony with the nuclear core. When **PM** rises compressively to the Mps value, it also falls expansively within the same time cycle to the Mep value at the boundary, in synchronous resonance to the core changes in stress values. Hence whenever the coherence of the nuclear core is broken the Mee state is exchanged as an accelerative reaction in a transmigratory mode. The comparison of

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the nuclear core with its harmonic oscillatory boundary gives the ratio of displacement as **KI**:

$$KI = \left[ \frac{Mep-Me \ 2}{Me-Mee \ 7RS} - \frac{PM-Pm \ 2}{Pn-PM \ 7RS} \right] = 0.259921$$

While **KI** equals k-1, it is a dynamic differential that is dependent on a complex set of interactive changes where all the states have the indicated values. The interactive exchanges are the result of **Pho** interactions and therefore perpetual and stable. The oscillatory state across the KI gap gives the Compton wavelength in Physics and is at the outer lepton boundary where the coherent electron state Mep forms into an undetectable envelope.

$$Mm_n = \left[ \frac{Mep-Me}{7 \left[ 1 + \left[ \frac{2}{100} \right]^2 \right]} \right] \left[ \frac{Me-Mee}{k^2} \right]$$

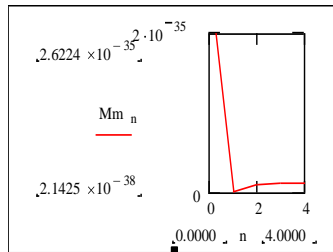


Fig: Electron Formation Boundary.

Therefore the electron Mee attains the particulate state at the instant of collision and transfers the stress across the  $k = 2^{1/3}$  displacement gap to the next nuclear core, moderated by its electron. Seven oscillatory volumes are transferred across the k-1 gap and forms a ratio of  $7/k-1 = 26.93$  at resonance. As it is a dynamic oscillatory ratio it gives a detectable potential that registers about 13.45 times the standard oscillatory cycle. Since the coherent potential of the **Mps/PMPx** exchange has  $2\pi 10^{17}$  cycles merged within the nuclear core (at an accelerative cycle of 10 counts) breaks its symmetry and releases the entire set of counts across the k-1 gap. The interactive stresses released in one cycle amounts to, as Amp:

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$$Amp = \left[ \frac{Mps}{PMPx} \right] 10 = 6.282665E+18$$

Since the potential change as a ratio is about 13.45 the **Amp** released contains that number as a simultaneous interactive stress ready to transmigrate to a lower potential/count value as an electromagnetic current. The value of the potential and current is derived below.

Hence every nuclear state must have a boundary in the three interactive modes. When the boundaries collide at different rates and phase, the electron states transmigrate to balance the stresses. The graph above shows the resonant point at index level one where the interactive stress density rises sharply to reverse the oscillatory rate to higher levels to keep the dynamic state functioning. However when the nuclear boundaries have the same oscillatory rates and phase the electrons merge but as the count value decreases as a result, bonding takes place as a synchronous resonant link. The Tk state's negative potential well characteristics control the rate, phase and displacement ratios thus keeping the nucleus, its boundary and the adjacent nuclear states in harmonic, oscillatory and interactively balanced state perpetually.

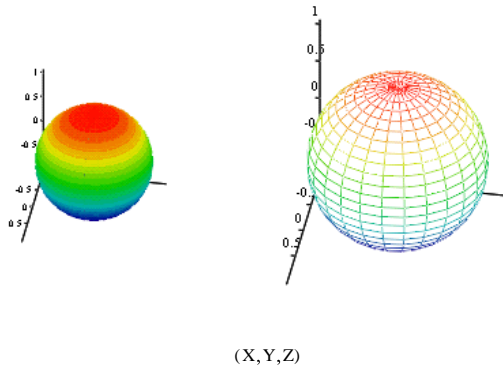


Fig: The nuclear core and its surface in oscillation.

The smaller coloured spherical nucleus as a hadron is inside the larger spherical surface of the electron or lepton state. Both are in harmonic oscillation and maintain the balanced state till it is interacted with by adjacent states. The diagrams represent the stress vortices in the stable and harmonic oscillatory state. Since the stress

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vortices do not emit any radiative stresses unless impacted, there is no means of capturing this form without first destroying it. The picture of the holographic state is complete as an interactive ensemble in the continuum of space.

In terms of Physic's empirical derivations the nuclear state is moderated by the strong or time cubed density parameter and the boundary where the weak force or the time squared flux density parameter operates, is the lepton level. The flux density is distant-dependant to the core density as mass, for only the equality of both values, maintain balance or else a transmigratory accelerative force is created. The cyclic  $t^3$  factor, as core density or mass, is always equal to cyclic  $t^2$  value as flux density into linear time  $t$  as distance / displacement rate.

$$T^3 = \frac{Length^3}{displacementrate^3} = \left[ \frac{L^2}{disp^2} \right] \left[ \frac{L}{disp} \right]$$

Hence the  $T^3$  state can be used to check the balance in any complex equation involving area and linear parameters, for it must always balance with the volumetric parameter at every instant as it forms the limit constraint as *Todc*. It is logically wrong to deal with linear parameters in isolation.

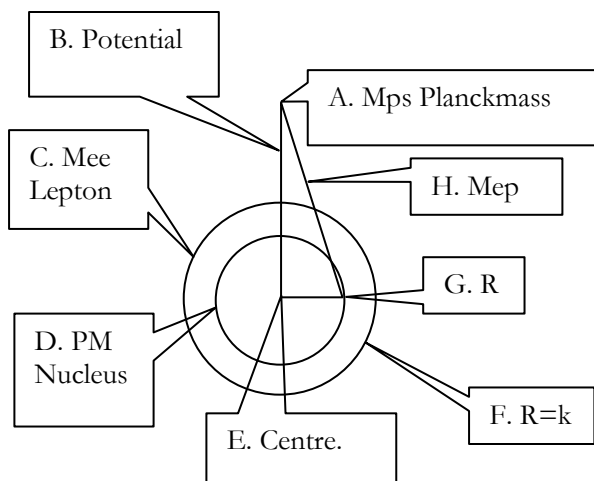


Fig: The Triad.

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A = Maximum density. B = Potential rise due to compression. C = **PM** boundary as lepton.  
D = **PM** core boundary. E = Kx forming dynamic centre. G = core radius  $1/k-1$ .  
F = expanded boundary radius k. H = Potential drop due to expansion forming Mep.

The figure Triad shows the three way interaction, with **Mps** at the high density apex, which has a simultaneous and coherent connection with the **PM** state. At the same time the **Mps** apex connects with the **PM** boundary in sequential displacement as a lepton **Mep** in a flux density state. The connection to and from the **PM** core to its boundary in the lepton state has the same oscillatory time period as the Mps connection.

The coherent state **PM** forming the **Pn** and **Pm** oscillatory ensemble expands to twice its volumetric state by an incremental radial expansion of **k-1** value, to form the lepton boundary containing the **Mep, Me and Mee** electron state ensemble.

The entire group is in a coherent and synchronous state of harmonic oscillation in the simultaneous mode where the counts merge and presents the lowest rate towards which higher counts gravitate and get absorbed by merging. The foregoing is a descriptive definition of the continuum of space in an un-manifest and therefore undetectable state but nevertheless in a perpetually dynamic state. The particles detected as Proton, Neutron and Electron etc, already exist passively as coherent stress forms in the perpetually dynamic space field but attain the observable or manifest state only when the break in coherence takes place by colliding interactions. These holographic states are the result of **Pho** interactions that neither stop nor can it be stopped, in the real and substantial continuum of space. The axiomatic reasons are given in the next chapter.

Conservation of activity or work as interactive counts is a fundamental property of a real field of matter regardless of whether time as an interval of displacement is displayed as an observable or not. The derivation of the theoretical process is easy because the components of the space field are real objects and only the changes in its state as vibrations are detectable and accountable. The entire theoretical base is a relational one and eliminates the need for a special relativistic approach for in a real field of matter nothing can move relative each other except its dynamic state of stress. While Special Relativity (**SR**) emphasises the constancy of the velocity of light, in General Relativity (**GR**) the need for a relative velocity concept is eliminated by postulating the Equivalence Principle

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which confirms that two neighbouring points in a gravitational field must not have any relative velocity between them if both gravitational and inertial masses are to be identical. But zero relative velocity between components in the continuum is the natural property of a substantial field of matter and the need for the equivalence principle is eliminated in a substantial space continuum. For the 'particle' is only a holographic stress vortex on the components forming the continuum in space. As mentioned elsewhere, the concept in SR of photons travelling as independent ensembles is impossible in a substantial field, which aspect was well established by the 'failure' of Michelson Morley experiment. The Lorentz transform artefact bailed out SR and fortunately the merging of interactions was interpreted as a rise in frequency and decrease in wavelength that matched the shrinking rod and slowing clock concept. The fact is the oscillatory count rate of C can never change in the axiomatic interaction between two neighbouring components in the continuum of space, hence when the standard displacements merged, the total transmigration distance reduced but so did the actual transmigration time, for ratio C:

$$C = \text{Length} / \text{displacement per cycle}.$$

But frequency being the reciprocal of time, it carried forward the ratio of merging displacement as an increase in frequency. Physics, bent on keeping the holy second intact, took the lead to adopt an act of legerdemain in SR. Time is the most difficult parameter to understand and handle in Physics and in the following chapter the interval that separates the simultaneous from the sequential or divides one object into two or when charge becomes mass, is derived with proof.

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### Axiomatic Basis for Physics: Pho State.

The perpetual harmonic oscillatory state (**Pho**) algorithm was used to derive the nuclear (hadron) and boundary (lepton) states in the previous chapter to demonstrate its validity in space. However, the generic principle is applicable to any coherent or simultaneously interacting state in a space with substantial qualities, wherein interactive stresses transmigrate in various forms. Since only interactions are counted, as a ratio to a standard cycle of ten cyclic counts, it is the only parameter needed to define and derive the algorithm. An extremely simple derivation is presented below to make this extraordinary state perfectly understandable, for it has not been derived in present day Physics.

Any coherent volumetric oscillation can attain a resonant state if equal compressive and expansive interactive exchanges take place simultaneously within a cycle, which forms a rate of two interactions. Within the same cyclic period, the radial expansion too can harmoniously attain a rate of two but the incremental volumetric ratio becomes seven as ( $2^3 - 1 = 7$ ). Hence the ratio of the two rates of harmonic exchanges carried out simultaneously within the single centred cyclic period would be  $7/2 = 3.5$ . While the simultaneous exchange at the rate of 2 would be within the coherent boundary the seven exchanges would occur outside and would take a minimum interactive count of  $2 = [1 - (-1)]$  as a forward and backward displacement within the cycle. In a volumetric oscillatory process, the interactive count within the cycle being ten, the total count along all three axial directions would be  $10^3$  as the *Tode* factor. However in the coherent cycle, all the interactions must have the same phase and oscillatory rate to attain a simultaneous oscillatory rate and therefore the counts along two axes would merge and vanish, leaving 10 as the detectable count. Therefore, since the cycle becomes complete only after ten counts the delay of 2 interactions reduces the hidden count of  $10^2$  to 98, whereas the coherent hidden rate remains at  $10^2$  and this ratio **RS** =  $100/98 = 1.020408163265$  etc, and forms a transcendental series extending the cyclic delay ratio to infinite hidden cycles. Since the delay is in the 7 incremental states, it increases by  $100/98$ , while the coherent rate remains at two.

The core algorithm is:

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$$\frac{\text{Expansiveincrease}}{\text{volumeincrease}} \times \frac{\text{densityincrease}}{\text{Compressiveincrease}} = \frac{\text{cycle}^2}{\text{cycle}^2 - 2(\text{displacements})}$$

The increase in both cases must refer to a standard, stable and numerically identifiable state. In three dimensional space a resonant half cyclic period covers volumetric, surface and linear oscillatory periods by the following ratios  $2^{1/3}$ ,  $2^2$  and  $2^3$  respectively. At the stated ratios, the time periods are the same for all the three modes of oscillatory interaction. Expansive ratio is E and compressive ratio is P within the period of a single interaction.

$$RS = \frac{1-E}{2^3-1} \times \frac{2}{P-1} = \frac{10^2}{10^2-2} = 1.020408163265$$

The coherent state constant Px and the harmonic state constant Kx have been derived earlier. The ratio of both as the universal constant Px/Kx provides a stable base for comparison of coherent states. The volumetric expansion constant KV, provides a stable base for comparison with Px in sequential expansive states. The ratio of the increase due to expansion and compression across the coherent boundary as Tce has also been derived earlier. Setting all of the ratio constants to one, so that a generic formula could be derived, the expansive increase as 1-E, the compressive increase as P-1 and RS=100/98, will enable equating the above numerically as:

$$\left[ \frac{1-E}{7RS} \right] \left[ \frac{2}{P-1} \right] = 1 \dots \dots \left[ \frac{1-E}{7RS} \right] = \left[ \frac{P-1}{2} \right] \dots \dots 2-2E = P7RS-7RS$$

The relation between E and P cannot exceed Tce and being simultaneous it increases as Tce<sup>2</sup>. Hence the ratio is:

$$P = E \left[ 1 + \frac{1}{Tce^2} \right]$$

Substituting P in equation:

$$2-2E = 7RSE \left[ 1 + \frac{1}{Tce^2} \right] - 7RS$$



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$$2+7RS=7RSE\left[1+\frac{1}{Tce^2}\right]+2E$$

$$E=\frac{2+7RS}{7RS\left[1+\frac{1}{Tce^2}\right]+2}=0.9989240073$$

$$P=E\left[1+\frac{1}{Tce^2}\right]=1.00030128$$

$$\frac{P}{E}=\left[1+\left(\frac{k-1}{7}\right)^2\right]=1.00137875$$

$$\frac{1-E}{P-1}=\frac{1-0.998924}{1.00030128-1}=3.5714292353=\frac{7RS}{2}$$

The **Gmr** ratio is a standard and constant ratio of expansive and compressive states at the unit radial boundary where the balance is established as a dynamic and perpetually interactive state, which never attains a static equivalence but remains in a state of perpetually exchanging unbalanced stresses within the same cycle. It applies to every oscillatory state, from a galaxy to a photon, in form, all of which can be defined as a hologram. It replaces the solution, called the Hamiltonian, to the well know problem of the classical harmonic oscillator where the fields have not yet appeared but yet is assumed to be in a quantised state. The derivation above shows that it is a quantised state before and after the field appears in Physics. In Physics, the commencement of the transmigration of stress from the perpetual oscillatory state is defined and measured as the field state, whereas in reality the prior field is also in a coherent state but cannot be detected because there are no observable changes. A perfect sphere will seem to be in a stationery state, whether spinning or not and that represents the state of coherence. All experimental techniques in Physics involve the use of an accelerative force to detect and analyse phenomena and that process destroys the coherent state to create a state of resonant decay. Hence at present there is no method to detect and analyse

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coherent state activity. In a later chapter, a process of detecting changes in phase by synchronising organic molecular states, is given.

Summarising, the state of oscillatory balance in a three dimensional volumetric stress form, is achieved by equating the outward sequential expansion ratio of seven with the inward simultaneous compressive ratio of two, with the forward and backward displacement rate, within a single cycle time. Because the interactive count rate and phase are kept identical and equal there is neither radiation nor absorption of stress counts in both directions, the resonant standing wave state of 2 or half wavelength cyclic state is conserved. The compressive stress rise is conserved as the magnetic state and expansive charge state balances out the energy or work equation every instant in the cycle. The axiomatic proof:

$$\left[ \frac{1-E}{P-1} \right] \left[ \frac{2}{7RS} \right] = 1$$

Rewriting this as an equation to display the progressive difference :

$$D_n = \left[ \frac{1-E}{7 \left[ 1 + \left[ \frac{2}{100} \right]^n \right]} \right] \left[ \frac{P-1}{2} \right]$$

The graph below shows the potential well, with characteristics similar to the Tk potential.

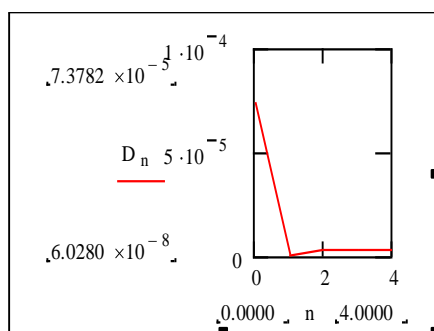


Fig: Density Change from Compressive to Expansive

The negative characteristics is established between index zero and one, indicating that when the oscillatory rate tends to stop the steep increase in stress density reverses it to keep it in perpetual

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oscillation. The table below shows the steep reversal between index zero and one, where the value is lowest thus forming the negative potential well.

$$\left[ \frac{1 - E}{7 \cdot \left[ 1 + \left( \frac{2}{100} \right)^n \right]} - \frac{P - 1}{2} \right] =$$

$-7.3782 \cdot 10^{-5}$	I
$6.0280 \cdot 10^{-8}$	
$3.0128 \cdot 10^{-6}$	
$3.0730 \cdot 10^{-6}$	
$3.0742 \cdot 10^{-6}$	

The second proof of the correctness of the above derivation lies in Planck's findings, where the wavelength of radiation in a blackbody radiation spectrum (the blackbody is the equivalent of the balanced but perpetual harmonic oscillatory state) maximises at .0029 m/Kelvin which forms ratio at an acceleration of one metre per second as shown below.

$$wavelength_{\max} = \frac{KV}{Px} \cdot 1 - E = 2.9251131584E-3$$

The KV/Px ratio equals Tk, the perpetual thermal potential in space that keeps the dynamic state in balance. It gives the ratio of displacement during the expansion cycle initiating the change and is equivalent to the maximum change in wavelength for the smallest change in flux density or thermal temperature change that forms the unit.

$$Potential_{\min} = \frac{KV}{Px} \cdot P - 1 = 8.1903168E-4$$

It is evident that the minimum potential needed to obtain the maximum displacement is controlled by the Gmr ratio, which must be seen as the resonant conservation mechanism that transfers interactive stresses between the simultaneous and sequential displacements, within the same cyclic period. Within the Gmr boundary, the magnetic field is created when the 7 expansive states accelerate towards the resonant boundary at twice the core radius (8 volumes) but the potential being below the radiant level, the

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spectrum of 7 rebounds back through 7 sequential levels involving cyclic time that is displayed as a resonant set of seven nodal frequencies in the basic or hydrogen orbital states. Because time is involved in decaying, it does work in restarting the harmonic oscillatory process, which ensures that the dynamic state continues perpetually or at the rate of RS. The magnetic state is a simultaneous interactive phase where a cycle of 10 interactions are compressed to 7 levels instantly as  $10^7$  per cycle.

The important principle exposed by the derivation above is that, transmigration of stresses take place when ever opposing interactive counts are not equal. Since differences in interactive counts arise in both the simultaneous and sequential modes it can be stated positively that stress transmigration movement is initiated only when interactions do not synchronise instantly to reverse the action reaction cycle. In the contained coherent state, the one to one interactive reaction is ensured by a higher volumetric or mass density of interactive counts which vanish within its boundary. When coherent symmetry is broken, it polarises into area dependant flux density and sequential interactive count dependant linear displacement. The flux density arises from interactions along two axis acting simultaneously and hence the counts decrease by merging which 'attracts' linear displacements. The coherent counts being merged by the third order constraint, it in its turn 'attracts' the flux response. Hence there is no logical basis to consider the existence of types of forces as an independent principle. The strong, weak and electromagnetic forces are differentiated only by the degree of super-positioning or merging of interactive counts.

$$Sp_n = \frac{KV}{Px} \left[ \left[ \frac{2^3}{10^{1+x}} \right]_k \left[ \frac{7}{\left( 2 \left[ 2^n A_n \right] \right)^2} \right] \right]$$

The derivations with graphical explanations below will establish the mechanism of transmigration of interactive stresses towards the lowered count state forming into a potential well by merging counts in resonant states.

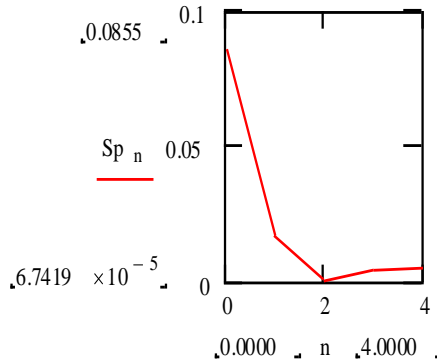


Fig: Transmigration

Analysing the fundamental state of the field in space at the moment of breaking up its coherent state, the comparison shows the creation of the potential sink at rate 2 is ***Sp<sub>n</sub>***. shown above. The density in the coherent state rises to the maximum level when the ***Mps*** mass state is formed. Despite the maximum rise in density the balancing point in the perpetual oscillatory state equals the state of the fundamental field at density two, which is the ideal resonant rate.

$$Mp_n = \left[ \left[ \frac{KV}{Px} \right] - \left[ \frac{7}{MpsC} - \frac{1}{(2^n A_n 2)^2} \right] \right]$$

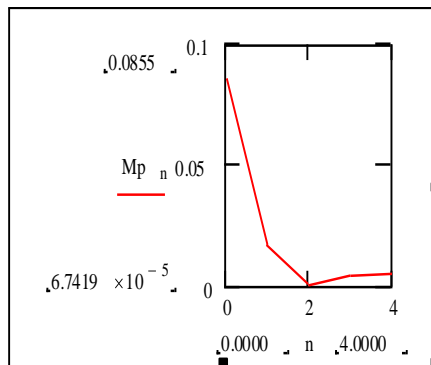


Fig: The Pho balancing point

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The highest density coherent state has been shown to have the same characteristics as the fundamental space in which the field state begins to emerge from the continuum of space. It highlights an important point that the rate of interactive activity is under the control of variations in density due to changes in the boundary condition. The cross-over point where the compressive rise in density equals the expansive fall in density is at a balance where the **Todc** aspect establishes the limiting constraint as **(C<sup>x</sup>)<sup>3</sup>**.

$$\frac{Kx}{Px} - \frac{PM}{Rp^3 \cdot |C^x|^3 \cdot (k-1)^3} = 0$$

The sequence of balanced states derived above confirms the connectivity of all interactive parameters in space without any uncertainty and leads to the positive conclusion that the continuum of space displays the same characteristics of any substantial field. The observer, whose existence too is controlled by the dynamic parameters of the field, cannot detect the un-manifest but dynamically coherent state of the field, for any attempt to measure it, breaks the coherent state instantly. As shown above any disturbance that tends to obstruct the perpetually dynamic state of the field rapidly raises the reactive mechanism to keep the field in its oscillatory state. As a result no observer can detect or measure any parameter in fundamental space directly.

The foregoing demonstrates that simultaneous interactions in the coherent state maintain a perpetual oscillatory state where the compressive and expansive states exchange stresses without breaking the resonant state. Resonance is broken when either timing or displacement exceed a precise limit that breaks the synchronised phase relationship of the two opposing stressed states. The expansion of the **PM** boundary creates the **Pm** state but it is still kept in resonance by the lepton state oscillations with an extended range of interaction that is just about ready to break the Gmr cycle symmetry as displayed by the Mm<sub>n</sub> graph. The formulation that breaks the symmetry is as follows:

$$\frac{t^3}{v_{\max}^3} = t_{\min}^3 = TODC = \left[ \frac{2\pi R}{v} \right]^3 = 2\pi^3$$

When **R** equals **v** the constant **(2π)<sup>3</sup>** becomes a limiting ratio.

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Recalling that  $G_s = \text{density} \times \text{time}^2$ , the minimum displacement cycle time  $tp$  must occur at the maximum interactive density  $Dp$ , values of both are derived from axiomatic principles later on.

At and less than  $tp$  the field behaves as a continuum displaying the properties of coherence where interactions are simultaneous and dense. The sequential interactive state can commence only when  $tp$  is exceeded by an axiomatic ratio, after which the transmigratory state is initiated.

The symmetry of the simultaneous **Todc** state must be broken, in order to derive the ratio **Bl**, when expansion coupled with transmigration of stresses, begins and it is:

$$\frac{2\pi^3}{2\pi} \left[ \frac{Mep-Me^2}{Me-Mee^2 RS} - \frac{PM-Pm^2}{Pn-PM^2 RS} \right] = 39.218497$$

The symmetry breaking interval **Bl**=39.2185 can also be derived logically by using the fact that in the simultaneous state the time<sup>2</sup> parameter vanishes by merging and consequently in Bl the  $(2\pi)^2$  value remains merged and hidden. It would be exposed when the simultaneous state symmetry is broken but that can happen only when the expansion ratio exceeds two or by its radial incremental value **k-1**. The ratio is axiomatically constrained. There are three ratios, volumetric, radial and cyclic. The **7/k-1** is the volumetric change ratio. Ratio **7/2 $\pi$**  is the linear radius change to cyclic circumferential change. The **7/10** is the number of radius to interaction per cycle change ratio. If **7/k-1** is compared with **7/2 $\pi$**  then the revised ratio is **2 $\pi$ /(k-1)**, which is a simultaneous state ratio and on correcting for cyclic time of **2 $\pi$** , it changes to **(2 $\pi$ )<sup>2</sup>/(k-1)**. The **Bl / (k-1)** ratio as **Br** is equal to **((2 $\pi$ )<sup>2</sup> / (k-1))**.

$$Br = \frac{(2\pi)^2}{k-1} = 151.886188595$$

$$Brf = 1 + \frac{1}{Br} = 1.006583877$$

Hence these ratios form a loop but on symmetry-breaking, the displacement cycle or interval forms a differential leading to

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sequential interactive states. Therefore, unless the ratio of the minimum cyclic interval  $\mathbf{tp}$  is increased by the difference  $\mathbf{Brd} = (2\pi)^2 - (k-1) = 39.218497$ , the symmetry cannot be broken for it acts as an inertial or mass potential that has vanished when coherence was achieved and must be reversed. Recalling that simultaneous interactions merge and vanish, sequential interactive states transmigrate as acceleration towards it and hence the act of reversal needs a steep rise in the reactive rate.

$$\left[ \mathbf{Btp} = \mathbf{tp} \left[ \frac{2\pi^3}{2\pi} \left[ \frac{\mathbf{Mep-Me\ 2}}{\mathbf{Me-Mee\ 7RS}} - \frac{\mathbf{PM-Pm\ 2}}{\mathbf{Pn-PM\ 7RS}} \right] \right] \right] = 2.234233\text{E-}42$$

The minimum cyclic time  $\mathbf{tp}$  increases to  $\mathbf{Btp}$  when coherent symmetry is broken. It denotes that the increase is a sequential interaction that does work or uses energy. Unless the  $\mathbf{Btp}$  value is exceeded the coherence state cannot be broken. It is to be specially noted that the coherent state was attained by the creation of the  $\mathbf{Mps}$  state due to the intense gravitational acceleration  $\mathbf{7/My}$  caused by the  $\mathbf{Ahs}$  spin / angular momentum becoming simultaneous. The instantaneous  $\mathbf{Btp}$  value applies to a single interactive state but cyclically it increases by rate  $\mathbf{C}$  to reach the value of  $\mathbf{h}$ , equal to the Planck's energy constant.

$$\mathbf{h} = \mathbf{BtpC} = (2.234233\text{E} - 42)(2.965760\text{E} + 8) = 6.626199\text{E} - 34$$

Or

$$\left[ \mathbf{h} = \frac{2\pi^3}{2\pi} \left[ \frac{\mathbf{Mep-Me\ 2}}{\mathbf{Me-Mee\ 7RS}} - \frac{\mathbf{PM-Pm\ 2}}{\mathbf{Pn-PM\ 7RS}} \right] \right] \left[ \frac{\mathbf{Mps}}{\mathbf{C^2Gs}} \right] = 6.626199\text{E} - 34$$

*The experimental observation of quantised action is only due to the time taken to break the coherent symmetry of the Pho state in the continuum of space. The instantaneous expansion creates an interactive stress vortex or holographic photon state that carries the spin angular momentum equal to the  $\mathbf{Ahs}$  value, all of which is released as a torroid. The stress vortex transmigrates from node to node at an oscillatory rate  $\mathbf{C}$ . The time needed to cross the  $\mathbf{k-1}$  gap at every node in the  $\mathbf{Pho}$  state results in the reduction of the  $\mathbf{Ahs}$  value by a factor proportionate to  $(\mathbf{x+x})=(1/\cos(2\pi/10))$  as conversion of spin to linear displacement and  $(1+(2/\mathbf{C^{1-x}}))$  as the resonant expansive interactive delay . The stress vortex (photon) transmigrates over a period of cyclic time  $\mathbf{TT}$  or the distance  $\mathbf{RU= TTxC}$ . It is proved mathematically as follows:*



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$$Ahs \quad k-1 \quad x+x \quad \left[ 1 + \frac{2}{C^{1-x}} \right] = TT = 2.02083919345873E+17$$

The equivalent of the **TT** ratio was discovered by Hubble and a complete derivation with proof is given later. The value of **h**, which forms the foundation of quantum mechanics, has been derived precisely by applying Sankhyian principles of simultaneity wherein the rules of self similarity and scale invariance prevail unfailingly. While **Btp** is the cyclic time interval below which two interactive counts become one and act simultaneously, **h = BtpC** is the differential cyclic time interval, less than which two charges become one and increase its density. It is extremely important to understand that the Planck's constant value is dependent on **C** interactions in a 'one second' cycle, whereas the **Btp** interval defines the very first interactive state after coherence is broken. Therefore it can be concluded positively and with certainty that the **Btp** interval, which is **C** times smaller than **h**, deals with the instant when density as mass changes to density as flux across the Mps boundary that forms the source of radiative phenomena. *The tp or the Btp interval can never be detected, measured and defined in the experimental laboratory. Therefore Physicists have been forced to interpret the symmetry breaking event that initiates radiation, to a period where the interactive count has risen from 10 to C and the cyclic interval from 1 nanosecond to one second. Even the singularly important rest-mass determining Compton wavelength, provides the oscillatory rate only at a radial distance 2<sup>1/3</sup> times the radius where a resonant state can be sustained. There is no known experimental procedure to detect or measure the coherent boundary of particulate states. The proof exists as shown diagrammatically:*

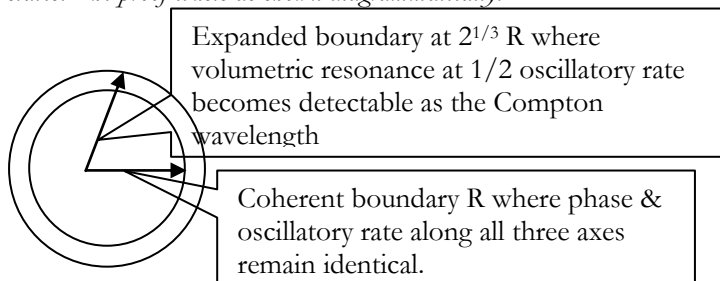


Fig: Compton wavelength marks coherent boundary.

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Stating it another way, the work done or energy expended as interactive stress of a single interaction can only be measured after  $C$  cycles in one second, which then becomes a quantum. But phenomenon in reality is not quantised at the discrete level. The observer's ability to directly detect interactive activity is not sensitive enough and he has to wait for his measuring cup to fill  $C$  counts in  $C$  nanoseconds before obtaining a value. Because of the foregoing lacuna, there arose the need to postulate the principle of uncertainty, which brought in the dependence on statistical evaluation to identify the interactive state of this hidden regime. The measurable interval  $h$  is  $BtpC$  but  $Lp = tpC$  is the limiting displacement per cycle. Therefore  $h/Lp = Btp/tp = BI$ . The symmetry breaking  $BI$  occurs much earlier at  $Btp/tp$ , but the quantum becomes detectable only at  $h/Lp$ . In Physics  $h$  indicates the value of the energy quantum proportionate to frequency, whereas in Sankhya  $tp$  is the limiting interval below which the coherent state is formed. Hence there is an interactive count lag proportionate to,

$$Lag = h/tp = BIC = 1.16310474044592E+10.$$

The **Lag** period hides important simultaneous transitions that cannot be detected or quantified in a system which uses work, energy or power to balance equations, for these are second order or reactionary derivations.

The value of the charge (or the flux density) in Sankhya is built of  $C$  simultaneous counts interacting at  $C$  counts per cyclic time period and its value is derived with proof below. As described in the earlier chapter, the mass, charge and quanta concepts are the result of experimental observations, which are the simultaneous and sequential interactive states in the continuum of space. Coherent volumetric states in the simultaneous interactive mode display density as mass. The break in coherence splits the phase symmetry and separates the volume into area and length. Changes in area result in flux density variation, simultaneously leading to proportionate changes in the linear displacement density as frequency in Physics. Axiomatically there can be only one interactive rate of exchange of compressive/expansive stresses between two adjacent oscillatory states and that is  $C$  interactions per unit cyclic period of 10 interactive states with  $1/(2 \pi) = \cos(2\pi/10)$  displacement ratio. The foregoing is an axiomatic state

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and cannot be changed in a space continuum comprising substantial components. Hence any oscillatory rate higher than **C** as frequency can be only due to superposition or merging, thereby decreasing the expansive interval  $C/C^x = C^{1-x}$ . In a substantial space continuum the constant axiomatic rate of **C** must equal the ratio of length / cyclic time or (**L/T**). The concept of frequency then becomes the reciprocal of cyclic time in which any frequency increase implies that more than **C** interactions are taking place within the same cyclic period that signifies the density of interactive counts have increased with the consequent decrease in the displacement parameters. When the **Brd** differential is exceeded transmigration as radiation commences from this point as a quantum or photon. The Sankhyan concept is that the perpetually interacting oscillatory stresses are externalised when the **h** displacement value is exceeded, thereby causing the breakup of phase symmetry which destroys the coherent state. Alternately, the oscillatory rate **C** had both the compressive and expansive ratios equal in terms of displacement & cyclic time or the net differential was zero, before radiation. But when **h** was exceeded, the net differential displayed an accelerative value in the direction of the symmetry breaking stress that caused it. *It is important to recognise that the quanta existed even before the radiation triggering event, as a perpetually oscillating volumetric quantum in a coherent Pho state that did not display a detectable displacement wave but after the event the transmigrating stress displayed particulate qualities with wavelike movement.* On expansion, the stress transmigration force became detectable but on compression the force reversed and became undetectable, thus introducing a number of observational anomalies which spawned an equal number of hypothetical principles to justify them. For instance, there is no uncertainty in calculating the stress excursions in any direction, before the application of **h**, as has been shown in the nuclear **PM** and its boundary state. The problem has arisen because of the unawareness of the **Pho** state and as a result the outer boundary states were labelled as leptons like electrons and neutrinos etc. Similarly the Neutron and Proton states are the stationary nodes of the oscillatory reversals at the nuclear core boundary.

The **Pho** state releases a stress vortex only when the constant **h** is exceeded which indicates that stresses do not

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transmigrate as a continuous flow but is periodic and displays wave characteristics. Hence the total distance covered in a specific cyclic period by the transmigration process falls short, by the following factor. The shortfall in transmigration distance per cycle time is:

$$SI = \left[ \frac{Mep-Me}{Me-Mee} \frac{2}{7RS} - \frac{PM-Pm}{Pn-PM} \frac{2}{7RS} \right] \left[ \frac{1}{C} \right] = 8.764063E-10$$

The SI value has also been identified as the delay in receiving wireless signals from distant spacecraft that forms a theoretical anomaly (Pioneer anomaly) for no theory in Physics has predicted this factor. As a result there would be a shortfall of one second or about 300000000 meters between the calculated and theoretically distance in about 10 billion years.

The basic interactive count ratio is related to a cycle of ten counts based on self-similarity operating in any confined domain. The total cycle count along all three axial directions is  $10^3$  but reduces to 10 when axial phase and rate of oscillation are identical, thus merging  $10^2$  counts per interaction. Further the **KI** delay occurs due to the ratio of expansion between coherent core and the outer boundary being in a resonant state. Hence the ratio of this delay per period of C is the impedance to stress transmigration:

$$imp = \frac{10^2}{2^{1/3}-1 RS} = 377.037566$$

The **imp** ratio is a constant delay due to merging of interactive cycles and affects the interactive cycles in all axial directions. In an accelerative cycle the coherent state is broken periodically or cyclically whereby the unbalanced stresses are forced to transmigrate towards lowered interactive count states. Though the compressive expansive exchange takes place within an interactive cycle, it is not along the same axis as the phase symmetry is broken by the accelerative force. Hence a forward transmigrating stress along the x axis reacts with a simultaneous lateral reaction along both the y and z axes. As the x axis force is compressive the lateral one will be expansive. Hence both types of forces react simultaneously but in different axial directions as follows.

It has been established earlier that the **PM** state is the undetectable but coherent perpetual harmonic oscillator state in the continuum of space. Therefore, the **imp** delay must relatively affect

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its interactive state due to accelerative stresses. As coherence is broken the merged interactions would be released as **C**<sup>2</sup> but due to the **imp** delay its value would increase and decrease in the two phases of the oscillatory cycle:

$$\epsilon r = \left[ \frac{Kx}{Px C^2} \right] \left[ \frac{imp}{PM} \right] = 1.118203E+11$$

$$\mu r = \left[ \frac{Kx}{Px C^2} \right] \left[ \frac{1}{PM imp} \right] = 7.865953E+5$$

The **εr** value is the compressive increase in interactive rate in the direction of acceleration and equals the reciprocal of the force of an electric charge or the permittivity factor ε in electromagnetic wave transmigration. The normal interactive rate of the **Pho** is **C** but on accelerative compression it rises to **εr**. While at the same time its lateral boundary expands thus reducing its count rate to **μr** or the reciprocal of the permeability factor μ indicating the magnetic flux density that returns the oscillator to the state of resonant balance.

The **εr** and **μr** factor was derived as a resonant ratio where the **RS** resonant decay in infinite time factor was involved. If now the **Br** factor that indicated the difference between the simultaneous and sequential interactive states or the interval that separated the continuum and quantum states in space is introduced into the same expression but as an interval of an interactive cycle, it will be shown to create the lepton or electron mass state.

$$\frac{PM}{\left( \frac{7}{k-1} \right)^2} \cdot \frac{Br}{imp} = \blacksquare \quad \quad \quad Mep = \blacksquare$$

Recalling that PM formed the nuclear core in the simultaneous state and the leptonic boundary at a displacement of  $[7/(k-1)]^2$  created the Mep electron state that was also in the simultaneously oscillating **Pho** state. When the imp interval was reduced to  $(2\pi/10)^2$  by the Br ratio, the boundary of PM attained the simultaneously oscillating state, whereas it was in the

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electromagnetic sequentially oscillating state that created the electric and magnetic oscillations as changing phases in a cycle. Hence the sequential electromagnetic oscillations changed to simultaneous state where in the oscillatory phase difference between two axes reduced to the Br level and became a simultaneously interactive phase. When the third axis oscillatory timing reduced even further by the ratio  $7/(k-1)$ , then all three axes attained a zero phase difference or it became a coherent state PM. Because Sankhya logic is based on axiomatic values, the sequence of synchronisation of the three axes could be logically traced and the equation of balance of time and displacement could be matched exactly in every way. Then it becomes evident that electromagnetic phenomenon occurs when there is a phase transition through breaking synchronisation between two axis. The so called weak force involving the massive W & Z bosonic states, occur when the synchrony between three axis in the coherent PM state breaks and leaves two in locked phase. The strong force comes into existence when the coherent PM state oscillatory rate is increased when the boundary leptonic state Mep is added and synchronised to lock in coherent step with the PM state but at a higher density.

In Sankhya, the break from the coherent state sets in motion stresses, as flux density that, transmigrated as electromagnetic field waves in Physics. The entire cycle of compression, expansion and transmission is defined as the threefold TriGuna state in the Sankhya Sutras and forms the core and foundation of all phenomena in it. The compressive Tamasa state, at high density, is mediated by the transition bosonic Raja states and followed by the expansive and radiating Satva state, of the electromagnetic spectrum. All the three formed a unitary cyclic of interactive oscillations with three different phase of time interval between the three axial directions in volumetric space. As shown it is related to the source of perpetual power, available from the substantial continuum of space and therefore the principle of conservation (at source) of the electric & magnetic or compressive & expansive interactive counts, is well founded. The **Pho** state polarised into the electric and magnetic phases due to the break in coherence that was created by the simultaneous interactive exchange of compressive and expansive stresses kept in balance by the **Gmr** ratio. The **KI**

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factor influenced the polarisation mode and in the process introduced a time delay and therefore a loss in displacement ratio by the **SI** factor. Therefore the distance of transmigration of stress at one metre wavelength would be **(C-SI)** metres in one second.

In Physics, electromagnetic theory was developed from experimental observations and empirical inputs that had no connection to the source of its field. Maxwell formulated mathematical algorithms from observation and experiment that did not show its connection to the source of perpetual dynamism in space. It was conjectured that electromagnetic waves transmigrated of itself and by itself, without any connection to a motive source. The Special Theory of Relativity introduced a mathematical correction to offset the failure of the Michelson Morley experiments.

The Lorentz Transform was used to justify an error of concept that light waves or photons travelled with a constant velocity **C** like an object on the surface of the earth, free of any obstructions, in a space without identity. Whereas the holographic stress-vortices as photons transmigrated at a constant oscillatory rate **C** form one oscillatory node to another by increasing and decreasing the interactive displacement or merging ratio, within each oscillatory cycle, in such a way as to provide a net displacement in the direction given by the accelerative input. In the balanced **Pho** state, the net displacement was zero, for the interactive stresses superposed or merged as simultaneous activity to cancel out the two opposing phases and attained its full potential which is defined as its rest mass. When the accelerative displacement from a previous **Pho** state increased it was passed on to the next unit. The reduction in displacement distance with increase in density of interactions within a cycle increased the time duration of merged interactions.

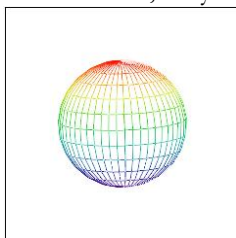
The theory of Special relativity addressed this apparent anomaly through the Lorentz transform as shrinking rods and slowing clocks but had Physicists recognised that three dimensional continuum of space consisted components and its vibratory state was being detected as manifestation or phenomena. When vibrations compresses together its length had to reduce but the time cycle consequently was forced to increase as there were more cycles within the same interval. Hence Special and General

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relativity arose out of an error of concept and therefore is not a real theoretical principle applicable to reality.

Recall the derivation of the  $C_L$  value obtained by experiment and that by Sankhya theory. The interaction between two adjacent components in the continuum of space is a constant  $C$  which is the frequency-equivalent of a meter wavelength. Since  $C$  can never change, only the phase angle of the displacement can vary such that a net transmigratory movement is initiated as a vector, proportionate to the accelerative input. In the continuum of space, the interactive rate between two adjacent components must be  $C = \text{displacement} / \text{time}$ . But in Physics, the constant  $C$  as velocity was equated to wavelength  $\times$  frequency. The reciprocal of time is frequency but a decrease in time would increase frequency, which was the same as stating that if the density of displacements per cycle is increased the gap as wavelength, decreased. In the following chapters proof will be given that shows the numerical value of stresses which exist in the simultaneous state as interactive counts. It provides the motivating potential to initiate stress transmigration as a 'velocity'.

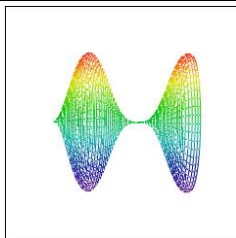
Before the photons are radiated there exist no detectable parameters as the coherent state is equated to a spherical surface. Though the graphic stress diagrams shown below are real, it cannot be detected as such because only after its collision the stress density is released to create a detectable reaction, only then work is done.



(X,Y,Z)

Fig: Pho state before a photon was radiated.

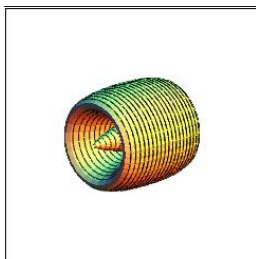




S

Fig: Accelerative impact breaks coherent symmetry.

If the accelerative impact from an adjacent Pho state broke the coherent symmetry and if it exceeded the Br factor, a self-sustaining vortex transmigrated from node to node as visualised below.



N

Fig: An accelerated vortex or Photon.

The photon became a self sustaining and transmigrating vortex only because the interactive acceleration factor exceeded the **Gmr** ratio. It broke the symmetry of the Pho state which changed the zero displacement state to one with net acceleration with magnitude and direction, with the **Amp** value as a simultaneous vortex or photon. The photon decays in two modes. When there is no obstruction the vortex transmigrates, losing  $(1/2 + 1/2 = 1)$  interactive count per interactive cycle and decays in about TT seconds or RU meters, naturally into a space at its critical density DD. When there is an obstruction and the resonance is broken, the ratio of the difference between **C<sub>L</sub>** the transmigrating rate and **C** the basic one, is logarithmically proportional and therefore the absorption rate is determined by the density and related parameters existing at that location. It is a complex process shown graphically in 'Fig: Decay and Absorption of Stress in Space.' It is a matter of

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factual interest that Psychics like Leadbeater and Anne Besant, among several others saw the form of the photon as shown graphically above. Electronic image capturing instrumentations do not at present have the 'speed' to display such forms. It is highly indicative that at the time of writing book, the view in Physics, taken from a university 'website-classroom' was: *'We can only conclude that light is somehow both a wave and a particle--or that it's something else we can't quite visualize, which appears to us as one or the other depending on how we look at it.'*

The Sankhya derivation shows that the Photon, formed as a vortex by interactive stresses, into a coherent state that breaks up and reforms when transmigrating from node to node, which act as stable harmonic states. The 'node' formed on the components in space by highly compressed stressed states that are "acting simultaneously", reach the limiting levels of the Mps complex. At the node its particulate characteristics are displayed and when resonance breaks it into harmonic states it transmigrates with wavelike properties. In short there are no 'solid' particles except when the basic point component is exposed by interactive stress density states in excess of ***Pd***. Stating it another way, the coherent state of the components is space cannot be 'seen' unless it radiates. But the coherent state is maintained by the ***Pho*** activity which does not radiate. However when coherence is broken and radiation does take place, the observer sees it as 'electromagnetic waves or light', which 'hides' the form of the components forming an eternal conundrum.

The Michelson Morley type of experiment should be conducted again with a reference to ***C*** as a standard frequency with a meter wavelength and look for compression of frequencies in the direction of travel and compensatory expansion in the opposite direction. The increase or decrease would be logarithmically proportionate to distance of source. The field stresses would not vary significantly across a laboratory table hence, verification must be carried out over a long distance, which Hubble did. If the experiment exposes the ***SI*** factor too, the verification would be complete. The experiment would also expose a self-similar and scale invariant feature that every length would have its associated cyclic time as constant ***C*** = length/cycle-time as a universal standard and therefore our clock time would vary. These factors would confirm the reality of space that cannot be detected directly.

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The potential source of the **Pho** state forms the limit in a number of related operating parameters. The connections are derived axiomatically which eliminates arbitrary postulates and establishes its credibility as forming the cornerstone of hidden phenomena in the continuum of space. All the stable states have the Gmr value as an operating factor, thus proving that the axiomatic dynamic state is the source of all phenomena.

The harmonic state constant **Kx** provides the first connection to the **Mps** mass in a coherent and maximum density state, has the Gmr value that enables the formation of the limit of any interactive stress rise, as:

$$Mps = \frac{Kx7RS}{C} = \frac{Kx(Gmr+Gmr)}{C} = 2.203694E-8$$

The **Kx** points, forming the continuum, group into a simultaneous set of  $2^3 = 8$  to create the elemental field or object state and its relation to the **Mps** state is:

$$Mps = \frac{10^{1+x}k}{8C} = 2.203694E-8$$

The maximum limit in density rise, in the simultaneous mode, induced by colliding, collapsing or compressive interactive states, is derived from the gravitation constant **G<sub>sankhya</sub>** which equals the product of density into time-cycle<sup>2</sup>. Since **Mps** value forms the maximum limit, the time-cycle and density too form the minimum and maximum limit respectively. The minimum time-cycle **tp** can be derived as the ratio of minimum displacement **My** times **C** divided by the number volumetric expansions occurring within the same period of a single cycle as **(2<sup>3</sup>-1)=7**:

$$tp = \frac{MyC}{7} = 5.696886E-44$$

The maximum density, being a limit, can be derived from fundamental principles and checked for accuracy with **G<sub>s</sub> = ρt<sup>2</sup>** proportionality. The maximum increase in interactive rate per period is **C<sup>1+x</sup>** over displacement **k** and the number of volumetric expansions occurring simultaneously is **2<sup>3</sup>-1=7** and therefore must be applied logarithmically as:

$$Dp = (C^{1+x}k)^7 = 4.569102E+96$$

Checking for correctness and accuracy:

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$$2 \frac{Dp(tp)^2}{Gs} = \frac{(4.569102E+96)(5.696886E-44)^2}{1.482880E+10} = 1$$

The derivation of displacement ratio **Lp** proportionate to the **Mps** value is time-cycle **tp** times the constant oscillatory rate **C** as:

$$Lp = Ctp = 1.689560E-35$$

Since the maximum mass and density state **Mps** forms the foundation of the gravitational principle, its acceleration too must conform as the limit of the rate of change. The limit of accelerative change **Ap** has been derived earlier as a set of invariant ratios.

$$Ap = \frac{7}{my} = \frac{Lp}{tp^2} = 5.205931E+51$$

Checking **Ap** through the gravitational equation:

$$Ap = \frac{Mps}{GsLp^2} = \frac{2.203694E-8}{(1.482880E+10)(1.689560E-35)^2} = 5.205931E+51$$

It confirms the accuracy and logic of the axiomatic derivation. The Mps equations can be rewritten in a number of ways to expose its equivalence to parameters derived through alternate means. It gives a measure of the strength of the principles involved. There are ten variations given below that provide the exact solution.

The basic **Pho** cycle at source:

$$Mps = \frac{Kx7RS}{C} = \frac{Kx(Gmr+Gmr)}{C} = 2.203694E-8.$$

The fundamental field cycle: (It is based on 8 units forming the simultaneous 'centre of mass' forms that initiates 'gravitation').

$$Mps = \frac{10^{1+x}k}{8C} = 2.203694E-8$$

Compressive limit cycle:

$$\left[ \left[ \frac{\left[ C^x \right]^2}{\left[ C^{1+x_k} \right]^7 2} \right] C \right]^3 \left[ \left[ C^{1+x_k} \right]^7 2 \right] = Mps$$

Time sequence cycle:

$$tpC^3G_s = Mps$$

Volumetric mass density cycle:

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$$Lp^3 Dp = Mps$$

Acceleration Flux density cycle:

$$Lp^2 ApG_s = Mps$$

Displacement cycle:

$$LpC^2 G_s = Mps$$

The Coherent Nuclear cycle limit:

$$PMPxC^2 7RS = Mps$$

Tode field cycle:

$$My \left[ C^{1+x} \right]^3 \left[ \frac{C^{1-x}}{7+7} \right] = Mps$$

Unit field cycle:

$$MyC^5 7RS = MyC^5 (Gmr + Gmr) = Mps$$

The high density coherent field is symmetric, self-similar and scale invariant. Therefore every point, in terms of the unit **My** can be precisely identified, defined and connected to the continuum of space. The coherent state is symmetrical and can be checked for correctness in both simultaneous and sequential modes of interaction.

Having established that the fundamental perpetual harmonic characteristics are not affected by steeply varying density values within the coherent region but a change only takes place at a rate more than two. Hence the coherent state of the nuclear **PM** state too displays gravitational qualities of acceleration and spin as shown in the following sets of equations, again with dimensionless ratios as results:

The displacement ratio forming the incremental volumetric state depends on two increasing parameters. Increasing the core Mps volume by one provides ratio of 2 which gives a radial increment of  $2^{1/3}-1 = k-1 = 0.259921$ . Since it forms the first detectable or observable parameter, it should be set to one so that all subsequent ratios form a numerical relationship more than 1 and can be meaningfully evaluated. By setting it to one, the unobservable and undetectable coherent core attains a relative measurable ratio of  $(1/(k-1))^3 = 56.947628$ . Again since  $1/(k-1)$

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forms the incremental gap by the expanding volume but because it is set to one, it represents the ratio of compression with reference to the expansion value set as a unit. Compressive action of interactive counts gives  $C^{1+x}$  as the larger value. Hence the radial displacement per interactive cycle as  $R_p$  is:

$$R_p = \frac{k-1}{C^{1+x}} = 5.089059E-15$$

The density of the **PM** state  $P_d$  can be derived as:

$$P_d = \frac{PM}{R_p^3} = 1.270436E+16$$

The time-cycle can be derived by using the  $G_s$  relationship, as  $P_t$ :

$$P_t = \sqrt{\frac{G_s}{P_d}} = 1.080380E-3$$

The rate of volume change at flux density rate  $G_s$  as  $(V_p)^3$  is and  $V_p$  as:

$$V_p^3 = \frac{PM}{P_t G_s} = 1.045160E-34.$$

$$V_p = \frac{R_p}{P_t} = 4.710433E-12$$

The inward acceleration inward, due to interactions acting simultaneously as the **PM** mass state is proportional to  $P_t^2$  is:

$$P_g = \frac{PM}{R_p^2 G_s} = \frac{R_p}{P_t^2} = 4.359977E-9$$

The maximum interactive stress **St** in space is proportional to the maximum mass state **Mps** and minimum cyclic time **tp** and its numerical value is:

$$St = \frac{Mps}{tp} = C^3 G_s = 3.868244E+35$$

Since interactive counts indicate the state of stress it rises inversely with cycle displacement time. A number of scientists notably Chandrashekhar and Sakharov derived the **St** value. While the **St limit** has been used to predict many aspects of phenomena in the macro environment, Sankhya theory establishes the connection for the perpetual oscillatory characteristics of the nuclear **PM** state. The flux density at the **PM** boundary and the **St** limit interactively maintain a perpetual balance as shown:

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$$\frac{Kx}{PxPgRp^2} = St \quad Mxe = \frac{Kx}{PxPgRp^2} C^2 = 3.40240285660824E+52$$

The maximum stress **St** and **Mxe** as maximum energy per cycle, has a direct connection in deriving the Universal boundary as the limiting distance of stress transmigration. It depends on three factors of cyclic time, cyclic interactive counts and the maximum sequential potential available to allow the stresses to transmigrate to the Universal boundary as its limit. The maximum sequential or transmigration potential released when coherence is broken is logarithmically proportional to one interactive cycle of 10 or log 1. Therefore the transmigration interactive count rises to **10C** but as it occurs at the instant of collision between two interacting states, its log value 9.472136 must be used. The **Todc** in space is **1/C<sup>3</sup>** and the transmigrating density of interactions is **DD** as:

$$DD = \frac{\log(C)+1}{C^3} = 3.631115E-25$$

The transmigration time cycle in space is **TT**, derived from **G<sub>s</sub>** as:

$$TT = \sqrt{\frac{G_s}{DD}} = 2.020845E+17$$

The maximum distance the stresses can transmigrate per cyclic period is **RU**:

$$RU = CTT = 5.993340E+25$$

If the oscillatory displacement is a meter per interaction in a time of one second then the distance **RU** is covered in **TT** seconds or about 6.4 billion years. The precise distance is **RU-(TTSl)** as a meter wavelength transmigrates only **C-Sl** meters per second

The Universal mass state **MU** per cycle can be derived as follows:

$$MU = RU^3 DD = 7.817120E+52$$

The total value of interactive stresses acting simultaneously within the volume **RU** is **MU**kgs if one count of interactive displacement is set to one meter acceleration per second yielding a force of one kg of mass per cubic meter. The expanded state stress value as mass **MU** is the cumulative number within cycle time **TT**, at a peak stress rate of **St** in one cycle time of **C**. Similarly, the compressive stress mass **Mps** is the merged value in cycle time **tp**, at a peak stress rate of **St** in one cycle time of **C**. Hence both the expanded and compressive level achieves the peak stress rate, though with

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different mass and cycle time values. However, applying the same logic the coherent **PM** peak stress value is only:

$$\frac{PM}{Pt} = 1.5499E - 24$$

Since **St** is 35 orders above unity in time cycle **tp** but **PM** is 23 orders below, in time cycle **Pt**, the low **PM** peak stress state forms a well that is large enough to absorb the expansive cycle of the **Mps/(Mep)** exchange, but not enough to crossover and radiate. Therefore, regardless of the amount and duration of radiated stress counts, it is always absorbed. Hence there would be not be enough positive stress potential to cross the **7/k-1** displacement gap and re-radiate. Nature has ensured that the night sky will eternally remain dark and nor will the thermal state exceed the **Tk** level. There is axiomatic mathematical certainty that spontaneous ‘runaway’ stress transmigration condition can never occur for 2/3 of the stress counts in space are at a density that varies from 15 to 96 orders.

$$\left[ \frac{Mep}{Mps} \right] \left[ \frac{Pt}{PM} \right] - \left[ \frac{7}{k-1} \right] = -0.245971$$

*The **PM** negative stress well permits a number of important conclusions to be drawn. The dynamic field in space is an absorber of interactive stresses and photons are holographic stress vortices. The negative stress well provides the potential to contract space rather than expand it. The inward pressure further ensures that the coherent state is not broken spontaneously and stress transmigration characteristics remain stable and consistent. The negative stress further strengthens the logic that simultaneous interactions merge and the reduction in stress count causes gravitational acceleration towards a lower interactive rate or decreasing stress levels.*

The **RU** is the distance to which interactions could transmigrate to but in every interaction **SI** must be subtracted, for it constitutes a fractional period of an interaction when the compressive acceleration increases the potential to transfer the stress across the **KI** gap, to the next expanding boundary. This delay is introduced only when the coherent state is broken by an accelerative displacement during the transmigration process. The limit of stress transmigration distance as **RU** would be short by 1.771081E+8 meters or the time in seconds would be increased by 0.597 to cover the total distance. As has been mentioned earlier,



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this factor has been detected and recorded as the Pioneer anomaly where radio signals have shown an anomalous delay of exactly **SL**.

Recalling the derivation of **C<sub>L</sub>**, its value was gave the ratio of the transmigration of stresses as photons, across the continuum of space, has an infinite number of resonant nodal states created by the varying flux density in the field around galactic, stellar and planetary bodies. It introduces a periodicity in the interactive transmigration rates, which sum up algebraically to create spectral shifts related to distance. The periodicity is caused by the **Pho** states compressive increase or expansive decrease in the oscillatory displacement distances. The compressive value above a threshold level initiates the transmigration process and increases the interactive count rate above **C**. The increase needed to initiate the transmigration is process is a cycle of ten interactions which raises the rate to **10C** during the period of acceleration, within the boundary of the **Pho** oscillator. Therefore theoretically a blueshift of 10 times is possible.

Therefore every photon received must be at a higher potential and interactive rate, than the resonant state **C**. Since the value of **C** is **C<sub>L</sub>** due to the Earth's distance from the Sun, every light wave from any other stellar or galactic source must have a ratio larger than **214** or **Ro/Rs**, which leads to a lower potential and count rate or frequency, as the equivalent of **C<sub>L</sub>**. The Earth is very close to the Sun, compared to the distance of stars, from which light could be received on the Earth. It would have an interactive count rate greater than **C** but certainly less than **C<sub>L</sub>**. The value of the measured velocity of light is blue shifted by **1.010845** or **log(1.010845) = 1/213.45 = Rs/Ro**. However, though light received from distant stellar bodies will still have a smaller blue shift than 1.010845 yet, compared to **C<sub>L</sub>** it would show a red shift. The expression for spectral shift of interactive rate or frequency, if **Rs** is radial displacement of source and **Ro** is displacement distance of receiver, then **Sf** is:

$$Sf = \frac{2}{x^3} + \frac{Rs}{Ro} \dots\dots\dots C_{Ln} = 10^{Sf} \dots\dots\dots \frac{C_{Ln}}{C} = 1+z$$

**C<sub>Ln</sub>** is blue shifted or at a higher frequency than **C**. Photons from any stellar source must have a higher interactive count rate and the ratio of shift **1+z**, as **log(1+z)** gives the ratio of **Rs/Ro**. But

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astronomical observation on Earth, have always been compared to  $\mathbf{C_L}$  instead of  $\mathbf{C}$ , for this axiomatic rate has not been derived so far. Therefore all light from stellar sources would seem to be red shifted as a consequence of taking the  $\mathbf{C_L}$  value as a base. The comparison is shown below:

$$RSZ_m := \frac{\frac{2}{x^3} + \frac{Rs}{Ro \cdot m}}{c - 10^x} \quad BSZ_m := \frac{\frac{2}{x^3} + \frac{Rs}{Ro \cdot m}}{C - 10^x}$$

$$RSZ_m + 1 =$$

1.000000
1.010622
1.010675
1.010693
1.010702

$$BSZ_m =$$

0.010845
$1.078761 \cdot 10^{-4}$
$5.420765 \cdot 10^{-5}$
$3.619874 \cdot 10^{-5}$
$2.717173 \cdot 10^{-5}$

$$m := 24, 114 \dots 814$$

$$SZ_m := \left| \left( \frac{2}{x^3} + \frac{1}{m} \right) - \left( \frac{2}{x^3} + \frac{1}{214} \right) \right|$$

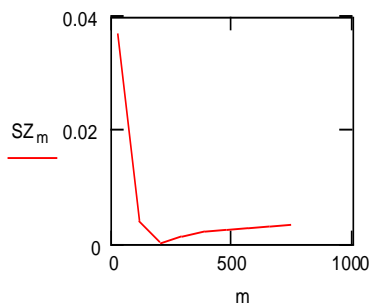


Fig: Point when Redshift changes to Blueshift.

$\mathbf{RSZ_m}$  is the reds shift value Astronomers always measure, while  $\mathbf{BSZ_m}$  is the real blue shift needed for light photons to transmigrate to distance  $\mathbf{Ro(m)}$ .  $\mathbf{SZ_m}$  shows the comparative difference on the Earth. The meaning of the blue shift can be clarified further using the Sankhyan concept of simultaneous

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interactive states merging to create the nuclear coherent potential in the **Pho** state. Light or any electromagnetic Photon is a three dimensional stress vortex and it must be accelerated sufficiently greater than the **KI** factor, so that it is transferred to the adjacent **Pho** oscillator. The second **Pho** repeats but with a loss of one interactive count as the delay needed to initiate the transmigration process to the next unit and so on. Stress vortices will move towards another only if the destination count rate is less than its own. As the count rate increase with acceleration, within the same oscillatory boundary, the counts merge or superpose to maintain coherence but the number of counts per interaction increases thus raising the potential as an increase in occupation density. Because many counts are merged in the coherent state of one cycle of ten interactive counts, a sequential transmigration process is driven by the simultaneous potential of one logarithmic count which is 10 in numerical counts. The driving potential source is the **Pho** oscillatory combination, illustrated as the triad, where the **Mps/PM/Px** exchange creates a displacement/spin/angular momentum potential of  $2\pi 10^{17}$  simultaneous counts in the coherent state. A log one cycle reduction in potential count

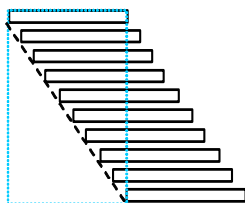


Fig: Merging counts.

increases interactive counts by 10 units, which then releases a set of  $2\pi 10^{17} \times 10 = 2\pi 10^{18}$ , reciprocal of which is  $1.591681\text{E-}19$  or the value of an electromagnetic charge of a volt in Physics. In the diagram ‘merging counts’ compressive acceleration piles up counts as a potential where there are more interactive work potential hidden within one cycle, which gives the erroneous impression that wavelength decreases and frequency increases. The superposed state is a potential but when it is accelerated in the stress transmigration process it is termed a current or a radiation of a photon, over a distance involving time. The physical picture in substantial space is that stress rises and falls cyclically, which

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creates transmigration if time is involved. The interactive displacement distance the photon covers through the **Pho** transmigration process is, assuming that 1 meter displacement with acceleration of 1 metre/cycle is involved:

$$\frac{Mps}{PMPx} = 2\pi 10^{17} \dots Trd = \left[ 2\pi 10^{17} - 2\pi 10^{17-1} \right] = 5.654398E+17$$

The **Trd** value is the exact distance a photon can transmigrate through, for the loss of a cycle of ten counts. Every repetitive distance undergoes a similar reduction in potential until it reaches the limiting distance **RU**. The number of interactive cycles needed to cover the **RU** limit is:

$$Rpd = \frac{RU}{Trd} = 1.059943E+8$$

The proof for the Rpd factor lies in Hubble's findings. While the limit of photon transmigration is **RU**, Hubble chose an arbitrary distance of one megaparsec **Ly=3.017173E+22**. By comparing **RU** with **Ly**, Hubble's quest of expansion of space is derived precisely, but contrarily as the loss of potential over that distance, being **Hy**:

$$Hy = \left[ \frac{Ly}{RU} \right] Trd = 5.335975E+4$$

Currently **Hy** is guesstimated to be around **55000** from various scientific institutions. Therefore Hubble had actually discovered the ratio of potential-drop to transmigrating-distance as **Hy**, which involved an increase in cycle time, proportional to potential drop. But the **Tk** value was considered to be the residual temperature from the Big Bang hypothesis and its importance, as the source of the **PHO** state, has not been realised nor is there an awareness of it even now. The **Tk** value, though hidden, provides the perpetual dynamism at the core and affects basic states in space. Therefore **Hy** times **Tk = 1.493026E+5** cycles as potential lost in transmigrating across **Ly**. The loss of potential was a reduction of the coherent and merged count which was hidden because it was a simultaneous activity. The ratios **Trd /TT** or **C/Rpd** should equal **Tk** as the ratio **KV/Px** of expanded to coherent states. But **Trd** is the potential change that initiates transmigration and hence it must equal a changing **Tk<sub>n</sub>** to maintain balance, which would prove the correctness of the **Rpd** or **Hy** factor.

$$Tk_n = \left[ Kx \left( 2 \cdot 2^n A_n \right)^2 \right]^{-1} - \frac{Trd}{TT} \neq 2.798037$$

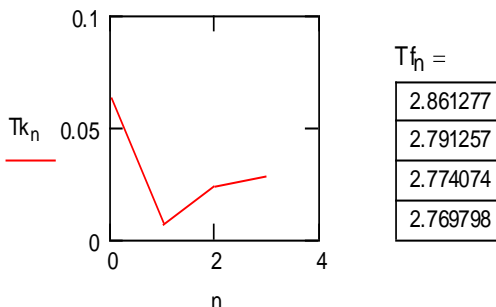


Fig: Volumetric Rate of change at the basic level.

At about one interactive cycle the difference is balanced to maintain a higher volumetric change rate than ***Tk***, which maintained the coherent and un-manifest state in balance. It is pertinent to state here that a difference of 2.798-2.718=0.08 difference in the volumetric change rate in space was sufficient to provide the potential difference of ***Trd*** by ***Rpd*** times to transmigrate a photon through ***RU***. The ***Rpd*** drop was caused by 10 interactive counts in one cycle that kept the oscillatory volume changing 2.718 times per cycle. The product gives the maximum simultaneous potential necessary to initiate the transmigration process:

$$Rpd \times 2.798 \times 10 \neq 10C = MaxPotential$$

The various factors equal the maximum oscillatory potential needed for initiating an accelerative state. It shows that the equations, starting from the source of radiation to maximum destination distance, balance the changes in potential and also transmigration rates. The critical equations of balance, to be derived later, will prove the foregoing to be correct and accurate.

The ***Pho*** state in space affects the stresses transmigrating across it in two ways. When stresses add up harmonically it creates simultaneously interactive states with a higher potential at periodic intervals as nodal states. Because of the higher potential, it amplifies stresses that resonate with it. Hence photons at various oscillatory rates transmigrate as agglomerate states that show different spectral characteristics. Due to the ***Pho*** state, there are

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certain radial distances at which the algebraic additive process amplifies the interactive rate of stresses and in between these nodal states, the opposite expansive mode, reduces it. While the harmonic states are innumerable, the 1 to 8 ratio of volumetric rate of change is important, distinctive and identifiable. Linear harmonics are easy to deal with mathematically. But in the three dimensional space continuum, the linear and area aspect merge into the volumetric oscillatory rates of change, as the latter have density, centre of mass and coherent state characteristics that swamp the other two.

The ***Rs/Ro*** factor for all stellar bodies affects the fundamental state of space universally till the ***RU*** limit. The next important harmonic spectral shift occurs at the coherent boundary of the ***Pho*** state. Since all formulations in Sankhya are dimensionless and scale invariant the derived ratios act in the same way regardless of size but in proportion. Hence the following derivations apply to nuclear state like the Proton / Neutron and also molecular, stellar, galactic mass states but the cyclic time factor would vary according to size, volume and mass. The axiomatic factors that contribute to harmonic resonances in space are the interactive count states in the expansive mode, which occurs when the simultaneous coherent state breaks synchrony to the sequential resonant state. Derivation is shown below and the bracket shows values familiar in Cosmology:

$$B1 = \frac{\left[ \sqrt{1+2^2} \right]}{2} - 1 = \frac{x^3}{2} = 0.118034$$

The ***B1C = 3.500604E+7, ( 35000 Km )*** is the most ubiquitous red shift parameter that is initiated at the boundary of solid bodies but is also the weakest in terms of potential drop. It can be detected as a direct in-line measurement as it is can be occulted by the shorter interval red shifts.

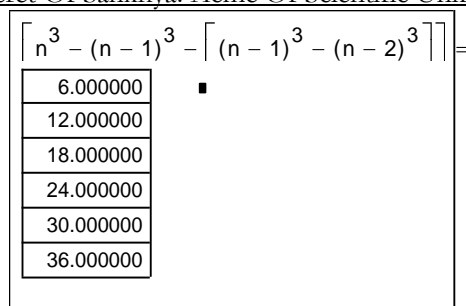


Fig: Red shift factor in space.

The table shows the red shift factor derived as a common differential in a volumetric expansion process. The odd radial expansion at 1, 3 and 5 as 6, 18 and 30 cannot form resonant harmonics and must be excluded. Hence 2, 4 and 6 as 12, 24 and 36 create resonant harmonics, which also beat with one another as 2/4, 4/2 or 12/24 , 24/12 and fall in to the same displacement band, which forms into simultaneous resonant nodes that amplify the absorbed stresses. The 6/2 , 2/6 or 36/12 , 12/36 also provides a resonant red shift at the third level, though 1/3 does not form a resonant harmonic. The table below gives the set.

Factor	Red shift interval	Measured	Cited
2 x 6 = 12	12/C=2.55E+7	25,600 Km	recorded
6/2 x 6=18	18/C=1.69E+7	16,400 Km	recorded
4 x 6 = 24	24/C=1.27E+7	12,800 Km	recorded
6 x 6 = 36	36/C=8.49E+6	8,100 Km	recorded

Fig: Table of Resonant Harmonic Redshifts.

The number 8 factor, forms into a density state 2 as  $2^3 = 8$ , and it repeats within the previous set but with a higher density and consequent delay, that broadens out the cyclic base.

The frequency of light at 1 meter wavelength on Earth is greater than the axiomatic rate of the **Pho** state by a factor **1.010845 or the log(1.010845) = Rs/Ro**, **Rs** being the radius of the Sun and **Ro** the Earths orbital distance. Hence the differential displacement is a blue shift, as it is greater than **C** by **C (.010845) = 3.216491E+6 or 3216 Km**. This factor is not known in Physics yet but if the displacement interval is applied to all the measured values then most of them would show a blue shift, albeit small, for the Sun is closer than other stellar bodies. The graph showing the anomaly is on page 122.

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All dense bodies with centre of mass characteristics stellar and planetary bodies are in a coherent state and any radiative transmigration of stresses (photons or phonons) must break the symmetry by the **BI** factor. Recalling that the break from the coherent state was initiated when the cyclic time exceeded a threshold, the Planck's constant was derived from the smallest time period, which applied to maximum density regime. Taking that critical time as a ratio, the first set of conditions which create resonances and therefore a spectral shift, by absorbing stresses harmonically, can be derived as follows. A ratio of circumference to radius is  $2\pi$  raising it to the third power as the **Todc** rule,  $(2\pi)^3$  sets the coherent limit. Dividing by the same value, breaks the coherent state and reduces the index to 2 as  $(2\pi)^2$ . Dividing it again by the incremental displacement ratio  $(k-1)$  required to expand the volume twice, gives  $((2\pi)^2/(k-1))-1 = 150.886$  as the ratio **Tc**, that breaks coherence and allows transmigration to commence.

All planetary stellar and planetary bodies have a standard density of  $Tc^2 = 2.2766641909E+4$ , which yields an orbital time of about 84 minutes on earth. The derivation of Planck's constant where the same ratio enabled the quantisation of energy states into units of mass Therefore, the period sequentially will cover a distance of  **$C/150.886=1.965E+6$** . In Cosmological terms it is  **$Cz=1.965E+6$**  where  $z=1/150.886$  and the red shift factor  **$1+z=1.00663$** . Approximately, the spectral lines would show a shift equivalent to 2000 Km displacement.

There are two important periodic resonances caused by the **Pho** state at the core level of space when the continuum in the **Tk** state changes to the field state. Recalling the **P** and **E** factors as compressive and expansive ratios that maintain the **Pho** state and applying the ratio that changes the radial stress into linear displacement in the simultaneous state as  $(7/2\pi)^2$  and applying it to the compressive differential:

$$C \ P^{-1} \left[ \frac{2\pi}{7} \right]^2 = 7.198913E+4$$

The displacement interval 72000 is an absorber of stress. But the next half wave expansive displacement is a resonant radiator of stress as:



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$$C^{P-1} \left[ \frac{2\pi}{7} \right]^2 \left[ \frac{1}{k-1} \right] = 3.74228E+4$$

Factor	Red shift interval	Measured	Cited
(Px/KV)RU/TT	1.09E+8		new
X <sup>3</sup> /2 C	3.5E+7	35,000 Km	recorded
2 x 6 = 12	C/12=2.55E+7	25,600 Km	recorded
6/2 x 6=18	C/18=1.69E+7	16,400 Km	recorded
4 x 6 = 24	C/24=1.27E+7	12,800 Km	recorded
6 x 6 = 36	C/36=8.49E+6	8,100 Km	recorded
(2/x <sup>3</sup> ) +Rs/Ro	C/92.2=3.2E+6	3200 Km	Blueshift
Kl symmetry	C/151.8=1.96E+6	2000 Km	recorded
C/4.12E+3 Pho	7.199E+4	72 Km	recorded
Ly/(TTx2.718)	5.49E+4	55 Km	Hubble
C/7.92E+3Pho	3.742E+4	37 km	recorded

Fig: Table of range of Redshifts.

The primary axiomatic set-of-factors are presented as a table above. There exist numerous harmonics, which can be identified through appropriate algorithms. Recalling the Sankhyan concept of space, comprising identifiable components in the **Pho** state, there is no uncertainty in dealing with its structure as being either 'open or closed' or about its origin and demise. As far as the observer is concerned space and its elemental contents remains the same eternally, for all the factors he deals with is its deviation from the coherent, resonant and self-similar perpetual harmonic oscillatory state, in two modes of simultaneous and sequential time cycles. Since it has been shown that the oscillatory interactive rate is a constant **C** counts per cycle of ten axiomatic counts, the variation in cyclic period as time is to be accounted for. Hence all analytical procedures are dimensionless, scale invariant and uniformly applicable universally. The oscillatory rate being a constant the ratio length/time is always a constant, which exposes the concept that frequency is a density factor or the number of displacements occupying a single displacement interval. The **Pho** state maintains the balance eternally by extending the process of interactive decay in infinite time cycles for axiomatically resonance can never be lost when the linear and radial displacement reach the  $1+x = 1/x$  ratio as the equivalence of the simultaneous and

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sequential states where in the compressive and expansive stresses are equal in both cycle time and displacement interval.

The size and cyclic lifetime of the observer's Universe is dictated by the yardstick he creates for it. The dynamic state of space absorbs all higher count interactions into its coherent state at the ***Tk*** volumetric rate of change. Locally the interactive rate can only rise by 10 times the normal rate of ***C*** and the increase decays in ***TT*** seconds over ***RU*** meters distance. Hence every observer forms the centre, from which he can only measure, observe or detect a standard ***RU*** distance as his horizon, regardless of where he is in the Universe. It is the distance that stress transmigrates in a period of time cycles consistent with density of interactions in coherent space. It does not constitute the limiting distance or boundary radius of space. For where the observers' ***RU*** ends, another Universe's boundary could well commence from there.

In the next chapter rigorous proof will be derived to establish the reality of space as the repository of the full potential that initiates the entire gamut of manifestation with a single axiomatic law that is self-generating, self-consistent, self-similar and self-sufficient to maintain the Universal process perpetually dynamic, eternally fulfilled, as the acme of perfection.

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### Axiomatic Universe is Eternally Dynamic

All the proofs for the foregoing derivations are given here, to establish the dynamism of the **Pho** state which forms the source of all phenomena. While the numerical solutions set out, provide factual proof of the mathematical logic used to derive the propositions, the conceptual basis of the functioning of phenomena in the continuum of space with identifiable characteristics, needs rigorous, logical confirmation through extraordinary methods of integrating the entire Universal manifestation process.

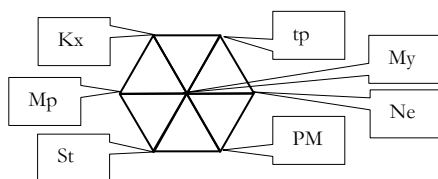


Fig: Method of Proof.

Rigorous proof is established by the concept shown in the diagram above. The main or source equation **My**, forming the centre, is connected through a constant with an ascending order of index, to six peripheral equations derived through alternate modes that also increase in value similarly. Its accuracy, logic, scale-invariance and self-similarity is ascertained if the source value at the centre forms an accurate and singular factor bridging all the twelve connected equation by the same constant with a sequential ascending order of index values. The only 'free' or theoretically hypothesised factor, forms the central or source proposition, as **My** in Sankhya. All the other twelve are rigidly conditioned by its value. Since all the twelve connecting spokes have to be ascending orders of index of a single constant that is also factored by the source, there is theoretical validity of the derivational process. The value of **My** being in the order of minus 51, the conceptual and numerical error will indeed be small if other factors equate precisely.

The following derivation will provide the key role the **Pho** state plays in controlling the unified field in a precise mode. The

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relational parameter, density, connects the mass content of stresses with the volumetric space it occupies. Further it has been shown through axiomatic derivation, that the merged cycle time along two axes are related to density through  $G_{sankhya}$ , the universal interactive constant of compressive stresses in the simultaneous state. It cannot change because it is an axiomatic ratio of the oscillatory interactive rate  $C$  at which the **Pho** state is maintained perpetually. Hence the proof has two modes of presentation as relative density and relative cyclic time period between dynamic states. Density deals with simultaneous interactions in coherent states and time cycles connect sequential interactions to the same source as flux density. The three important density states, already derived, are  $Dp$  as the compressed limit parameter,  $DD$  as the expanded limit value and  $Pd$  as the oscillatory state of the **Pho** ensemble of  $Pn$ ,  $Pm$  and  $PM$ . In the sequential mode  $tp^2$ ,  $Pt^2$  and  $TT^2$  are equivalents of flux density as  $G_s = \rho t^2$ . Further, radial length / time-cycle<sup>2</sup> gives its second rate of change as an accelerative parameter that implies stress, force etc. Comparing density or time-cycle<sup>2</sup> with any other parameter should lead to the same solutions. However it is easier to calculate density as the ratio of real parameters, whereas cyclic time has to be extracted through analytical processes.

The ratio  $Dp/DD$  can be polarised into two modes as  $(Dp/DD)^{1/3}$  and  $(Dp/DD)^{2/3}$ . In the coherent state, the symmetry is maintained and hence comparing sections within it, should yield the same solution but as the reciprocal of the other. The simultaneous  $Dp$  factor, is compared with the sequential  $DD$  factor, which is in a coherent state in space. Similarly  $Pd$  is the coherent resonant factor in the **Pho** state. Polarisation ratio should equal the potential change ratio, when it occurs simultaneously, within equal time periods. Therefore comparison of these three should yield a simultaneous ratio of  $\log 2/3$  (volume to area) if it is totally symmetrical but as resonant dynamic space has a delay of two interactions per cycle it yields a ratio  $Ge$ , not  $2/3$ .

$$Ge = \left[ \frac{Dp}{DD} \right]^{1/3} \left[ \frac{DD}{Pd} \right] = 0.664790$$

The ratio  $Ge$  is the Universal dynamic coupling constant in maintaining compressive and expansive regimes in resonant balance. It is the controlling factor for the **Pho**, electromagnetic, nuclear and the Universal boundary and also as the **TriGuna**

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interactive algorithm in Sankhya. **Ge** is almost  $2/3$  but the deviation is due to the time cycle of the interactions in the **PHO** state or the interval when compression changes to expansion. Had **Ge** been  $2/3$  the coherent **PM** state would not have been able to achieve resonance to maintain the **PHO** interactive exchange involving **Pm** and **Pn** states at the core and the lepton group of **Mep**, **Me** and **Mee** at the boundary. The difference in ratio between  $2/3$  and **Ge** must be kept in control by the **PHO** state. If  $2/3$  is reached the resonant state is lost and breaking the coherent phase would need an external input that would exceed the **BIC** factor, which certainly brings in dependence on anthropomorphic concepts. Again the delay must not go below the ratio **Ge**, for spontaneous transmigration of stresses can commence that would increase the rate of decay, resulting in loss of resonance. The critical delay is **Cd**, as:

$$Cd = \frac{2}{3} - Ge = 1.876906E-3$$

The most important criteria is that in all the interactive states which reach resonance, the delay **Cd** must never form a resonant harmonic factor and the test would be to see if such a harmony is at all possible to be reached. If resonance with **Cd** is achieved the **Pho** state would decay at a rate greater than **RS** and the coherence would be broken. Within the basic resonant oscillatory rate **C** the compressive component is **C<sup>x</sup>** and that ratio yields the number of interactions per cycle as **C/C<sup>x</sup>** or **C<sup>t-x</sup>** which forms the resonant rate of expansion within the cycle. The ratio **(C<sup>t-x</sup>)Cd** is a critical factor in every changing state of interaction, in all the three modes, as it is a resonant state that bridges the compressive and expansive activities exactly to maintain the **Pho** state. While **Cd** relates to the stable and coherent **PM** state, the **Pn** and **Pm**, states of compressive and expansive balance, change proportionately to maintain the **Gmr** ratio required to sustain the **Pho** state. Deriving the corresponding **Cd** states for the **Pm** and **Pn** values as **Cdm** and **Cdn** would enable comparison and confirmation. The **BIC** interval was derived earlier in relation to **tp** as the limit of cyclic time period in coherent high density state **Dp**, but the same interval applies to the coherent nuclear low density state at the **Pho** level. Raising the coherent density requires altering the **BIC** barrier, resulting in the **Cda** value forming a limit. The fine

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structure coupling constant in Physics is derived empirically and equals the **Cda** in value. It bridges the compressive / expansive interface at the nuclear boundary where interchanges of flux / coherent mass density factors prevail as the operating parameter. The derivation of **Cdm** for the **Pm** state is simple, as it should be  $2/C^{1-x}$  if perfect resonance is to be attained but it is not, as:

$$Cdm = \left[ \frac{2}{3} \left[ \frac{Dp}{DD} \right]^{1/3} \left[ \frac{Rp^3}{Pm} DD \right] \right] \left[ \frac{C^{1-x}}{2} \right] = 0.999552 \neq 1$$

The **Cdn** factor for the **Pn** state is compressed at the maximum rate of  $7RS/2$ , but it does not become resonant, as:

$$Cdn = \left[ \frac{2}{3} \left[ \frac{Dp}{DD} \right]^{1/3} \left[ \frac{Rp^3}{Pn} DD \right] \right] \left[ \frac{C^{1-x}}{7RS} \right] = 0.982239 \neq 1$$

When density rises above the **Pn** value, the **BIC** interval must merge within the cycle so that the interactive count decreases in proportion to the increase in mass. The **Cda** or the fine structure constant reaches the limit indicated by the **BIC** ratio, which shows clearly that the reciprocal of  $2Gmr$  (as .28) is exceeded by a large margin and therefore goes into the coherent domain. A stable but higher density level is reached, which creates the next level of a coherent, merged and dense particulate state.

$$Cda = \left[ \left( \frac{2}{3} \right) \left[ \frac{Dp}{DD} \right]^{1/3} \left[ \frac{Rp^3}{PM} DD \right] \right] \left[ \left( \frac{C^{1-x}}{2} \right) \left( \frac{k-1}{2\pi^2 - k-1} \right) \right] \left[ \frac{1}{2\pi} \right] = 0.284655 \geq 0.28$$

There are numerous ways to derive equations that prove the required proposition in a coherent field state, as all the parameters maintain its relative ratios, till the symmetry is broken. The stable and critical **Cd** ratio is compared graphically with both **Cdn** and **Cdm** at a resonant rate of 8 interactions per cyclic period and all three cross-over at the same timing interval but at different potential levels. However the **Cda** ratio, forming the fine structure coupling constant, crosses over at 6 interactions per cyclic period, indicating that compressive increase raises the potential and slows down the rate.

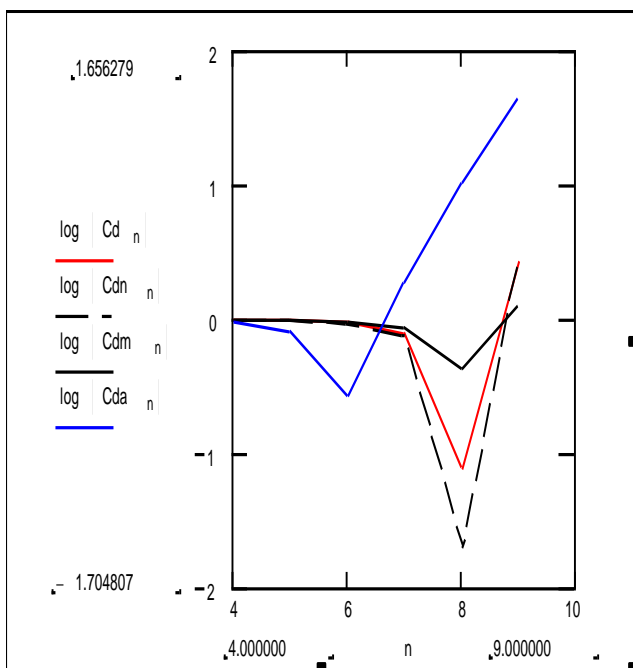


Fig: Universal Interactive Control Constants

The **Pho** state coincidence at 8 confirms that only the potential as density, changes which is the equivalent of pressure and volume changing reciprocally at the same temperature and though it is in a dynamic state, the net work / energy involved equates to zero, displaying the typical perpetual harmonic oscillator characteristics. But **Cda** reaches resonance at 6, at a potential level between the **PM / Pm** state, with a steep rise in density that transfers it to the next level. It indicates that density has been raised by merging 2 counts, which increases the inward acceleration of interactions proportionately, thereby maintaining that state. A spinning flywheel does work but equates to zero because of its coherent state of balance. It's rate of decay of angular momentum depend directly on its state of imbalance.

The **Cd** and **Ge** ratios formed the control link with the high density **Mps** limit and resonant **PM** states. Similarly there is a controlling link between the **Mps** coherent boundary, formed by

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its radial displacement  $Lp^3$  and the Universal mass state  $MU$ . While  $RU$  is the distance a photon can transmigrate due to the reduction of the coherent potential by one cycle, it does not form a limit in terms of the stress content in Universal space. The ratio of maximum coherent mass  $MU$  and the minimum unit mass  $My$  provides a measure for comparison with the ratio of the minimum coherent volume at maximum density  $Lp^3$  with that of unit density, for there is no known parameter specifying the Universal limit of space. Since all values represent interactive counts, the first interactive state represents the unit or base interactive density as  $D1$ :

$$D1 = \left( \left( \left( \sqrt{1+2^2} - 1 \right)^2 \right) \right)^{-3} = 0.280379248593737$$

$D1$  has the same value as  $(\cos(2\pi/10))^3$  and this equivalence has been derived earlier. The  $MU/My$  ratio, indicates the maximum number in a cycle and  $D1/Lp^3$  similarly provides the number of volumetric changes per cycle. Both the ratios should have the same relationship as the **Pho** characteristics but as the Universe's limiting displacement or radial boundary parameter in space cannot be derived, the volumetric change per interaction as  $(7/k-1)^3$  times the  $D1/Lp^3$  ratio should provide the control link, because  $(7/k-1)^2$  provides the link between the nuclear boundary (lepton) and its core (hadron). Further, as the  $MU$  mass of Universal space is at a low density  $DD$ , it is not a coherent state and therefore the symmetry breaking factor **BIC** or **BI** must form a part of that link as a ratio. The  $MU/My$  ratio is a coherent state number whereas the  $(7/k-1)^3$  represents the state where the symmetry has been broken. This link provides the severest test for the correctness of Sankhyan logic and also the most elegant proof for the derivational concepts in Sankhya. The expansion ratio linking the two as  $Lxp$  is:

$$Lxp = \left[ \frac{MU}{My} - \frac{D1}{Lp^3} \right] \left[ \frac{Lp^3}{D1} \right] = 5.01887141804214E-5$$

The  $Lxp$  linking ratio contains both simultaneous and sequential interactive exchanges. A specific sequential cyclic ratio should equal the  $Lxp$  ratio to maintain balance for the simultaneous phase would merge and the counts would be hidden



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within one cycle. The same axiomatic ratios that control the nuclear boundary would also apply at the boundary of the Universal mass limit but in its own time cycle.

$$\left[ \left[ \frac{k-1}{7} \right] - \left[ \left( \frac{k-1}{7} \right) \frac{2\pi}{10} \right]^3 + \left[ \frac{k-1}{2\pi^2} \right] \left[ \frac{k-1}{7} \right]^3 \right] \left[ \frac{1}{Lxp} \right] = 1$$

Recalling that circularity is a function of the interactive rate, the limit  $\pi$  can be factored to establish the oscillatory rate at which balance is maintained.

$$\left[ \left[ \frac{k-1}{7} \right] - \left[ \left( \frac{k-1}{7} \right) \frac{2^{2^n} A_n 10}{10} \right]^3 + \left[ \frac{k-1}{(2^{2^n} A_n 10)^2} \right] \left[ \frac{k-1}{7} \right]^3 \right] \left[ \frac{1}{Lxp} \right] = n \xrightarrow{3,4} = 1$$

The balance is maintained between 3 and 4 interactions per cycle. Another elegant proof using the **Pho** algorithm is given below to show the change over graphically between 3 and 4 interactive count rate. The **Lxp** was obtained as a differential ratio operating sequentially at the outer boundary whereas the Pho functions simultaneously with its internal ratio of exchange **RS**:

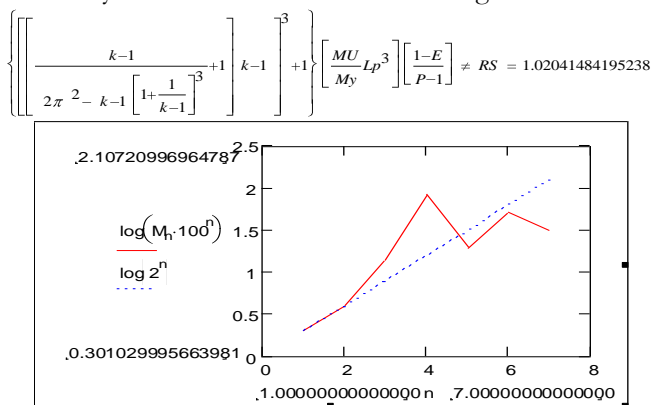


Fig: Decay and Absorption of stress in Space

At the boundary, symmetry breaks because the potential is a minimum and **RS** resonance is destroyed. The blue dashed line is the normal **RS** slope of the **Pho** coherent boundary decaying in infinite time cycles but when symmetry is broken it peaks at an

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interactive rate of 4 and decays. When it crosses the blue line between 4 and 5 it regains resonance and returns to 2, only to peak at 4 again in an out of phase oscillatory loop. When symmetry breaks the resonant state turns into asymmetric oscillations even at the nuclear core **Pn** state, which radiates and decays, when there is an accelerative interaction. The **Pn** decay time cycle, in minutes is approximately  $1/60Pt = 15.426$ .

At the Universal limit **RU**, recalling that the photon would have lost its accelerative potential from source in time **TT** or 6.4 billion years but takes about 25 billion years for its stresses to get absorbed back into the coherent state of space at critical density **DD**, which is shown graphically as the steep rise and fall at rate 4 along the x axis. The significance of the life and death cycle of the photon assumes importance if it is realised that  $10E+17$  interactive stress counts merged within it gives its holographic form, containing the coded information of its source, which has the potential to trigger a reaction till 25 billion years. It provides the mathematical foundation for the Vedic theory of Karma, with all its esoteric consequences of self organisation and spontaneous evolution that affect all manifestation.

The foregoing sections have dealt with the control factors that link the high, median and low interactive stress density **Pho** states in the continuum of space, as an integrated phenomenon. The Photon state in Physics commences when an interactive interval exceeds the value of Planck's constant **h**, which comprises about 17 orders of **Mly** states. However in the dynamic continuum of space the limiting state **My** has the smallest stress count value in a fundamental interaction between two components in space and all other interactive states can be defined in terms of its counts, including the mass of the Universe. Recalling the cycle has C interactions and that the volumetric increase is 7 when the radius doubles, the interactive count ratio per cycle would be (**My**)  $C/7 = tp$ , which has been derived earlier in another way as  $tp = (Gs/Dp)^{1/2}$ . Since **tp** has been established as the limiting time cycle, **C (tp) = Lp** (Planck length in Physics) attains the status of the limiting or minimum displacement possible in any interaction. In the continuum of space, the displacement distance **Lp**, acts as a rigid section to display the highest density characteristics. It leads to the conclusion that the unit component of space cannot be less than

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**$Lp^3$** . Recalling again when radius doubles the incremental ratio as  **$k-1 = .259921$** . Dividing  **$((k-1) / My)$**  identifies the number of interactive cycles involved in transmigrating across this gap. Since the smallest displacement possible is  **$Lp$** , the density of displacements per interactive cycle is  **$Lr$** :

$$Lr = Lp ((k-1)/My) = 3.26599354886648E+15$$

The  **$Lr$**  count is the maximum density of stable oscillatory counts per cycle in the **Pho** environment that is always in a coherent state. For  **$Lr$**  to initiate a transmigratory move it must break the coherent state by accelerating  **$Br=1.0065838$**  times equal to  **$Lrm$** .

$$Lrm = (Br) Lr = 3.28749644902521E+15$$

The derivation of  **$Lrm$** , as the density of displacement counts in an interactive cycle, has been made from the fundamental limits reached in a space with substantial qualities. It is extremely important to note that  **$Lrm$**  stress count rate is the maximum the observer can detect or measure for it is in the expansive or sequential mode of transmigration caused by the  **$Br$**  acceleration. The situation previous to the  **$Lr$**  state is in the transition or equalising-interaction mode of balancing the **Pho** across the  **$(k-1)$**  expansion gap in a resonant state. As already stated earlier the preceding  **$Lp$**  parameter forms not only the minimum displacement but also becomes the continuum wherein the density is highest ( **$Dp$** ) and the enclosed volumetric mass  **$Mps$**  is the maximum. Hence any transmigratory movement of stress before the  **$Lr$**  state must be in contiguous or simultaneous counts of  **$Lp$**  in the continuum of space. That is, the interactive stresses are so intensely compressed that it acts like a rigid rod and transmigrates instantly across that displacement distance. Therefore the smallest volumetric ratio of space that is rigid and fulfils the characteristics of solidity is  **$Lp^3$** . It confirms the conclusion arrived at in equating the maximum ratio:

$$MU/My = \cos(2\pi/10)^6 / Lp^3 = 1 / ((2x)^6 Lp^3)$$

This implies that it forms the equivalent of the rigid state. The singularly important conclusion with proof is that if  **$My$**  formed the basic unit count,  **$Lp^3$**  too formed the unit volumetric state with exactly the same proportionate ratio of maxima to minima. Since its factors were  **$C$**  and  **$tp$** , forming two important stable states as  **$C^3$**  (stable volumetric oscillatory count) and  **$tp^3$**  as the limiting **Todo** parameter, logically confirming the limiting unitary characteristics

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of **Lp<sup>3</sup>**. From the foregoing it can be stated categorically that the continuum of space is populated with components with a volumetric ratio of **Lp<sup>3</sup>** which is equal to **Mps/Dp** both of which have been derived very accurately and logically through ten alternate methods as the limiting mass and interactive stress density. Reiterating, because of maximum density, minimum cyclic time and minimum displacement characteristics **Lp** attains the status of the smallest, stable linear form, in principle, for single dimensional objects do not exist in reality. Then the real volume of an elemental component of space cannot be less than **Lp<sup>3</sup>**. If the observer chooses the meter and second as the standard measure in meters per second where **C** is the oscillatory rate per second in the **Pho** state, then the unit volume of a component in the continuum of space will be **Lp<sup>3</sup>** cubic metres.. All these three parameters have been derived empirically in Physics too as the Planck mass **Mps**, density **Dp** and length **Lp** but with the correction for the value of **C** as **C<sub>L</sub>**. However the extraordinary significance of these findings was lost due to the concept of space being a void.

The ratio of the unit of interactive activity **My** and unit volumetric state **Lp<sup>3</sup>** provide further proof that confirms the foregoing conclusion unequivocally. The **Brd** parameter defined the numerical difference that separated the simultaneous from the sequential interactive state or the continuum from the quantum and in the process it vanished by merging and therefore was never explicitly identified as a coupling or bonding parameter. Stating it differently, the Planck's constant **h** as energy / frequency played the same role as the constant **My** that differentiated it as stress mass / unit interactive count. Yet Max Planck derived **h** as a factor associated with Planck length and Planck time. But **Lp** has been shown above to have the properties of a stable unit or quantum displacement in the continuum of space. An extraordinary aspect of interactive phenomenon emerges by comparing **h, Lp & My**, which is unknown in Physics

$$\frac{h}{Lp} = Brd = 2\pi^2 - k-1 \qquad \frac{h}{my} \frac{7}{C^2} = Brd = 2\pi^2 - k-1$$

The **Brd** factor is the differential in cyclic period of the simultaneous angular displacement and the resonant linear expansion in the Pho state. Differential angular momentum is converted to linear momentum and the cyclic time difference

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between the two causes the expansive acceleration or compressive deceleration. Since both ratios are equal and **h** is common then:

$$\mathbf{h/Brd = Lp = my (C^2/7)}.$$

The accelerative term **Ap** derived earlier was shown as being equal to **C<sup>2</sup> / Lp** and similarly **7 / My**. Therefore rewriting the equation as a ratio of **h** exposes a well known aspect of phenomena that has not been exposed mathematically in Physics:

$$\frac{Lp \left[ \frac{2\pi^2 - k - 1}{h} \right]}{h} = 1 \quad \frac{My \cdot C^2 \left[ \frac{2\pi^2 - k - 1}{h} \right]}{h} = 7.$$

Further unequivocal proof of Sankhyan logic is given below to show why the Planck's constant must be exceeded to radiate a quantum,

$$\frac{\left[ \left( \frac{Dp}{DD} \right)^{\frac{1}{3}} \cdot \frac{DD}{\left( \frac{my \cdot C^2}{10h} \right)^{-1}} \cdot Rp^3 \right] - PM}{(PM - Pm) \cdot 2} = 1.258767488$$

$$\frac{\left[ \left( \frac{Dp}{DD} \right)^{\frac{1}{3}} \cdot \frac{DD}{\left( \frac{my \cdot C^2}{10h} \right)^{-1}} \cdot Rp^3 \right] - PM}{(Pn - PM) \cdot 7 \cdot rs} = 1.25876748$$

The constant  $K=1.25992$  must be exceeded to radiate but it is just short of that value by a precise ratio **1/Tc** that defines the difference between a compressive and radiative state.

$$\frac{(k - 1.25876748)^{-1} \cdot 2}{C^{1-x}} = 1.0067418085 + \frac{1}{Tc}$$

Interactive compressive stresses must act as a simultaneous unit across **Brd** to equalise with the minimum displacement **Lp**. But in

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an expanding interaction seven quantised states are radiated simultaneously to initiate the process of transmigration as **(2<sup>3</sup> -1 = 7)**, when the interactive quantum ***h*** is externalised (within a cycle or simultaneously). It contains **(2π*C*)<sup>27</sup>** interactive stress counts of the unit ***My***. If ***My*** is considered the mass of the quantum or photon, radiation contains **4.9*E*+17** mass units which transmigrate from node to node as a dynamic vortex containing compressive, expansive and resonant stresses. Hence the spectrum of seven states, as a set of harmonic oscillatory frequencies, is radiated and observed as seven colours or energy density levels. The 2, 4 and 6 harmonics form simultaneous states with defined centre of action characteristics as fermions, while the 3, 5 and 7 harmonics form diffused sequential states as bosons. The process of transmigration contains both aspects, which gives ‘particle and wave’ characteristics observed experimentally. If the harmonic interactions occur within the period of a cycle or simultaneously it creates the magnetic field state (recall the ***Gmr*** value **7*Rs***) but commences radiative transmigration when that ratio is exceeded. The harmonics 1 to 7 are simultaneous but would separate out as a spectrum on commencement of transmigration:

$$1 - \left( \frac{-1}{n} \right) =$$

2.000000000000000
1.250000000000000
1.111111111111111
1.062500000000000
1.040000000000000
1.027777777777778
1.02040816326531

It is to be noted that the seventh harmonic resonates at ***RS*** as an infinite decay factor.

Recalling that ***Lr***, as the density of displacement per cycle, is the maximum and it would divide into harmonic states according to self-similar interactive modes. The ratio of compressive increase would be ***x*** while the corresponding expansive reaction would equal ***x*<sup>2</sup>** and if the resonant interactive relative location is to remain constant as a nodal position then it must attain the ***Todc*** factor in both the simultaneous and sequential interactive states as :

$$(x)(x^2) = x^3 = x - x^2 = 0.236068.$$

Therefore the next resonant nodal count rate would be ***Lg***:

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$$Lg = \frac{Lp(k-1)x^3}{My} = 7.70996491608270E+14 .$$

The **Pho** state limit of **Gmr = 7RS/2** must form the limit of the next nodal harmonic state as an axiomatic limit if it is to be perpetually dynamic **Lf**:

$$Lf = \frac{Lp(k-1)}{My \quad Gmr+Gmr} = 4.57239096841307E+14$$

The limit for a **Pho** interactive displacement density is

$$\log(C) = 2/x^3 = 8.47213595499958$$

Therefore the interactive displacement density will reach the limit at **log(C)** or at twice the oscillatory cyclic period which volumetrically equals 8 units, which forms the base of a field count.

$$Lw = \frac{Lp(k-1)}{My \quad \log(C)} = 3.85498245804135E+14$$

The same limiting count value due to the compressive interactive displacement density increase, as a reaction from the boundary, keeps the **Lw** value stable. Emphasising that the derivation of **Lr**, **Lrw**, **Lg**, **Lf** and **Lw** has been obtained from a space with substantial characteristics has no meaning unless it relates to experimental findings. Further the values depict density of interactive stress displacements within the unit cyclic period. *It would cause the greatest surprise if the values of Lr to Lw are found equal to the spectrum of frequencies of electromagnetic waves at the hydrogen atom boundary. But it should not, for frequency is the reciprocal of time that will decrease with increasing density of interactive states, which can only exist in a substantial continuum of space but not in a vacuous void. Shown below is the equivalence as proof.*

Spectrum	Sankhya	Physics	E. volts
Lr	3.265994E+15	NA	13.5959
Lrm	3.287496E+15	3.2894314E+15	13.604
Lg	7.709965E+14	7.7070000E+14	3.1874
Lf	4.57239E+14	4.5670000E+14	1.89
Lw	3.85498E+14	NA	1.5937
Lph	3.6482E+14	Photoelectric wf	1.5187

Fig: Table of Oscillatory rates at nuclear boundary.

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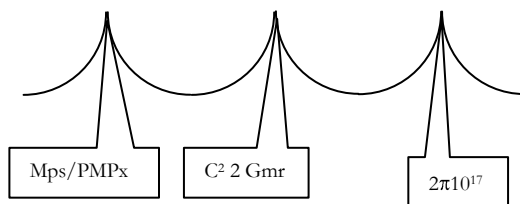
Because space is thought to be a void, Physics has been compelled to look at displacement rate or density per cycle as a 'distance' between nodes of waves with an interval in time, which has been classified as wavelength. The proof given here will confirm the Sankhyan concept of space as being the correct one.

While **Lr** is the coherent state value that cannot be measured, **Lrm** is detected when it begins to transmigrate. **Lr** to **Lg** is classed as an ultraviolet spectrum, while **Lg** to **Lf** is the normal visible light spectrum. The **Lw** value (**Lg/2**) merges with **Lg** and cannot be detected. Other  $(1/2)^n$  values of **Lg** would merge and form nodes where the densities of interactive displacements would rise proportionately but cannot be detected as a change in rate because all the displacements as  $(1/2)^n$  would have merged with **Lg**. The **Lw** value forms the lowest threshold which must be exceeded to radiate or transmigrate a 'coherent vortex' as a particulate state like an electron. The photoelectric work function commences from **Lw**. Compression / expansion change occurs at interactive density **Lw** when the interactive count rate or displacement density per cycle rises to **Lph**:

$$Lph = C^{1+x} 7RS = C^{1+x} Gmr + Gmr = 3.6482E+14$$

Because **C<sup>1+x</sup>** forms the maximum compressed stress count state, transmigration can commence only after the **2Gmr = 7RS** value is exceeded though below that value work is being done within the boundary which results in a change in the energy level but without any radiation. Since the **Pho** has **Pn** and **Pm** states interactively providing the oscillatory potential **Gmr** constantly, any excess count is transferred to the boundary where the **Me** & **Me** states initiate the transmigration process.

Fig: The stress intensity in nodal states.





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The diagram shows the nodal position or wave crest where compressive stress is intense. Three identical equivalents are shown at the same wave crest or node as simultaneously interacting events. The ratio of two oscillatory mass states, the two axially merged states and the simultaneous cyclic states, exist simultaneously at every interactive nodal point. The concept displays the real meaning of simultaneous interactive states where coherent mass, sequential oscillations and centred 'rotation' are all present as an intrinsic characteristic of the node or 'particulate' state. In the trough part the equality is broken in all three modes and transmigration towards a lower count rate begins as a 'wave' of changing parameters. It represents mass, charge and angular momentum parameters in Physics with its particle wave duality and the fermion / boson states defining spin / angular momentum etc.

The fundamental quanta **My** determines the potential level, the sequential time interval and the cycle density at which transmigration or radiation commences. It is to be noted that though all three states depict parameters with different characteristics, the value of the interactive counts per cycle are identical, displaying the extremely accurate level of unification. The different states and its unified values are shown below.

$$\left[ \frac{Ahs}{Br} \right] \left[ \frac{2\pi}{10} \right]^2 Ahs = \frac{Mps}{PM.Px} = C^2 2Gmr = \frac{2\pi}{10} 10^{18} = 6.28266458E+17$$

$$\frac{My(Ahs)}{Br RS} \left[ \frac{2\pi}{7} \right]^2 = h = 6.62619863E-34$$

Another proof of the transition from the coherent and simultaneously interacting state to the sequential or radiative state is the  $7 / (k-1) = 26.93$  factor that also differentiates the proton / electron boundary in the **Pho** state as shown below.

$$\left( \frac{Ne}{Lp} - \frac{h}{7 \cdot Lp} \right)^{-1} = 26.9302314087 \blacksquare$$

Reiterating, the top 3 equations of compressive, expansive and resonant stress-states, corresponding to mass, radiative and charge states are all equal in the coherent, rest mass state prior to the commencement of radiation. The lower equation displays the true quantum nature of **My**, for it must be accelerated by the angular momentum component **Ahs** for the Planck's constant **h** to emerge as an 'energy quantum'.

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From the above, it is absolutely evident that though Planck's constant **h** is considered the energy quantum, in actual fact **My** is the true fundamental quantum in a completely unified field, for it determines the limiting mass, the Pho state and the cyclic potential as of 18 orders as **Ahs** all of which almost equal the Planck's quantum. It underlines the error-potential in Physics when dealing at that energy level, for the Planck's quantum is not a true elemental state. It may also emphasize the singular importance of **My**, if it is realised, that it can factor with equal accuracy all three states of compressive (mass), resonant **Pho** state (charge) and expansive stress transmigration (photon), whereas **h** can be associated only with 'energy' or sequential photon states. Due to the real nature of fundamental space-field in which the coupling constant is Ge, the break in coherence by the Br factor releases an expansive or accelerative vortex as a photon with an interactive count value that had been hidden by the merging of two sets of axial counts

$$Ahs - \frac{(h)}{My} = \frac{C^2}{Ge} = 1.32308452E+17$$

Since the expansive state releases counts, the converse must apply when compressive interactive states prevail. The Br interval, which provides the logic for the empirical derivation of Planck's radiation constant, determines when exactly a simultaneous interaction breaks out into a sequential one. The converse process is when two interactive states become one or act simultaneously within a cycle and is determined by the relationship of the Todc factor in an expansive phase. Compressive self-similar ratio is  $C^x$  whereas C is the number of interactions per cycle. The sequential ratio is  $C/C^x$ . The cyclic time ratio is  $2\pi$ . Recalling that in deriving the fundamental time constant ratio  $Kx$  the basic field state was identified as  $2^3 = 8$ . Applying the Todc rule the ratio to attain coherence or simultaneous compressive state is Fsc:

$$Fsc = \left[ \frac{C}{C^x} \right]^3 \left[ \frac{1}{2\pi} \right]^3 \left[ \frac{1}{2} \right]^3 = 2.5737973E+6$$

If it is simultaneous and achieves coherence therefore two axes must merge and the counts would vanish, leaving Alpha, the reciprocal of the fine structure constant in Physics.

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$$Alpha = \frac{C}{C^x} \cdot \frac{1}{2\pi} \cdot \frac{1}{2} = \frac{C^{1-x}}{2\pi+2\pi} = 137.04339643$$

The alpha ratio above is based on a cycle time of 10 interactions per cycle, whereas in Physics the measured value is taken across the Pho state gap at the electron boundary and is therefore as shown:

$$\frac{\frac{C^{1-x}}{2 \cdot 2 \cdot \pi}}{\left[ \frac{1}{\left( \frac{7}{k-1} \cdot \frac{10}{2 \cdot \pi} \right)^2 \cdot 10} + 1 \right]} = 137.035937423$$

The proof of the foregoing is obtained by an alternate method. The compressive count per cycle is  $C^x$  and the incremental increase in volumetric expansion ratio that must be countered is 7 (=  $(2^3-1)$ ). The ratio of change in relative area is  $1 + (k-1)^2$  when doubling the density of the coherent state. The product should equal Fsc.

$$\left[ C^x \left[ 1 + (k-1)^2 \right] 7 \right] 2 = 2.5738 + 6 = \text{Fsc}$$

The logical compressive process proves that the fine structure constant in Physics is an empirical measure of the axial change of interactive rate whereas increasing density must be of the third order. This proof provides unequivocal evidence for a space with a substantial foundation and the above parameter could never be derived in a vacuum.

The maximum interactive stress count ratio per cycle is **St** in the continuum of space. While every coherent state has **St** as a determining factor, yet its existence as the most vital contributor to the substantial qualities of space has never been identified, exposed or proved for a very axiomatic reason. The constant **Kx** has been derived and shown to be the sum of all the odd numbered interactions in a coherent state that contributed to the limiting displacement cycle ratio. Comparing **Kx** with **St** exposes a very significant fact that logically explains how and why the maximum potential in the coherent state has never been detected and that process gives the most important and incontrovertible proof of the existence of the substantial continuum of space. The neutral and

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coherent parameter **Ne** identified as the state prior to transmigration or radiation provides the important clue. The parameter **RS** as the indicator of a decay process in infinite time must provide a logical reason for the non-detectability of **St**. The final proof as **Fp** is given below.

$$Fp = \left[ \frac{St}{RS} \right] \left[ \frac{Ne}{KxRS} \right] = 2\pi^2 = 39.4784176$$

The most extraordinary proving parameter **Fp**, as the merged and hidden factor in a coherent state, is proof beyond compare. Compounding the surprise is the fact that **ST**, **Kx** and **RS** are derived from axioms, without a single value taken from an extraneous source. The conclusion that space has substantial properties is ascertained by the above results because a void certainly cannot produce a density parameter **Fp** but its coherent state can imitate a void and hence the debacle in Physics. Besides, these important parameters are unknown to the Physics academia. It also validates the new **Todc** concept as a real principle in confined domains operating through self-similar rules. The next question to confirm the proof is the fact that  $\pi$  is the asymptotic limiting sum of sequential interactions and therefore has the capacity to store infinite interactive time cycles simultaneously as diminishing parameters:

$$\frac{\left[ \frac{2 \cdot \pi}{A_{55}} \right]^2}{St} = 1.3422879 \quad \left( \frac{2^{58} \cdot 20}{2 \cdot \pi} \right)^2 \cdot \frac{1}{St} = 2.1760352$$

The self-similar displacement parameter  $A_{55}$  indicates that at the rate of 55 interactions per cycle the maximum stress **St** is equalised. Similarly the resonant half waves at the 58<sup>th</sup> harmonic equalise with **St**. The stress, **St** cannot be released spontaneously hence this potential remains locked up in the continuum of space. The **Pho** state alone has the potential but it is not enough to provide the 7 Ne units required for radiation.

$$\frac{PM - Pm}{Ne} \left[ \alpha^2 \right] = 1 \dots \dots \text{required} \dots 7.$$

The incontrovertible proof for Sankhyan logic is derived below by identifying the real nature of the **Pn** state or the Neutron. While in the **Pho** derivation it has been identified very accurately as

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the simultaneous compressive-stage increment that balances the sequential expansive factor as a lepton state or the electron. The derivation below defines the precise change in the interactive rate which increases the stress intensity to compress it into the simultaneous mode as a **Pn** state or the Neutron. Recall the **Fsc** factor, which showed that, on total synchronisation of interactive rates along all three axes, it lead to coherence and thereby attained the simultaneous state. In it, two axes values merge and vanish, leaving the measurable **alpha** value.

$$\frac{\left[ \frac{7}{k-1} \cdot \left( \frac{10 - \frac{\sqrt{5}-2}{2}}{2\pi} \right) \right]^3 + \frac{Kx}{Px}}{C^3} = 1.674927645k \cdot 10^{-27} \quad Pn = 1.674927645k \cdot 10^{-27}$$

It is an extraordinarily precise factor  $x^3/2 = .118034$  that reduces the full cyclic count period of  $10/2\pi$  to the value shown below.

$$\frac{10 - \frac{\sqrt{5}-2}{2}}{2\pi} = 1.572763738$$

It creates the Pn or Neutron state, which is extremely accurate.

$$\text{MUON} \quad \frac{Pn - \left[ \left( \frac{Ne \cdot \frac{7}{k-1}}{Pn - Pm} \right)^{-2} \cdot G \cdot Rp^3 \right]}{Mep} = 105.963091420$$

$$\text{W boson} \quad \frac{\left( \frac{7}{k-1} \right)^3 \cdot \frac{Mee \cdot 7}{Kxrs} + PM}{PM} = 80.671369564$$

$$\text{Z Boson} \quad \frac{\left[ \left( \frac{7}{k-1} \right)^3 \cdot \frac{Mee \cdot 7}{Kxrs} + PM \right]}{\frac{PM}{\sqrt{k}}} = 90.550550721$$

Summarising, the **PM** state, centred on the **(Kx/Px)** coherent and stable ratio forming the fundamental holographic framework, is compressed by the simultaneous merging of interactive counts along two axes to form the higher mass value **Pn state**. Within the same cycle but at a different phase, the breaking of coherence between two axes, releases interactive counts to form the **Pm** state. This oscillatory exchange ratio, defined as **(Gmr + Gmr)**, keeps the **Pho** state in a perpetually dynamic state at the nuclear core and at the same time it keeps the leptonic boundary or the electron, in a state of resonant decay **RS**, in infinite time.

The table below gives equivalent states in which **St** plays a key role in conserving, absorbing and maximising the potential in space in a number of related ways.

Stress	Ratio	Process	Stress (Mass / energy)
St	Mps/tp	impulse	Coh. Mass Density
St	KxG/PMPx	Compression	Coh. Mass Spin
St	KxPt <sup>2</sup> /PgRp <sup>2</sup>	Expansive	Coh. Mass Resonance
St	KxRS7 <sup>2</sup> /MyC <sup>2</sup>	Resonant	Seq. Energy Transition
St	KxRS(2p) <sup>2</sup> /Ne	Transmigration	Seq. Energy Radiation
St	MU/TT	Radiation	Seq. Accelerative

The table displays the limiting stress **St** has a central importance in all simultaneous interactions that are coherent, resonant and expansive. The continuum of space is always at this stress level. Physicists Chandrashekhar and Sakharov hypothesised that the **St** term contributed to the elasticity of space and several formulations exist on this concept. But as shown above it is a coherent compressive stress contributing to mass characteristics in contrast to sequential, expansive and transmigratory stress-states that represent energy states in Physics.

*From the foregoing proofs the coherent compressive **St** stress potential in space remains constant and at the highest density. It leads to the unavoidable conclusion that components in space at the highest density must have the smallest displacement length per cycle as **Lp**. Being volumetric **Lp<sup>3</sup>** must be the relative dimension of a substantial 'particulate' state in the continuum of space.*

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*As derived earlier the relationship of **Lp<sup>3</sup>** to **D1** the cyclic unit of space has the same ratio of **MU/My** which forms an essential proof of conservation of interactive counts, angular momentum and cyclic time. The mass **Mps** and highest density **Dp** have been derived earlier as the limiting parameters. In Physics these parameters have been derived and accepted as a part of Planck's quantum mechanics and principles and current theoretical understanding is based mainly on the 'energy quantum' **h** which is counterpart of the Sankhyian 'mass quantum' **My**. Coupled to the fact that the **Ap St, Ne, h** and **Br** form an intrinsic interactive ensemble at the **Mps** boundary where the displacement distance **Lp** makes it the most dynamic state in which, potential changes by converting linear acceleration to angular momentum and vice versa. All of which is carried out as coherent interactions in the simultaneous state that cannot be detected. However evidence of this activity exists in the term 'Planckian Foam' in space. The unequivocal conclusion is that the continuum of space is populated with components as **Lp<sup>3</sup>** with mass **Mps**, density **Dp**, inward acceleration **Ap**, cyclic displacement interval **tp** at the constant resonant interactive rate **C**.*

*If an abnormal accelerative interaction reduces the potential, it absorbs any **Ne** state with an excess count rate in the dynamic substratum, to attain the balance. The ability to maintain a full stress potential provides the initiative to transmigrate stresses below the radiation level which creates a gamut of esoteric phenomena described as ESP etc. The mathematical formulation of the hidden spectrum is derived in the next chapter.*

Further proof for the existence of the substantial continuum of space exists in the laws governing gravitational mechanics. Existing formulations primarily depend on mass and its rate of movement as the deciding parameter at the macro level. However at the nuclear hydrogen boundary a similar activity is defined in terms of spectral characteristics connected with resonant states. Sankhya logic establishes that both scale levels can be defined by both methods with equal accuracy. Both Newtonian and Relativistic formulations lack predictability of the spacing between planets and its radius. The 'harmony' existing between the planetary bodies can be defined and derived only through the Pho principle that governs the entire dynamism existing in space. Sankhya derivations provide the algorithm to derive the radius of planets as an integrated characteristic governed by the rules that determine the orbital distance and period of revolution. While today's gravitational mechanics calculates the paths followed by

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planetary bodies, dictated by mass concepts, Sankhya derives the rate of stress transmigration of the components in space through the **Pho** algorithm that provides the motive potential for any and every movement of bodies in space as a consequence of the variation of interactive density from a common centre.

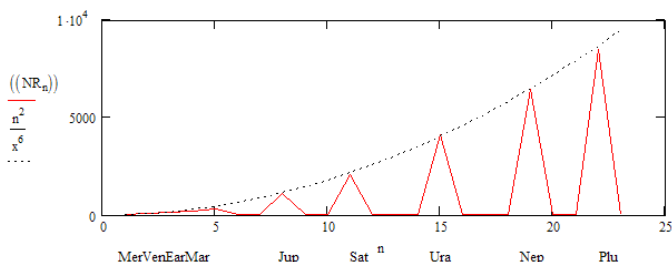


Fig: Spectral characteristics of Gravitation.

The dashed-line shows the spectral curve based on the Todc rule as the ratio of the radial distance count to its third order period raised to **log 2**, as the stresses in space are always in a coherent state, equal to  $(n/x^3)^2$ . The red triangles depict the orbital position of all the 9 Planets with reference to the spectral harmonic curve. The proof of Sankhyan logical correctness is confirmed by the symmetry and synchronisation of the two ratios, one calculated and the other observed and measured.

***Insert here  $Tc^2$  factor as density of all planetary and stellar bodies forming the hard surface.***

This proof should be a deciding factor in attaining scientific conviction to make a paradigmatic shift towards a real and dynamic space. The entire calculation is based on the periodicity of sequential increment of radial distances, similar to the hydrogen spectrum, which however uses energy differential as the criteria since space is deemed a void.



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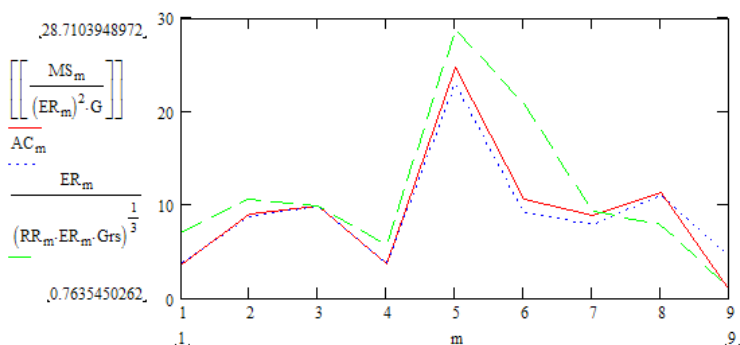


Fig: The mass, planetary radius and acceleration g.

The graph above shows that the diameters of orbiting bodies are determined by a similar law based on the density of the interactions in space coupled to the volumetric resonances maintained by the Pho state or the Gmr ratio. The red line in the graph displays measured parameters as it is today. The green line gives the theoretical derivation based on the application of the Todc rule in a space that is operated in the Pho state. The dotted line gives the theoretical projection based on the shift of Earth and Mars from the position dictated by the green line due to two reasons. The Earth and Mars moved closer to the Sun because the sixth planet broke up and formed into the asteroid belt. The sixth position is unstable as the planet diameters past that position increase to the next harmonic. Had Mars been larger, as it should have, the sixth planet would not have formed but its formation was a direct reason in dwarfing Mars. Also another reason is possible for the earth too should have been larger consistent with its position but might have lost a moon as Mars, causing the astral upset. In the Sankhyan concept of a scale invariant phenomenon in the continuum of space, the mechanism based on the spectral characteristics of the field is the correct method of defining gravitational principles for it results in understanding cosmological processes. It also resolves the question of how astrology was practised effectively, because it's enough to use the angular harmonic positions to see the influences and the resonant period being constant the forecast of future positions could be done accurately and confidently. Millennium old Vedic almanacs are as accurate as modern ones.

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The elliptical rigorous proof of the symmetry of stable states and its Sanskrit names are given in the table below where Ce = centre, Sp = spoke in hexagon, stab = stable state.

Ce.	Sp.	Boundary	Stab.	Physics	Sanskrit	Stress-type
My	C <sup>6</sup>	Kx	Kx	New	Purusha	Potential-max
My	C <sup>5</sup>	Mps/7RS	Mps	Planckmass	Mahad	Coherence
My	C <sup>4</sup>	(RS/St) <sup>0.5</sup> Kx7	St	CL <sup>3</sup> /G <sub>N</sub>	Linga	Maxdensity
My	C <sup>3</sup>	PM Px (Pho)	PM	Nucleonmass	Prikriti	Massdensity
My	C <sup>3</sup>	Me Px/const.	Me	Leptonmass	Vikriti	Fluxdensity
My	C <sup>2</sup>	Ne 7/(2 $\pi$ ) <sup>2</sup>	7Ne	Planckcon h	Vikaro	Radiate
My	C <sup>2</sup>	Ne (7/2 $\pi$ ) <sup>2</sup>	Ne	Neutrino	Bhava	Transmigrate
My	C <sup>2</sup>	Lp 7	Lp	Plancklength	Krama	Unit length
My	C	tp 7	tp	Plancktime	Yugapac	Unit cycle
My	1	(2 $\pi$ ) <sup>3</sup>	My	Photonmass	Vriti	Unit-point

**Fig: Proof of Self similarity, scale invariance and symmetry**

The unit **My** state provides the numerical count values of progressively increasing densities as **C<sup>n</sup>**, which is the only way interactive rates can be raised to increase interactive stress densities.

The conclusion that space is real, substantial and identifiable should not be a surprise. When any object is observed or detected, it is space that is really detected but in the altered form of stresses. Colours and forms hide the canvas in a paining but the art lover little realises that it is only the altered 'backing' that he is raving about. The change in viewpoint will be slow to come around but the realisation that everything is only a hologram of stresses with various densities and activity rate will make the shift in paradigm. In Vedic parlance all phenomena is called 'Maya' or an illusion and is not without a foundation in absolute Sankhyan scientific terms.

Within the coherent domain in space the sum total of activity remains constant and conserved. The sequential interactions can be detected or counted and the simultaneous ones can be calculated. The super-symmetric state of space ensures that the property of self-similarity and scale invariance allows the observer to theoretically assess every dynamic situation using the axiomatic and invariant relationship. A comprehensive table of equivalents and invariants are given in the appendix to see the symmetry and range of associations.

Reiterating that while Sankhyan derivations are from a radically different foundation, both in terms of conceptual logic and the mathematical process followed in Physics, the numerical

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congruence of results inexorably drives home the fact that the continuum of space with identifiable properties has equal if not more validity than the concept of space as a void or vacuum. The question arises as to what are the advantages of making a paradigmatic change on a vital aspect of Physics. The answer is that exposing two thirds of phenomena hidden from human understanding can give a tremendous motivation to humanity to correct its focus and thereby gain the maximum advantage that the substantial continuum of space can offer, especially in the realm of extracting over-unity energy from the limitless dynamic source. The secrets of developing technology using levitation and anti gravity principles, is hidden in the benign sea humanity calls space. The nascent change in the potential state has more to offer man in the way of fundamental knowledge in ESP, genetics, astrology, event forecasting and teleportation than intense radiation or explosion. It opens the doors to infinite freedom and unlimited exploration of the cosmic scene. The derivations in the following chapters will identify the axiomatic mathematical basis for such advancement.

What is the real difference in concept between current physics and Sankhyan derivations? Fundamentally it is mode of approach. Starting from one and additively reaching the maxima is an unquestionable process of arriving at the limit. But if one creates a limit by making assumptions and then fractioning it to reach the elemental state has three uncertainties. The maxima, the elemental and the derivational process are open to doubt. The case to point is the fact that in Physics as of now there are a plethora of logically disconnected states defining phenomena that we know arises out of a single parameter. The statement in Physics that fundamental interactions are four in number as forces with gravitational, strong nuclear, weak nuclear and electromagnetic characteristics is in itself a denial of the elemental nature of interactions. Whereas the Sankhyan logical foundation rests on the elemental nature of a perpetual harmonic oscillatory state that need not be started for it could never be ended. The perpetual nature arises out of the conservation of time in an activity that is equal and opposite at each instant. This state is only possible with two equal components in adjacent positions with freedom to collide, reverse and expand.

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In a sea of components, every two adjacent component fills this criteria and therefore the interactive state continues perpetually.

Note: What Physics needs today is a benign creator who can substantiate the concept of a Universe, beginning from empty space, through an explosive Big Bang process that expands in a vacuum and miraculously retracts to implode at the centre, to restart the cycle. No engineer would have seeded the present theories in Physics, for he would have been forced to make his theories into predictable realities, whereas the ivory tower of Physics is insulated from the real world by the grandeur and loftiness of ideas far removed from the reality.

Children lap up fairy stories and so does the adult if the stories are based on "Principles". To an engineer, the stories of physics are based on myths, magic and magnificence.

*In current mainstream physics, a Theory of Everything would unify all the fundamental interactions of nature, which are usually considered to be four in number: gravity, the strong nuclear force, the weak nuclear force, and the electromagnetic force. Because the weak force can transform elementary particles from one kind into another, the TOE should yield a deep understanding of the various different kinds of particles as well as the different forces.*

.  
*The **holographic principle** is a property of quantum gravity theories which resolves the black hole information paradox within string theory. First proposed by Gerard 't Hooft, it was given a precise string-theory interpretation by Leonard Susskind.*

*The principle states that the description of a volume of space should be thought of as encoded on a boundary to the region, preferably a light-like boundary like a gravitational horizon. For a black hole, the principle states that the description of all the objects which will ever fall in is entirely contained in surface fluctuations of the event horizon.*

*In a larger and more speculative sense, the theory suggests that the entire universe can be seen as a two-dimensional information structure "painted" on the cosmological horizon, so that the three dimensions we observe are only an effective description at low energies. Cosmological holography has not yet been made mathematically precise, partly because the cosmological horizon has a finite area and grows with time.*

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*The **Standard Model** of particle physics is a theory of three of the four known fundamental interactions and the elementary particles that take part in these interactions. These particles make up all visible matter in the universe.*

*The standard model is a gauge theory of the electroweak and strong interactions with the gauge group  $SU(3) \times SU(2) \times U(1)$ . To date, all experimental tests of the three forces described by the Standard Model have agreed with its predictions.*

*The Standard Model falls short of being a complete theory of fundamental interactions because it does not include gravity and because it is incompatible with the recent observation of neutrino oscillations. In order to introduce neutrino masses, the standard model can be modified by adding a non-renormalizable interaction of lepton fields with the square of the Higgs field. This is natural in certain grand unified theories, and if new physics appears at about  $10^{16}$  GeV, the neutrino masses are of the right order of magnitude*

Physics to a human investigator must be based on observational techniques for it to be meaningful. Must be capable of detection and verification. Counting discrete events is the easiest and accountable method. But unless the event has a discrete duration that identifies it as such, the counting method cannot be accurate. Hence a method that predicts accurately the events that occur within the discrete duration becomes necessary. Only an axiomatic mathematical procedure can predict the state of events within a discrete period within which the sequence of events form a continuum of activity or a cycle.

GREATEST PROOF OF SUBSTANTIAL FIELD AND  
GENETIC FREEDOM TO GROW ONLY ON EARTH  
ECCLIPTIC ORBITAL OSCILLATION OVER 25650 YRS  
AND 216 MILLION YRS AROUND GALAXY CREATES THE  
EXPANSION OF GENETIC MOLECULES TO DINOSAUR  
LEVEL AND SHRINKS TO FLEA LEVEL AT THE ORBITAL  
DIRECTION CHANGE LIKE SUMMER WINTER ON  
EARTH.