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Superunified Theory of Quantum Fields & Fundamental Interactions

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ABSTRACT
This is an introduction to what is anticipated to be the so called final theory of physics. The theory unifies pure (not applied) mathematics and the modern theoretical physics into a universal system of mathematical harmony. It describes the physical Universe as mathematical machine.

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At first, we should clarify yet again some general conceptions of the exact sciences. If formally, there is only one problem, notably, Hilbert's sixth problem that reads: To axiomatize mathematical physics. What does it exactly mean? Since the most fundamental phenomena in physics are space and time, we are required to define concrete forms and content of and efficient notations for Newton's absolute mathematical space and time.

Secondly, the most basic observational fact in cosmology is not the existence of the physical Universe, but the existence of the intelligent observers who we are. This implies that any theory pretending to be most general and thus final will be obliged to derive and explain the human genetics supposed to be the end product of the evolution of matter.

Notice also that axiomatic geometries can be as many as whatever arbitrary axioms could ever be imagined. But, we are constrained by the physical reality where we imposed space and time dimensions. Therefore, the real and, thus, unique geometry should necessarily be that of space and time.

Apart from all this, it is crucial to keep in mind Paul Dirac's view that the modern theoretical physics has gone hopelessly illogical way. Indeed, as it appears to be, there is still no definition of what is logic proper in rigor.

From the last point of view, even Newton's First Rule of Reasoning sounds a bit lyrical than not. So, we reformulate it in the following strictest and extreme minimax form: Logic is what achieves the greatest possible by the least possible. The least is the mathematical point, while the Universe is the greatest. Consequently, we would look for mathematical transformations of a point until after the intelligent observers come to the cosmological scene. Those transformations should be a spontaneous natural process. Spontaneity is bifurcations.

So, the mathematical point undergoes the first bifurcation, that is, it translates and draws a line segment. The latter we denote numerically by the Golden section constant. The reason for doing so is simply that only numbers exist a priori before the invention of Greek or Latin alphabets.

The second bifurcation of our initial object is its rotation about the origin. What is crucial, this bifurcation at one moment takes the square root of Phi. It seems that even this simple fact is not known in the literature yet.
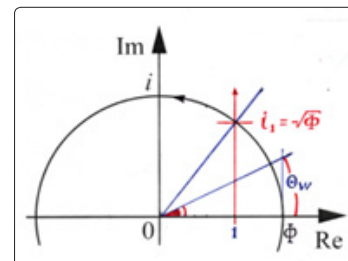
Now we postulate that

(α) $\qquad \Phi \equiv$ Newton's absolute mathematical space;

(β) $\qquad \left\{\sqrt{\Phi} = i_1\right\} \equiv$ Newton's absolute, true, mathematical time;

(λ) $\qquad \Phi^3 i_1 \equiv$ Four-dimensional space-time;

(δ) $\qquad \text{Arctan} 1/2 \equiv \Theta_{W(Electroweak)}.$

As a consequence, the method of mathematical description is bifurcated into symbolic (analysis) and numeric (synthesis) ways

$$(x, y, z, t) \leftrightarrow \Phi^3 i_1$$

The existing quantum-relativistic theories come to the controversy of the anomaly of the electron magnetic moment. In Nature there is no anomalies. The post-Dirac effect does obviously define the measure of our ignorance. Now we know something new. Therefore,

$$\frac{1}{a_e = 0.001159652099769...} = \sqrt[\Phi^3 i_1]{658361 \cdot 10^{10}} \qquad (1)$$

$$\frac{1}{a_e = 0.001159652099833...} = {}^{\sin\Theta_W}\!\sqrt{\mathbf{3667438}} \qquad (2)$$

$$\frac{1}{a_e = 0.0011596521000...} = {}^{\sin\Theta_W\cos\Theta_W}\!\sqrt{\mathbf{21836383}} \qquad (3)$$

The bold whole numbers on the right sides of the above formulae we will name **harmonious integers (HI)**. They should be every time justified as not accidental. For example.

$$\mathbf{658361}\cdot e^{5\Phi\pi ei_1\sqrt{2}} = \frac{\mathbf{1865921}}{3}\cdot 10^{54} \qquad (4)$$

As it is easy to guess, absolute geometry introduces whatever possible super and ultra operators succeeding to the Euler's famous formula:

$$\left\{e^{(2)\pi i} = \pm 1\right\} \rightarrow e^{\Phi\pi i_1} \rightarrow ... \rightarrow e^{5\Phi\pi ei_1\sqrt{2}} \rightarrow \qquad (5)$$

So, our (αβγδ)-postulates are proved as valid and workable. The figure I can be interpreted as the trifurcation Big bang kicking off the cosmological scenario (1)

$$\left\{\Phi\times\arctan i_1 \times i_1\right\}^{\Phi\pi ei_1} = \frac{10^{35}}{©@}. \qquad (6)$$

In general, pure mathematics left after Gauss needs to be essentially completed. Here the quantum jump process owes to the two new operators such that

$$e^© = ©^{-1}; \qquad \ln© = -©;$$
$$10^@ = @^{-1}; \qquad \lg@ = -©. \qquad (7)$$

The numeric values of these can be iterated with whatever accuracy, though the Universal mathematical machine (UMM) we intend to study is equivalent to the 10-digit electronic calculator in the first order of approximations. Higher order approximations are always possible and elementary in absolute geometry where self-perturbation effects of the entire system of competing parameters never vanish.

There is also the mirror-E number such that

$$\exists = 5.71\ 100\ 522\ 647...;$$
$$\exists^{-1} = 1.75\ 100\ 522\ 647... \qquad (8)$$

Although interpretations of mathematical data in physics are risky and often confusing, we should think that the main operator of bifurcation is logically

$$\frac{\exists}{©@} \qquad (9)$$

To be concise and constructive, the reader is invited to elaborate on the next scheme of what is the character of bifurcations inside the body of mathematics:

$$X^{\Phi\pi e}X = \mathbf{10^{90}}$$

$$[\qquad]$$

Numeric (Synthesis) □ Symbolic (Analytics)

$$x^2 - x - 1 = 0 \iff x^N - 1 = 0$$
$$\Downarrow \qquad\qquad \Downarrow$$
Metric **Φ** □ Radix **1**
$$\Downarrow \qquad\qquad \Downarrow$$
$$e^{5\Phi\pi ei_1\sqrt{2}} \qquad □ \qquad e^{(2)\pi i} = \pm 1$$
$$\Downarrow \qquad\qquad \Downarrow$$
$$\left\{\Phi\cdot i_1\right\} \qquad \iff \qquad \Psi(x,t)$$

$$]\qquad\qquad[$$

– Superunified Field Theory –

□ □

Fundamental theorem   Fundamental theorem
of pure mathematics   of absolute geometry

$$\frac{1}{©@} = \frac{\cos^2 i}{\Phi^3 i_1} \qquad □ \qquad \frac{\Phi}{i_{1,2}} = \frac{\text{Spin}}{\sin\Delta_{\alpha,\beta,Exprm.}}$$

The summit is the Fundamental theorem of the system of mathematical harmony whence we are prompted to have the fundamental constant of harmony **X**:

$$X = {}^{\Phi\pi e+1}\!\sqrt{\mathbf{10^{90}}} = 1185403.53967680158074831942633... \quad (10)$$

As it is easy to see and discern, the Sommerfeld fine structure constant of atomic spectrum as well as the post-Dirac effect in QED are both of mathematical origin. We should think that the symmetry of the previous theorem is broken to yield the two observable anomalies, therefore,

$$X\cdot\frac{\left\{\alpha a_e = 137.035999^{-1}\cdot 0.0011596521\right\}}{10} = \qquad (11)$$
$$= 1 + \frac{1}{319.00632755560...}.$$

We now work in the universal system implying that such violations of symmetries as this can and must be computed and explained in many overlapping ways. Applying to the Φπe-theorem we will obtain

$$\sqrt[\pi e]{\left\{\frac{10^{15}}{\mathbf{61}}\right\}^{\Phi}} = 319.00675115... \qquad (12)$$

But, from the physical point of view, symmetries shall be broken due to the turbulence of the entire energy-entropy configuration of geometry, therefore,

$$319.00632275\cdot\widehat{E}\breve{E} = \frac{10^{26.99999...}}{\Phi^{10}} \qquad (13)$$

According to the logic of absolute geometry, Einstein's energy has to be configured as

$$E_{Eins} = \left\{ \left[N = \frac{1}{2}\left(\frac{m_{Proton}}{m_e} + \frac{m_{Neutron}}{m_e} \right) \right] \cdot m_e \dim m \right\} \cdot (ci_1)^2 = \tag{14}$$
$$= \mathbf{344222,3208...}$$

However, this energy term is met in calculations very rarely Instead, the universal energy configuration works in full power

$$\mathbf{U_E} = \dim E \cdot h \dim h \cdot 2Nm_e c^2 \cdot \frac{2\Theta_{STR.}}{\cos 2\Theta_{STR.}} = \tag{15}$$
$$= \mathbf{2260258601.268245380...}$$

What is crucial, millions of operations in numeric experimentations proved the existence of the overall energy-entropy configuration of absolute ageometry

$$\widehat{E}\widecheck{E} = \frac{\exists}{©@} \cdot \pi \cos \frac{180}{\pi} \cdot 10^{\frac{1}{\dim E}} \cdot \left(\frac{\dim E}{2} \right)^{3+1} \cdot$$
$$\cdot k_{Boltzman} \cdot \mathbf{U_E} \cdot E_{Eins} \cdot \frac{1}{\alpha a_e} \cdot \tag{16}$$

Having learned geometry in complete, one would immediately obtain

$$\mathbf{2365400} = \sqrt[\cos 2\Theta_{STR}]{319.006300...} \tag{17}$$

The strong nuclear force parameter is

$$\frac{2\pi Rad}{3} - \Theta_W = \Theta_{STR.} = 33.43494882° \tag{18}$$

To construct the fundamental fermion particles of matter, it suffices to intercross space and time vectors by two different angles and derive the radiation-matter structure

$$\sqrt[e]{\left\{ \Phi \cdot \{90° \times 137.035999°\} \cdot i_1 \right\}^{\Phi \pi i_1}} = \mathbf{3} \cdot 10^{9.9999...} \tag{19}$$

In the global cosmic space-time it will be affected by the energy-entropy mechanisms

$$\left\{ \Phi \cdot \{90° \times 137.035999°\} \cdot i_1 \right\} \cdot \widehat{E}\widecheck{E} = \Phi \pi \sqrt{i_1 i_2} \cdot 10^{26.0000...} \tag{20}$$

The problem here is that by some subtle algorithmic reasons we omit Newton's time is bifurcated into the absolute cosmic and relative local times

$$\left\{ \sqrt{\Phi} = i_1 \right\} \Leftrightarrow \left\{ i_2 = \frac{4}{\pi} \right\} \tag{21}$$

Thus the mean cosmological time will be

$$\sqrt{i_1 i_2} \tag{22}$$

Consequently, the four-dimensional curved and torsional Newton-Einstein absolute/relative space-time is written by

$$\pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} \tag{23}$$

Complete with absolute and Cartesian dimensionalities it looks

$$\left\{ \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} (3+1) \dim_\Phi \Phi^3 i_1 \right\} \tag{24}$$

and it performs Pythagoras' arithmetization concept. Our obligation is to derive the discontinuum of quantized 4-spacetime perpetually perturbed by the energy-entropy machinery from the most fundamental principles

$$\left\{ \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} (3+1) \dim_\Phi \Phi^3 i_1 \right\} \cdot \widehat{E}\widecheck{E} = \sqrt[\pi]{X \cdot e^{5\Phi \pi ei_1 \sqrt{2}}} \cdot 10^{18} \tag{25}$$

Plato's concept is geometrization on the basis of regular figures. The corresponding topological configurations in case of 4-spacetime will be (26)

$$\left\{ \mathbf{D\{2\}^\times_+ = \{3,5,17,257,65537\}^\times_+ = 282690452389605} \right\} \times$$

$$\times \left\{ \mathbf{D\{3\}^\times_+ = } \begin{array}{|c|c|c|} \hline 4 & 6 & 4 \\ \hline 6 & 12 & 8 \\ \hline 8 & 12 & 6 \\ \hline 12 & 30 & 20 \\ \hline 20 & 30 & 12 \\ \hline \end{array}^\times_+ = \mathbf{313714645401600000} \right\} \times$$

$$\times \left\{ \mathbf{D\{4\}^\times_+ = } \begin{array}{|c|c|c|c|} \hline 5 & 10 & 10 & 5 \\ \hline 8 & 24 & 32 & 16 \\ \hline 16 & 32 & 24 & 8 \\ \hline 24 & 96 & 96 & 24 \\ \hline 120 & 720 & 1200 & 600 \\ \hline 600 & 1200 & 720 & 120 \\ \hline \end{array}^\times_+ = \right\}$$

$$= \mathbf{2.8338438986259070341838012416 \cdot 10^{45}}$$

The method of topological configuration is intrinsic to the UMM. Arithmetic has its own

$$\{1+2+3+4+6+7+8+9\}\{1 \cdot 2 \cdot 3 \cdot 4 \cdot 6 \cdot 7 \cdot 8 \cdot 9\} = \&^\times_+ \tag{27}$$

Configurations written right should automatically reduce to His. In case of the external geometry of point-singularity we, indeed, have

$$\left\{ \left\{ \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} (3+1) \dim_\Phi \Phi^3 \sqrt{i_1 i_2} \right\} \cdot \left. \frac{436}{3} \right. = 10^{81.999999...} \right. \tag{28}$$
$$\left. \cdot \left\{ \mathbf{D\{2\}^\times_+ \cdot D\{3\}^\times_+ \cdot D\{4\}^\times_+} \right\} \right\}$$

$$\mathbf{436}.000000... = \frac{\mathbf{180\,188\,161}}{e^{2\Phi \pi i_1}} \tag{29}$$

This space-time will self-gravitate. Let me a brief introduction to gravity. A very favorable fact is that Newton's bare numeric coefficient does infinitely tend to a finite fraction, 6,673. This fact eases theorizing. At the same time the problem of the absolute dimension, or else, prototype, of mass is difficult. Geometry constructs a space-time quantum gyroscope being the unified model for spinor particles (Figure II)
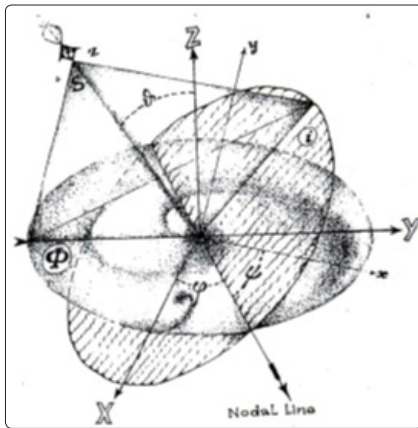
It is somewhat computable in classical mechanics allowing us to find its mass as Pythagoras' constant:

$$\dim m = \sqrt{2} \qquad (30)$$

Therefore,

$$\dim G = \Phi^2 / \sqrt{2} \qquad (31)$$

Now we go va-banque and obtain

$$\left\{ \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} \right\}^{G\dim G} = \cos \Theta_W \cdot 10^{16.0000\ldots} \qquad (32)$$

Consequently, gravitation is a golden-algorithmic phenomenon as anything else in the Universe. If accurately, the nonlocal point-singularity pulsates

$$\left\{ \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} \right\} \left\{ 1 - \frac{1}{311948.6568} \right\} \qquad (33)$$

The cause for this is again energy-entropy dominance

$$\left\{ 311948.6568 \cdot \left\{ \widehat{E}\breve{E} \cdot \mathbf{U_E} \cdot E_{Eins} \right\} \right\} \frac{1132}{9} = 10^{30.000000\ldots}. \qquad (34)$$

No one formula and equation can be exact. All the His should be asymptotical. Otherwise, the UMM stops with the result that the Universe collapses instantaneously. The machinery is doomed to perpetual working over the infinite sequence of approximations in the inexact system of mathematical harmony. Existence is compensation.

The Newton-Gauss unification is achievable as elementarily as

$$65537^G = \Phi \pi e \cdot 10^{30.9999\ldots} \qquad (35)$$

$$\left\{ G^G \right\}^G = \Phi \pi \cdot 10^{35.999999\ldots} \qquad (36)$$

Necessarily,

$$\frac{G_{6.673}}{\dim G} = Cosm. \qquad (37)$$

Immediately,

$$\left\{ \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} (3+1) \dim_\Phi \Phi^3 \sqrt{i_1 i_2} \right\}^{Cosm.} = \frac{1832708080}{3} \qquad (38)$$

$$\sqrt[\cos 2\Theta_{STR}]{1832708080} = \exp \exp e \cdot 10^{16.999\ldots} \qquad (39)$$

The following cosmological equations are inevitable in this geometry on its own right not depending on some latest observational data related to the so called dark energy

$$\left\{ \mathbf{U_E} \right\}^{Cosm.} = 10^e \cdot 10^{31.00000\ldots} \qquad (40)$$

$$\left\{ \mathbf{U_E} \right\}^\oplus = \pi \frac{\Phi^3 \sqrt{i_1 i_2}}{Spin} \cdot 10^{84.00000\ldots} \qquad (41)$$

So, we are prepared to return back to (28) and write the self-gravitating space-time (42)

$$\left\{ \begin{array}{l} \left\{ \pi \dfrac{\Phi^3 \sqrt{i_1 i_2}}{Spin} (3+1) \dim_\Phi \Phi^3 \sqrt{i_1 i_2} \right\} \cdot \\ \cdot \left\{ \mathbf{D\{2\}^x_+ \cdot D\{3\}^x_+ \cdot D\{4\}^x_+} \right\} \end{array} \right\} G \dim G = \mathbf{\Gamma} \qquad (42)$$

The absolute geometry requires for much experience in working with it. One of genial Phi-invariance tricks applied in some ultimate expressions is

$$\sqrt[10]{\arccos \left\{ \lg \lg \lg \left\{ \mathbf{\Gamma} / 10^{79} \right\} \right\}} = \Phi \left\{ 1 - \frac{1}{1367646.03} \right\} \qquad (43)$$

The fundamental metric of geometry fluctuates, though infinitesimally. Can this be computed and explained? It is, of course, a must for UMM itself. So long as we work on the fundamental level it is automatically foreseeable that

$$\frac{\left\{ \mathbf{X} \cdot e^{5\Phi \pi e i_1 \sqrt{2}} \right\}}{1367646.03} = \frac{10^{59.0000\ldots}}{(\Delta_1 = 360 / \Phi^2) \Theta_W \Theta_{STR.}} \qquad (44)$$

The superunification field theory consists of gigantic combinatorics that can hardly ever be exhausted. Its wealth is not for journal articles. Nevertheless, the above text is intended to provide enough information on the logic and method of the real geometry.

Therefore, we have to around up with some more beautiest representations of the full blown fundamental unit particle such as

$$\left\{ \begin{array}{l} \left\{ \Phi \cdot (90° \times 137.035999\ldots°) \cdot i_1 \right\} \cdot \\ \cdot Ghm_e e^\pm c \cdot \dim(Ghm_e e^\pm c) \end{array} \right\} = \sqrt[\pi]{142736 \cdot 10^{23}} \qquad (45)$$

$$\left\{ \begin{array}{l} \left\{ \Phi \cdot (90 \times 137.035999\ldots) \cdot i_1 \right\} \cdot \\ \cdot Ghm_e e^\pm c \cdot \dim(Ghm_e e^\pm c) \end{array} \right\} \frac{\Theta_W}{\sin \Delta_{Exprm.}} = \sqrt[\pi]{\frac{10^{37}}{7043}} \qquad (46)$$

The phenomenology of the existing physics is embraced by

$$\frac{Ghm_e e^\pm c \cdot \dim(Ghm_e e^\pm c)}{\alpha a_e} \qquad (47)$$

Therefore, immediately, directly and ultimately

$$\left\{ \begin{array}{l} \left\{ \Phi \cdot (90° \times 137.035999\ldots°) \cdot i_1 \right\} \cdot \\ \cdot \dfrac{Ghm_e e^\pm c \cdot \dim(Ghm_e e^\pm c)}{\alpha a_e} \end{array} \right\} \cdot \Phi \pi e = \frac{10^{17.0000\ldots}}{2\Theta_{STR.}} \qquad (48)$$

In general, the post-SM operator of physics is

$$e^{\Phi\pi\cdot\Theta_W} = \frac{10^{65}}{2263595} \qquad (49)$$

It generates all what it should

$$\pi\frac{\Phi^3 i_1}{\text{Spin}}\cdot 2263595\cdot U_E = 10^{17.0000\ldots} \qquad (50)$$

Know that the HIs are in their turn integrated operators to work for more results in geometry. This is, notably, the chief mechanism of the spontaneous but progressive cosmological evolution. Memorize the divine trinity of super operators of absolute geometry

$$\left\{\frac{\exists}{\textcircled{©}@}\cdot\left\{X\cdot e^{5\Phi\pi ei_1\sqrt{2}}\right\}\right\} \qquad (51)$$

However, all the functions of this gigantic machinery of mathematical symmetries are reduced merely to the constructive algorithmic compass-and-straightedge drawings in the plane geometry of Euclid as we have shown at the beginning

$$\left\{\frac{\exists}{\textcircled{©}@}\cdot\left\{X\cdot e^{5\Phi\pi ei_1\sqrt{2}}\right\}\right\} = \{3,5,17,257,65537\}^{\times}_{+}\cdot 10^{46.999\ldots} \qquad (52)$$

Consequently, the space-time Superstructure of matter as the unified model for the fundamental fermions can and must be drawn in two-dimensional projection.

The gravi-electromagnetic electron is

$$G\dim G\left\{(\Phi(90\cdot\Delta_{Exprm.})i_1)\right\}\cdot m_e\dim m\cdot e^{\pm}\dim e^{\pm} =$$
$$= \textbf{\textit{Electron}} = \sqrt[\pi]{\frac{10^{20.9999\ldots}}{(\textcircled{©}@)^2}}. \qquad (53)$$

If so, any self-respected fundamental theory should derive the hydrogen atom

$$\textbf{\textit{Electron}}\times N_{1837.41} = \dim E_{Eins}\cdot 10^{10.00000\ldots} \qquad (54)$$

Whatsoever, the history of the exact sciences developed by the human civilization rounds up. The Φ-invariance unification would have remained impossible until after any given civilization possesses the technology of microelectronic computing devices at accessible to everyone prices. Consequently, the Earth civilization arrives at this theory we relate in due time, no later and no sooner.

It is hoped that the final theory conceals a wealthy resource for the future revolutionary new technologies. Microelectronic technology is already exhausted. Nanotechnology remains so far mythology. The future technology will be based upon the laws of self-organization of matter. It is a must that calculations in the unified theory be automatized. At this stage might be discovered normal temperature superconducting materials. Probably, such materials will have organic chemistry components. Normal temperature superconductivity will be a decisive progress in many fields and lead to the construction of genuine supercomputers to simulate the system of absolute geometry.

However, the above introductory text is the latest news in sciences alone. The latest news for the human civilization as a whole is that the Cosmos and our digital appliances such as desk top PC or even digital photo camera have become compatible to be hacked by the forces residing up above there [1-3].

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