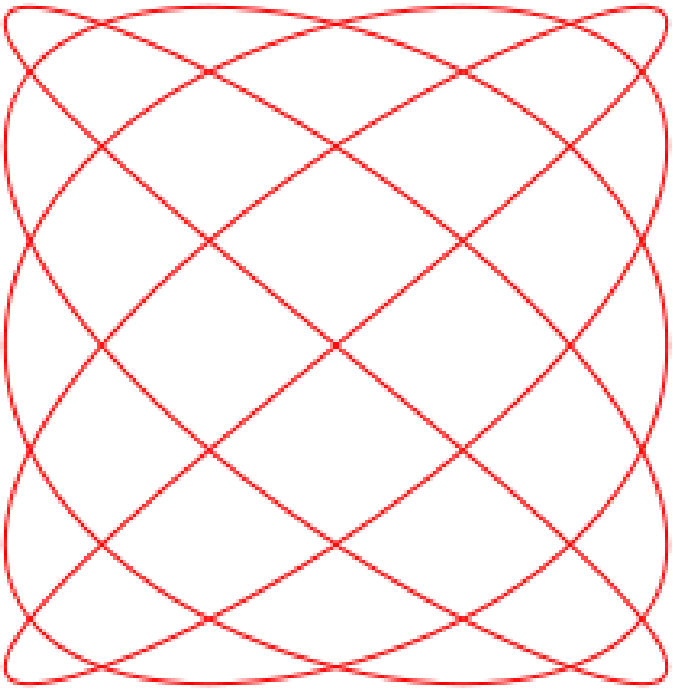
Lissajous Figures, Octonions, Sedenions and G2 Exceptional Lie Algebra

By John Frederick Sweeney



Abstract

The work of Robert de Marrais intersects with Vedic Physics at the point of Lissajous Figures (Bowditch Twirls). That is to say that modern mathematical physics meets ancient Vedic Science at a point of nuclear physics anticipated by but not yet articulated in western science – the Purushka. In Vedic Physics, Lissajous Figures of combinatorial waves meet at the crossroads of three types of matter. This paper explains the differences between the Electromagnetic and Weak forces from the point of view of Vedic Nuclear Physics.

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Introduction

Robert de Marrais left behind an unfinished body of work, which pointed towards future areas of research, to be explored only by the most hardy of mathematicians. With the exception of Frank “Tony” Smith, few have followed up on the research areas that de Marrais had pioneered. Moreover, de Marrais had gleaned important insights about the Exceptional Lie Algebra called “G2,” from the work of Guillermo Moreno, who passed away a decade ago.

The field in question refers to G2, the Octonions (discarded by Sir Robert Penrose as useless for physics) and Sedenions, which remain fairly unexplored in contemporary mathematical physics. Through the metaphor of Box Kites, de Marrais describes the necessary connections between G2, Octonions and Sedenions, in the 42 Assessors and subsequent papers.

De Marrais intuitively chose the 42 Assessors as his metaphor for the Zero Divisors of Sedenions from the Egyptian Book of the Dead, or illustrations of the Egyptian Underworld in the Am Duat. As this author has shown in other papers published on Vixra, the remotely Ancient Egyptians knew of the Exceptional Lie Algebra G2 (its root system, the Flower of Life, is inscribed in the basement of an ancient temple) and the Am Duat in fact describes the Substratum, the region in Vedic Physics where Dark Matter exists.

This paper connects the work of de Marrais with that of G. Srinivasan, an Indian writer who has interpreted various Sanskrit classics along the lines of high – energy physics. The purpose of this paper is to provide the complete Vedic Nuclear Physics understanding about this process, as a guide to the immature version, which western mathematical physicists fumble to discover. With Vedic Nuclear Physics as a reliable guide, contemporary mathematical physicists may fill in the missing blanks in order to render a holistic nuclear science for the 21st Century.

Electromagnetic Spectrum

(Wikipedia)

Electromagnetism is the study of the **electromagnetic force** which is a type of physical interaction that occurs between electrically charged particles. The electromagnetic force usually manifests as electromagnetic fields, such as electric fields, magnetic fields and light. The electromagnetic force is one of the four fundamental interactions in nature. The other three are the strong interaction, the weak interaction, and gravitation.[1]

The word *electromagnetism* is a compound form of two Greek terms, ἤλεκτρον, *ēlektron*, "amber", and μαγνήτης, *magnetic*, from "magnítis líthos" (μαγνήτης λίθος), which means "magnesian stone", a type of iron ore. The science of electromagnetic phenomena is defined in terms of the electromagnetic force, sometimes called the Lorentz force, which includes both electricity and magnetism as elements of one phenomenon.

The electromagnetic force plays a major role in determining the internal properties of most objects encountered in daily life. Ordinary matter takes its form as a result of intermolecular forces between individual molecules in matter. Electrons are bound by electromagnetic wave mechanics into orbitals around atomic nuclei to form atoms, which are the building blocks of molecules. This governs the processes involved in chemistry, which arise from interactions between the electrons of neighboring atoms, which are in turn determined by the interaction between electromagnetic force and the momentum of the electrons.

There are numerous mathematical descriptions of the electromagnetic field. In classical electrodynamics, electric fields are described as electric potential and electric current in Ohm's law, magnetic fields are associated with electromagnetic induction and magnetism, and Maxwell's equations describe how electric and magnetic fields are generated and altered by each other and by charges and currents.

The theoretical implications of electromagnetism, in particular the establishment of the speed of light based on properties of the "medium" of propagation (permeability and permittivity), led to the development of special relativity by Albert Einstein in 1905.

Although electromagnetism is considered one of the four fundamental forces, at high energy the electroweak force and electromagnetism are unified. In the history of the universe, during the quark epoch, the electroweak force split into the electromagnetic and weak force.

Weak Force (Wikipedia)

In particle physics, the **weak interaction** is the mechanism responsible for the **weak force** or **weak nuclear force**, one of the four fundamental interactions of nature, alongside the strong interaction, electromagnetism, and gravitation. The weak interaction is responsible for both the radioactive decay and nuclear fusion of subatomic particles. The theory of the weak interaction is sometimes called **quantum flavordynamics** (**QFD**), in analogy with the terms QCD and QED, but in practice the term is rarely used because the weak force is best understood in terms of electro-weak theory (EWT).[1]

In the Standard Model of particle physics, the weak interaction is caused by the emission or absorption of W and Z bosons. All known fermions interact through the weak interaction. Fermions are particles that have half-integer spin (one of the fundamental properties of all particles). A fermion can be an elementary particle, such as the electron, or it can be a composite particle, such as the proton. The mass of W^+, W^-, and Z bosons is far heavier than that of protons or neutrons, thus causing the short-range of the weak force. The force is termed *weak* because its field strength over a given distance is typically several orders of magnitude less than that of the strong nuclear force and electromagnetism.

During the quark epoch, the electroweak force split into the electromagnetic and weak forces. Most fermions will decay by a weak interaction over time. Important examples include beta decay, and the production of deuterium and then helium from hydrogen that powers the sun's thermonuclear process. Such decay also makes radiocarbon dating possible, as carbon-14 decays through the weak interaction to nitrogen-14. It can also create radioluminescence, commonly used in tritium illumination, and in the related field of betavoltaics.[2]

Quarks, which make up composite particles like neutrons and protons, come in six "flavours" – up, down, strange, charm, top and bottom – which give those composite particles their properties. The weak interaction is unique in that it allows for quarks to swap their flavour for another. For example, during beta minus decay, a down quark decays into an up quark, converting a neutron to a proton. In addition, the weak interaction is the only fundamental interaction that breaks parity-symmetry, and similarly, the only one to break CP-symmetry.

G2, Octonions, Sedenions and the 42 Assessors

In the realm of the Octonions, only trivial cases entailing null or non-distinct letters can occur. This is certainly connected to the fact that each of the seven Octonion triplets has exactly one unit in common with any other triplet. Translating this into conditions among Sedenions is not immediately obvious, however.

First, any product like the above implies *six* different triplets, since each Sedenion index pair belongs to the triplet containing its XOR product. Hence, A and B form a triplet with A *xor* B = X, while C and D form another with C *xor* D = Y. Moreover, the requirements just given mandate that *two pairs* among the six must necessarily share a term each: (A, C) and (B, D) share some E; (A, D) and (B, C) share some F.

In fact, we can say more than this. Since the Octonions and their copies contain but seven imaginary units, and the explicit requirements for zero-dividing already exhaust six, then:

Lemma: Given two Co-Assessors (A, B) and (C, D), A *xor* B and C *xor* D have the same index G.

This clearly implies that the units involved in multiplication can be arranged in both Assessors so that (A *xor* B) - (C *xor* D) = 0, without effect on the end result. This "axiom of choice" will be of great use in the proof behind our second production rule. For the moment, though, we provide, prove, and apply

Production Rule #1 ("Three-Ring Circuits"). Given a pair of Co-Assessors (A, B) and (C, D), a new Assessor (E, F), mutually zero-dividing with both its progenitors, can be created by assigning the new letters to the two distinct XOR's (A *xor* D = C *xor* B; A *xor* C = D *xor* B).

Proof: Do the zero-dividing arithmetic, keeping track of the triplet cycles as they reveal themselves.

$$
\begin{array}{lll}
 & C + D & \\
 & \underline{A + B} & \\
[B\ xor\ C =] + F & + E\,[= B\ xor\ D\,] & \Rightarrow (B, C, F);\ \ (B, D, E) \\
\underline{[A\ xor\ C =] - E} & \underline{- F[= A\ xor\ D\,]} & \Rightarrow (D, A, F);\ \ (C, A, E) \\
 & 0 &
\end{array}
$$

Now, substituting from the associative triplets listed to the right, form products of (E $\pm$ F) with the initiating Co-Assessors, allowing for unknown signing via the "sg" variable:

$$
\begin{array}{ll}
E + sg\,F & E + sg\,F \\
\underline{A + B} & \underline{C + D} \\
- D - sg\,C & + B - sg\,A \\
\underline{+ C + sg\,D} & \underline{- A + sg\,B} \\
0 \Leftrightarrow sg = (+1) & 0 \Leftrightarrow sg = (-1)
\end{array}
$$

Clearly, exactly one of these must be true for fixed sg. By moving sg between lines of a product, it is obvious that we get a collection of six distinct product-pairs involving (A $\pm$ B), (C $\pm$ D) , and (E $\pm$ F). As we make zero by multiplying the Assessors in some sequence, we are forced to switch from DOS to UNIX paths in one of two cross-over sequences, the knot theorist's trefoil (dduddu), or else the "unknot" of a "triple zigzag" (dududu). In the GoTo Listings, the first of each O-trip's 4 columns displays, in 3 consecutive lines, the first half of its sole zigzag's 6-cycle; the other 3 columns show the 3 trefoil couplings.

Dynamic Content. Whether trefoil or zigzag, the dynamics are analogous – and require adapting the usual exponential power-orbit to the special requirements of their nonassociative (and even non-alternative) world. The complex domain's exp(ix) = cos x + i*sin y requires various "correction terms" to work in less orderly settings. An Assessor's pair of imaginaries indexed ($A \pm B$) can't simply be recast as exp(i_A) (cos x + i_C sin y), A *xor* C = $\pm$ B, with a Co-Assessor indexed ($D \pm E$) being recast similarly. For the zero to show in the product, the sine and cosine terms in the right-hand parentheses must evaluate ***last***.

The simplest way to guarantee this is by fiat: define a "zip" (Zero-divisor Indigenous Power-orbit) function. Ignoring internal signing for simplicity, for Assessor indices (A, B) and (C, D), and angular variables x and y, write products of the circular motions in the two Assessor planes like this:

$$\begin{aligned} \text{zip}(A, B;\ x) * \text{zip}(C, D; y) &= (\cos x * i_A + \sin x * i_B) * (\cos y * i_C + \sin y * i_D) \\ &= (\cos(x + y) * i_{[A\ xor\ C]}) + (\sin(x - y) * i_{[D\ xor\ A]}) \end{aligned}$$

We know, from our first production rule, how to interpret this: two currents with opposite clockwise senses or "chirality," spawned by angular "currents" in two Co-Assessors' planes, manifest as alternately con- and de- structive wave interference effects, in the plane spanned by the third Assessor they mutually zero-divide. In this "toy model," patterns readily recognizable as Lissajous figures would sweep through the origin, "showing on the oscilloscope" in accordance with the opposing currents' relative velocities (provided, of course, their ratio only involved small integers).

Vedic Physics on Lissajous Figures

The following sections originate in a book about Vedic nuclear physics, and include all of the parts which discuss Lissajous figures. The author of this paper has edited these paragraphs for errors and misspellings.

Sutra 51

Uha: shabdhoadhyayanam
knowledge gained cause of vibrations through research
dhukhavighathasthrayah suhrthaprapthih
stress colliding tripleacting intensive-superpositioned
dhaanam cha siddhayo'ashto siddhey:
divergent also synchronised 8th. order coherence
purvon'gkushasthrividhah.
previously controlled state third power

Meaning: Knowledge gained through research on vibratory or oscillatory stress caused by colliding interactions follow three step action (of compression – shuttling- expansion –guna mode) leading to intensive super - positioned, divergent, or synchronised state, raised to the eighth power coherent mode. The original state prior to the interaction has been established in a controlled, compressed, cubic, volumetric state, raised to the third power.

Explanation: The components of the substratum exist in a dynamic and synchronised state corresponding to a volumetric or cubic representation and follows a third - order damping control or reaction, proved and established in the derivation of rules controlling the triple - acting guna interactions.

The normal dynamic state is maintained by resonant interactions wherein the three phases of Thaama compression, Rajah shuttling interaction and consequential reactive Sathwa expansion that equalises according to Swabhava or self - similar rules.

However, when a collision occurs, the intensity causes the vibrations to aggregate, con the component such that the density increases to eight times or powers (instantaneously). The proof of this behaviour is established by analytical and mathematical logic as follows: at the instant of collision the oscillatory counts of the two components combine to form a THAAMASIC increase proportionally to two units.

The increment must take place along all three axes to maintain the synchronised and centred state, so the count value rises to 2 cubed = 8 within the instant duration of the collision (See note 1).

The corresponding RAJASIC interaction must equal 8 counts in the normal sequential spatial shuttling form in which it normally oscillates. The SATWIC expansive reaction must account for the 8 units by equalising in an expansive mode. Since only two components are involved in the colliding interaction, the reactive values must be generated only by these same two units, as an expanding displacement.

Had there been eight unit components involved in the collision, equalisation could have been possible within the unitary cycle by all the 8 components absorbing the 8 counts. Therefore, the two unit components must now equalise in eight sequential steps or stages or the duration must equal eight sequential steps to absorb the increased counts.

Subtracting the normal unit displacement in a unitary cycle there are seven additional expanding vibrations or oscillations superposed or accumulated on the component. Therefore the Raja interactive shuttling duration shows seven distinct phases of the oscillations that are superposed in a sequence of seven additional wavelengths in a cycle. This state continues because the next cycle adds a similar count value so that the counts increase logarithmically to the 8th Power in a cycle.

As a cycle contains 10 units as a count duration, (Suthra 30) the 8th power is based on 10. So the consistent , constant, resonant, synchronised state of a cycle must contain 108 counts increment or additional interactive displacements that are equally subdivided into the expansive RAJASIC – SATWIC cycle.

In sum, an intense colliding interaction value rises to two units that are then translated into cubes of two displacements that superpose. The expansive reaction equalises the instantaneous rise in cycle time value of 8 in sequential displacement of 8 cycles. Subtracting the normal, usual unit value, there exist seven sequential expanding cycles for each intensive collision. If the 3 axes counts are synchronized, then the count remains at 108 and the spherical boundary remains undisturbed .

If the 3 axes lose synchrony the spherical qualities, the count rises to a maximum of 1025 . The observed spectrum of seven colours in light created by an accelerated photon as set , or the seven sound frequencies created by an impact in air are the consequences of the above explanation.

Tthe substratum exists in constant dynamic and self - similar interactions. Light is produced only when it is in an accelerative or unbalanced and therefore non –spherical interaction. Had the case been otherwise, then light would spontaneously emit from the Substratum. Spherical photons with helicity zero would have been detected. Substratum components oscillate continuously at a self - similar rate of 296,500,000 cyclic interactions, consistent with a stable oscillatory cycle due to a1 to 2 difference in timing between the axes.

Similarly, the field of air molecules vibrate at the same proportionate self - similar rate of 256 interactions for a unitary cycle, because the air field is not a free one and synchrony along two axes is forced. The statement that there are so many interactions in a cycle means that not a single interaction is simultaneous with another during that cycle. In light and sound, and in every spherical harmonic oscillator there are seven incremental levels of changing values before they repeat.

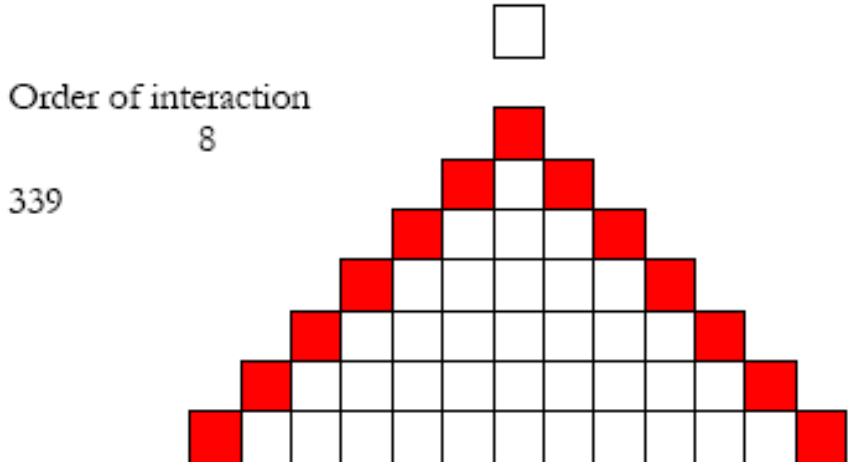
This situation is true only if the field functions in the normal SWABHAVA state, free from external influences. Above all, this self - similar behaviour is possible in a Substratum of equalised, similar, identical and compacted plenum of components.

Note 1. Using momentum conservation (though not applicable) principle and using a unit mass then the displacement on colliding will be half the diameter of the component and the volume will be proportional to ½ cubed and density will rise to 2 cubed within the impact duration and this must be dissipated by a linear movement of both units away from the centre. If both units move at the same speed in opposite directions the centre of collision remains stationery. If one remains stationery the other moves away at 108.

Note 2. The same behaviour takes place when measuring waveforms on an oscilloscope. If the timing between the vertical and horizontal axes is identical then a single diagonal line or a circle would be visible. If the timing between the two axes is made different then numerous waveforms in continuous motion would be visible. A triggering pulse is needed to make the waveforms superimpose one train of waveforms on the next train to make them stay stationery.These patterns are called Lissajou figures and are used to study the state of synchrony between two axes.

In an odd count interaction the only possible way of synchronising is by combining with the next incremented count rate, which provide the following sequence of numbers by of previous to present and can be expressed as a formula where n = previous number.

Order of Interaction



The Purusha black hole state of Kx reduces to the Mahad value of Mps (Planck Mass) when C breaks its coherent and synchronised state, on all three axes. The cyclic time taken extends from My to Tp (EP12) as a stable centred and synchronised state in a complete cycle of C counts has been reduced.

Axiomatic derivation of numerous modes of constructing the Mahad state was shown in the original paper. Reducing the Mps stable value as a ratio per cyclic time Tp, gives the rate of change of counts per cyclic time as St - the dynamic stress in the Substratum. Since Kx was coherent, only after the break in synchrony by C in time Tp, can it produce the rate of change per time cycle as St. or the stress in the Substratum:

The equivalence of St to the lower C3 / G1 as the metric elasticity of space identified by Sakharov, Chandrashekar and others support the qualities of the field in space.

EP14 $$\frac{C^2}{charge\_ec \cdot \sqrt{2}} = 3.96654 \cdot 10^{35}$$

St is the value of an electron volt of change in mass energy units as shown.
The next stable state reached after a loss of one more cycle of C counts results in the the breaking down of the simultaneous state to produce the synchronised count along two axes. So far, Substratum interactions are an internal simultaneous exchange which do not propagate any counts outside its boundary of action. Here, the commencement is signaled by a distance parameter as Lp.

EP15

$$Lp := c \cdot Tp = 1.68956 \cdot 10^{-35}$$

$$Flux := \left(\frac{Mps}{Tp \cdot c}\right) = 1.304301 \cdot 10^{27}$$

The term Lp is the equivalent of a length if C is specified in metres wavelength / second and is equal to the Planck length. The stress in the substratum of space is C times Flux EP15. That count rate of the flux per cycle is due to the self-similar nature of an expansive interaction in a contained field of space.

This value is critical and must be interpreted correctly. When oscillatory wave counts are identical along two axes, density rises but the counts reduce to that of one axis. If counts along x and y axes differ, the product of both values can be counted as events.

If counts synchronise perfectly, then the count reduces to that on any one axis but the count become rings or circles of counts. The Lissajou figures below show the coherent ring when n1 n2 are equal or reflect simultaneous activity

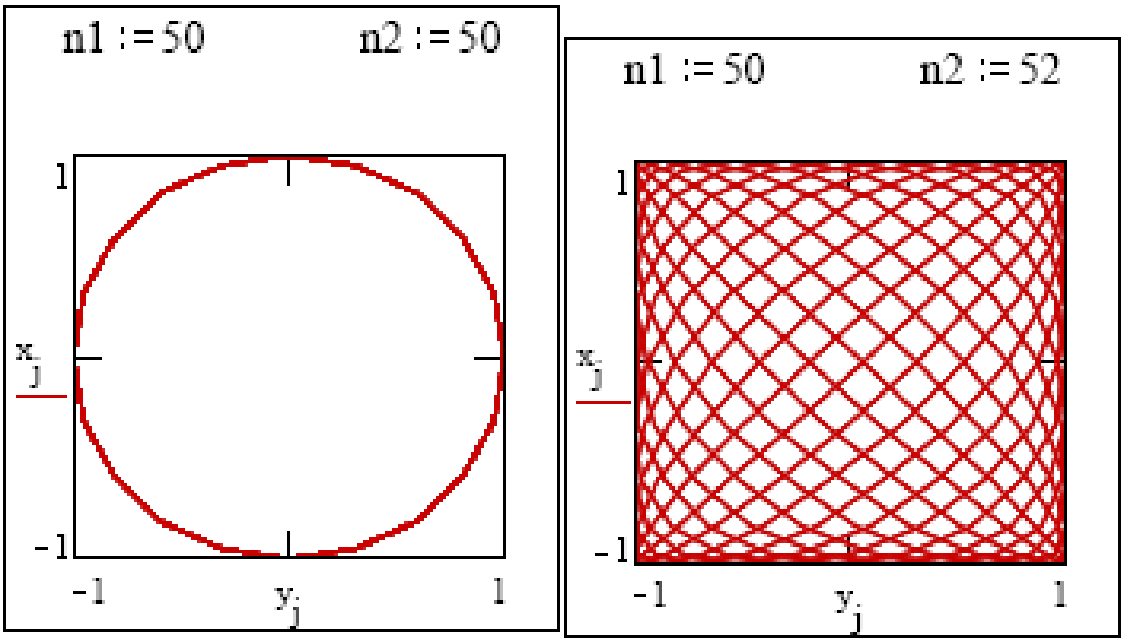


Fig: Lissajou Figures Show Coherence

But when there are more than one count difference, the coherent pattern breaks up and increases the interactive count. In the same way, when the count of C is identical along all three axes, then the C3 count falls into step and the value of counts reduce to C, thereby hiding C 2 as a factor that increases density and displays mass characteristics.

Coherence produces spherical or circular time period functions or rings of simultaneous interactions and hides the true numbers involved. When interactions take place along one

axis from opposite ends, the total value is C2 . But the self - similar internal characteristics allow simultaneous exchanges between compressive and expansive states to vary the proportions according to the Guna laws explained in the relevant sections. The compressive value can raise the count value to a maximum of C1+x, while reducing the expansive value to a minimum of C1-x at the same time.

For this reason, the smallest interval beyond which counts along two axes can act simultaneously, like the Lissajou patterns with equal counts, is 1/C1+x Thus, till the point of reaching the synchronised state, the flexibility, slackness or elasticity is displayed. When the difference is nil, then C1+x raises as the square or cube, depending on two or three - axis synchrony.

At the Flux of value of (C1+x)2, the density of interactive counts increases suddenly to create additional mass characteristics.

Original text

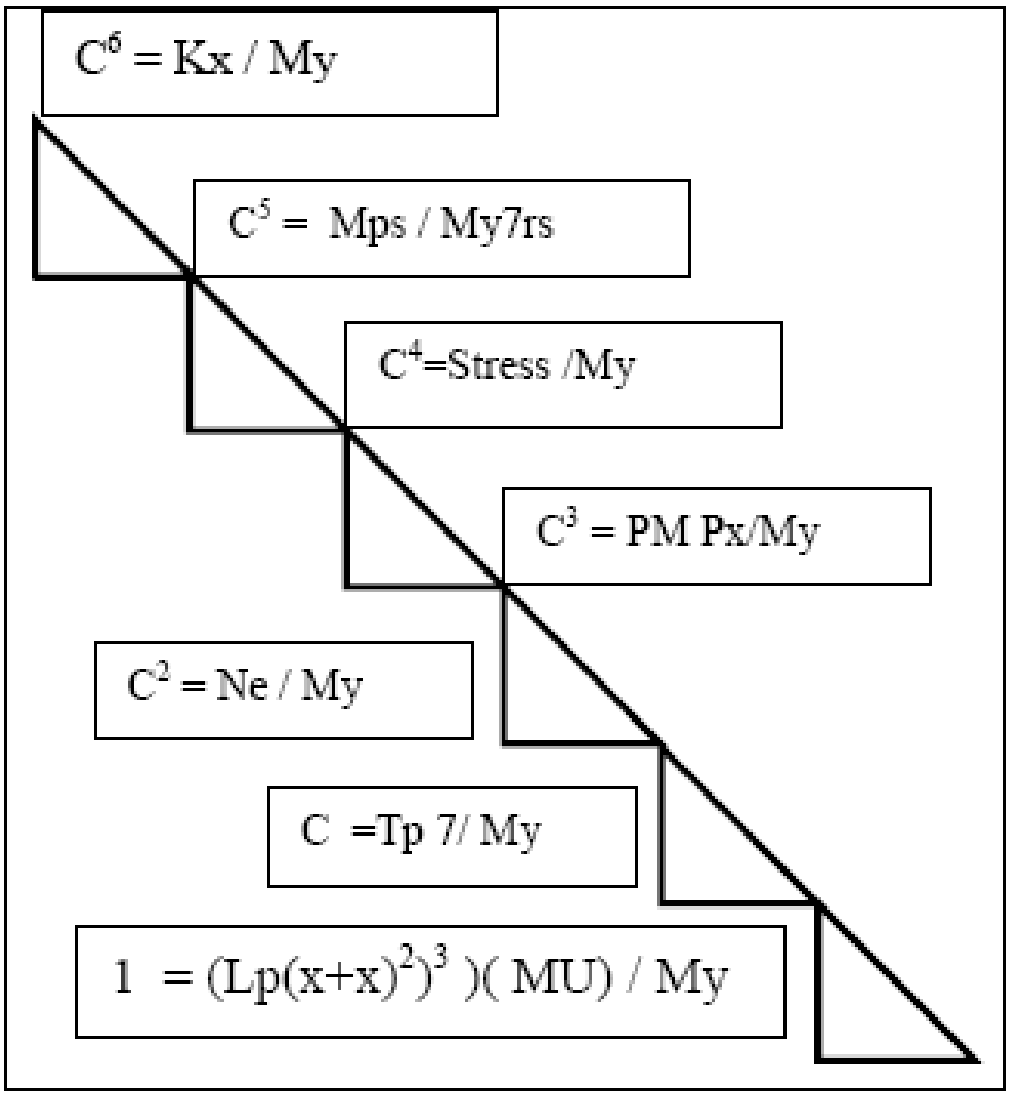
compressive and expansive states to vary the proportions according to the Guna laws explained in the relevant sections.. The compressive value can raise the count value to a maximum of C^{1+x} while reducing the expansive value to a minimum of C^{1-x} at the same time. Hence the smallest interval beyond which counts along two axis can act simultaneously, like the Lissajou patterns with equal counts, is $1/C^{1+x}$ Hence till the point of reaching the synchronised state the flexbilty or slackness or elasticity is displayed but when the differen is nil the C^{1+x} raises as the square or cube depending on two or three axis synchrony. Hence at the Flux of value of $(C^{1+x})^2$ the density of interactive counts increases suddenly to create addition mass characteristics.

The Thaama state represents the quark domain in particle physics. It is the strong force domain in asymptotic freedom. The Raja domain is the weak force region. The EP3 ratio is the equivalent coupling constant that varies with potential change, enabling transitions in the strong hadronic / weak - interface.

The Sathwa domain is the Electromagnetic region. The EP2 ratio is the equivalent of the coupling constant, enabling transitions from the radiant photon - electromagnetic/weak - leptonic interfaces. Unlike in physics, the Sankhya spectrum comprises a continuous state of transitions that are coupled by the EP3 and EP2 ratios that demarcate a phase change of two axes and three axes synchrony when energy to mass transition takes place.

The above provides a brief outline of parallel transport in particle physics and can be justified perfectly by a few conceptual changes. However, the Sankhya logic being logically superior, which explains the power generation process in the Substratum perfectly. The following will cover further sequences in the Sankhya process.

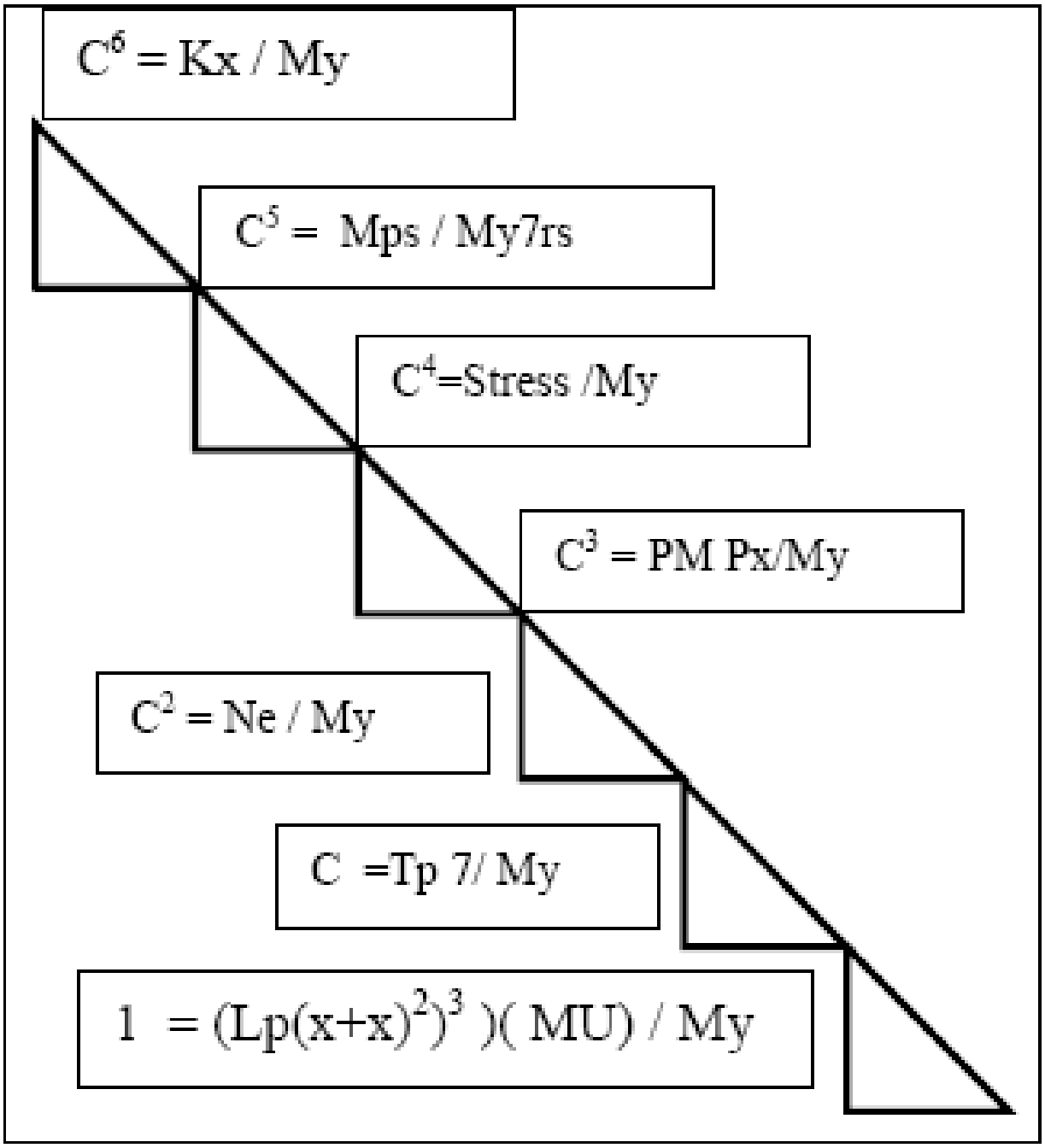
The oscillatory state in the Substratum of space is kept in a coherent and synchronised state by the internal exchange of oscillatory counts between the Purusha and Mahad Prakriti's Linga potential variation, balanced simultaneously by the Mahad.Prakriti's and Prakriti.sapta form (Bhava Variations) as a totally internal count transfer, represented
by the EP1 to EP4 type of mechanism.



In the Fig. 'Ladder of Phenomena,' the order of logical flow of phenomena is shown to highlight mathematical rigour of the derivation of each state (again) as a sequence of steps. The comparative equivalence can be seen at a glance. Sankhya conceptual logic shows that the Universe follows an extremely orderly process. The ladder of phenomenal action starting from 1 unit that indicates a relatively stable or equal state of activity rises to its axiomatic

axiom of C6 value.

The basic principle of self - similarity in action or Swabhava mode creates stress according to Suthra 55. The same principle derives the fundamental state of stable action.



Conclusion

This paper has shown the similarities between concepts around LIssajous Figures put forth by Robert de Marrais and G. Srinivasan. That two independent researchers might reach similar conclusions, while not having seen the other's work, speaks to the veracity of this concept. De Marrais arrived at this concept through his background in computer science, while Srinivasan derived his ideas from Vedic literature.

De Marrais hints, perhaps with tongue in cheek, at the connections between G2, the Octonions and Sedenions, and ancient Egypt. Srinivasan takes a completely serious tone in describing how he extracted nuclear science from Vedic Literature. The author of this paper studied Chinese at National Taiwan University in Taipei, Taiwan, where his fellow student studied the Confucian Classics. Scholars of classical Chinese understand that one sentence of text may be interpreted in any of ten different ways, and all of those ways were intended by the author.

Vedic literature was written in the same way, and it is likely that the Chinese borrowed the style from the Vedas, rather than coincidentally writing their classics in this same way. Indeed, Christopher Minkowski of Oxford University has shown how Magic Squares were incorporated into the Rig Veda via numerical equivalences for Sanskrit terms.

Srinivasan raises a series of parallels between Vedic Physics and contemporary nuclear physics, such as;

Bott Periodicity and 8 x 8 Satwic Matter:

However, when a collision occurs, the intensity causes the vibrations to aggregate, con the component such that the density increases to eight times or powers.

Octonions

Subtracting the normal unit displacement in a unitary cycle there are seven additional expanding vibrations or oscillations superposed or accumulated on the component. Therefore the Raja interactive shuttling duration shows seven distinct phases of the oscillations that are superposed in a sequence of seven additional wavelengths in a cycle.

Exceptional Lie Algebra E8

Similarly, the field of air molecules vibrate at the same proportionate self - similar rate of 256 interactions for a unitary cycle, because the air field is not a free one and synchrony along two axes is forced.

Wikipedia states:

There is a unique complex Lie algebra of type E_8, corresponding to a complex group of complex dimension 248. The complex Lie group E_8 of complex dimension 248 can be considered as a simple real Lie group of real dimension 496. This is simply connected, has maximal compact subgroup the compact form (see below) of E_8, and has an outer automorphism group of order 2 generated by complex conjugation.

As well as the complex Lie group of type E_8, there are three real forms of the Lie algebra, three real forms of the group with trivial center (two of which have non-algebraic double covers, giving two further real forms), all of real dimension 248, as follows:

- The compact form (which is usually the one meant if no other information is given), which is simply connected and has trivial outer automorphism group.
- The split form, EVIII (or $E_{8(8)}$), which has maximal compact subgroup $\mathrm{Spin}(16)/(\mathbf{Z}/2\mathbf{Z})$, fundamental group of order 2 (implying that it has a double cover, which is a simply connected Lie real group but is not algebraic, see below) and has trivial outer automorphism group.
- EIX (or $E_{8(-24)}$), which has maximal compact subgroup $E_7 \times \mathrm{SU}(2)/(-1,-1)$, fundamental group of order 2 (again implying a double cover, which is not algebraic) and has trivial outer automorphism group.

EM, Weak and Quark States Explained:

The Thaama state represents the quark domain in particle physics. It is the strong force domain in asymptotic freedom. The Raja domain is the weak force region. The EP3 ratio is the equivalent coupling constant that varies with potential change, enabling transitions in the strong hadronic / weak - interface. The Sathwa domain is the Electromagnetic region.

In sum, Srinivasan describes in detail the processes that de Marrais guessed about. This is because Vedic Physics is derived from axioms and so is a priori true, while the scientific process that de Marrais followed is based primarily on guess work, in a field where many of the guesses are flatly dead wrong. Thus, it would be wise of contemporary mathematical physics to pay attention to the tenets of Vedic Physics.

Bibliography

De Marrais, Robert, 42 Assessors and the Box Kites they Fly, on Xarchiv server.

Secrets of Sankhya, G. Srinivasan. 2008.

Wikipedia entries

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Let us dedicate ourselves to what the Greeks wrote so many years ago: to tame the savageness of man and make gentle the life of this world.

Robert Francis Kennedy

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