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Correlation of the electromagnetic mechanics of elementary particles with Buckminster Fuller's Synergetics

André Michaud

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Abstract: Correlation by Noel Coughlin of the Electromagnetic Mechanics of elementary particles, among other developments by other researchers, with Synergetics, which is the empirical study of systems in transformation developed by Buckminster Fuller, and from which Noel's deep study and further conclusions show how vector sums of close-packed tetrahedral Synergetic structures lead to numerous values corresponding to well established physical constants, and to just as well established characteristic values of the restricted set of stable elementary electromagnetic particles that interact at the subatomic level of magnitude, which convincingly leads to the conclusion that a unified field theory may now be within reach.

It was after Arthur Young, who was the only student of Oswald Veblen, who was the only teacher of relativistic theory at Princeton in 1925, suggested to him that to establish a unified field theory, he should begin by learning the geometric and numerical patterns of Synergetics and then should learn electromagnetic theory in view of clearly linking Synergetics with physical reality, which kept him focused on this unification project.

The successful outcome of his project is summarily described by himself in a conversation with Daniel Ari Friedman presented in the following video (Duration: about one hour and a half).

In particular, Noel explains how the numerical values of the gravitational constant (G=6.673) and Planck's constant (h=6.626) astonishingly emerge from vectorial sums of the tetrahedral complexes of Buckminster Fuller's Synergetics.

- Noel Coughlin: "Origins of gravity, electromagnetism and the inverse square law"

In the following video, Noel explains in particular how the inverse of the fine structure constant ($1/\alpha = 137.0359997$) emerges out of Synergetics vector sums, which in electromagnetic mechanics is the number of times that the Compton wavelength of the electron rest mass energy (λ_c) enters the length of the Bohr orbit of the hydrogen atom $2\pi a_0 / \lambda_c = 1/\alpha = 137.0359997$, whose orbit is located at the mean distance of the ground state orbital of the hydrogen atom.

Squaring this value reveals the figure 18778.86523 which is astonishingly close to the number of times that the energy of the magnetic half of the invariant rest mass of the electron oscillates during one cycle of the Bohr orbit of the electron at its hypothetical electromagnetic velocity (2187647.56821 m/s) per period of 1.51986E-16th of a second (amounting to 1.235589976E20 Hz), which is 18779.24022 times (duration of the video: about one hour):

- Noel Coughlin: "Examining and Rectifying the Error in Heisenberg's Uncertainty Principle"

In summary, Synergetics proposes that all elementary particles and atomic structures existing in the universe could be represented by assemblies of close packed spheres, each enclosing a tetrahedron whose edges would then reach isometric unity and whose vertices would touch each other through the symbolic walls of the spheres, to be addable as unit vector sums if their temperature was brought to absolute zero Kelvin. It is from this idealized configuration of the carbon atom, with its four valance electrons established as the vertices of an idealized tetrahedron circumscribed in an enclosing sphere that the Carbon-60 spherical molecule was discovered in 1985, inspired by Buckminster Fuller's research, and that was given his name to honor his contribution.

It is from these idealized potential isometric structures, that would theoretically predate time and space that physical constants and other characteristics of elementary electromagnetic particles surprisingly emerge from vector sums of such assemblies of close packed spheres each enclosing a tetrahedron. These physical constants and characteristics of elementary particles have now been experimentally confirmed, and their electromagnetic structures and interactions at the subatomic level of magnitude are now described by the electromagnetic mechanics of elementary particles.

The most surprising constant that emerges from Synergetics is the "practically exact"

electromagnetic oscillation frequency of the magnetic half of the electron rest mass energy previously mentioned, that is, 18778.86523 from Synergetics and 18779.24022 per period of 1.51986E-16th of a second from electromagnetic mechanics, which is the well known invariant frequency of the rest mass energy of the electron 1.235589976E20 Hz.

This separate calculation of the same invariant electromagnetic frequency of the electron rest mass energy from both geometric Synergetics vector sums and from electromagnetic mechanics is so specific and precise that it does establish a clear causal bridge between electromagnetic mechanics and this apparently underlying synergetic geometry that needs to be further analyzed. All the more so, since the tetrahedral structure seems to shed new light on the possible origin of fundamental energy.

As put in perspective by Buckminster Fuller, a tetrahedron made of equal sticks is the simplest isotropic volume that cannot collapse on itself. Not collapsing on itself for any structure involves a stress or tension (energy) to maintain the volume. Noel speaks of these sticks as "unit vectors" all of isotropic unit length at zero-Kelvin that all touch each other at their vertices. A vector being defined as "a quantity with a magnitude and a direction", sums of these unit energy vectors may well be the fundamental energy quanta at the origin of the minimum of two 1.022 MeV photons required to initiate the production of matter in the universe, as analyzed in the paper on our Electromagnetic Universe.

But the tetrahedral energy quanta are captive of their non-collapsible individual tetrahedral structures and are not free moving like the energy of electromagnetic photons. More research needs to be made to possibly identify at what level of complexity or temperature some assembly of these close packed spherical structures become unstable enough to collapse and liberate some of this energy along the fracture area.

The only pending issue would then be whether or not life, with the extraordinary engineering feat of the life sustaining energy producing ATP molecule constantly regenerated by means of the mitochondrial electron transport chain and its extraordinary rotating proton engine, as documented by Fritz Lewertoff, can also be emergent from Synergetics.

Example of numerical volumetric measurement simplification

Measuring the series of close packed tetrahedral volumes that are in isotropic vectorial equilibrium, grounded on the Cartesian cube unit Example with 1 meter edge		Measuring the series of close packed tetrahedral volumes that are in isotropic vectorial equilibrium, grounded on the synergetic tetrahedral cubic unit Example with 1 meter edge	
Structures in Isotropic vector equilibrium	Irrational numerical volume value in cubic meters m^2	Structures in Isotropic vector equilibrium	Integer numerical volume value in cubic tetrahedron units
Tetrahedron	0.1178…	Tetrahedron	1
Octahedron	0.4714…	Octahedron	4
Cuboctahedron	2.357…	Cuboctahedron	20
Tetrakaidecahedron	11.313…	Tetrakaidecahedron	96
Truncated tetrahedron	2.7105	Truncated tetrahedron	23
Cube edge $\sqrt{2}$=1.414214…		Cube edge $\sqrt{2}$=1.414214…	24
With 2 meters edge		With 2 meters edge	
Tetrahedron	0.9428...	Tetrahedron	8
Octahedron	3.712...	Octahedron	32
Cuboctahedron	18.856...	Cuboctahedron	160
Tetrakaidecahedron	90.508...	Tetrakaidecahedron	768
Truncated tetrahedron	21.684	Truncated tetrahedron	184
Cube edge $\sqrt{8}$=2.828428…		Cube edge $\sqrt{8}$=2.82428…	192

YouTube channels on Synergetics

Noel Coughlin: https://www.youtube.com/@noelcoughlin8263

Daniel Ari Friedman: https://www.youtube.com/@danielarifriedman

Articles in Electromagnetics Mechanics project

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