What is Fundamental ? NOTHING is Fundamental !!!

Frank Dodd (Tony) Smith, Jr. - 2017

Fundamental = Starting Point of a Process Describing Realistic Physics
including **Lagrangian** and **Algebraic Quantum Field Theory (AQFT)**.
The Starting Point of Our Universe was a Fundamental Spinor Void
Void = NOTHING so NOTHING is Fundamental

This paper explores the Process,
which allows calculation of Standard Model Particle Masses and Force Strengths.

Page 2 is a Graphic Overview.

Pages 3-13 **What is Fundamental? NOTHING is Fundamental !!!**

Pages 14-42 are my 2018 Calendar with Physics Graphics.

Pages 43-46 are about Leonardo DaVinci's Salvator Mundi and E8.

Void -> Cl(Void) -> Cl(0) -> Cl(1) -> Cl(2) -> Cl(4) -> Cl(16)

Kaluza-Klein Spacetime
M4 x CP2

Cl(8) that contains 28 = D4 for M4 Gravity	Cl(8) that contains 28 = D4 for CP2 Std Model	
		1
		16
		120
		560
		1820
		4368
		8008
		11440
1	1	12870
8	8	11440
28	28	8008
56	56	4368
70	70	1820
56	56	560
28	28	120
8	8	16
1	1	1

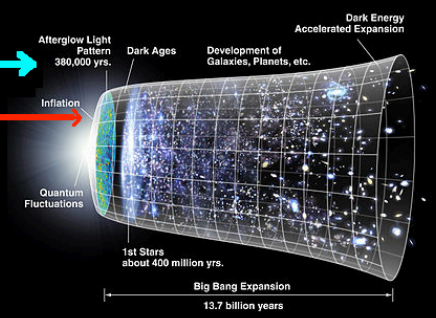
Cl(8) x Cl(8) = Cl(16)

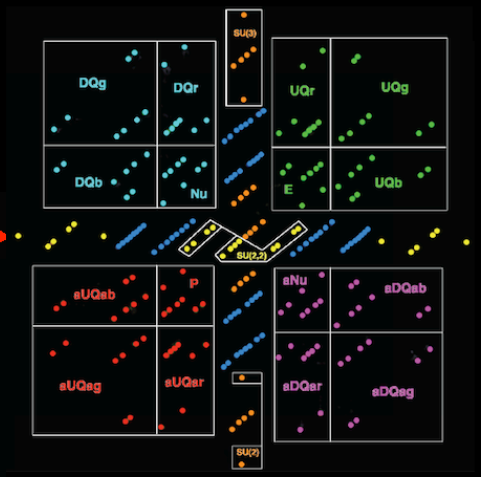
Spinors: $(8_s+8_c) \times (8_s+8_c) = (8_s \times 8_s + 8_s \times 8_c) + (8_c \times 8_s + 8_c \times 8_c)$

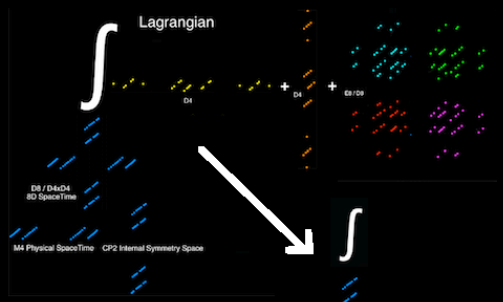
Quantum Resonant Connection

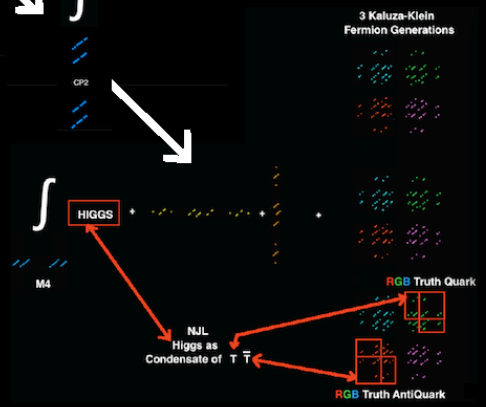
NJL Quantum Condensate

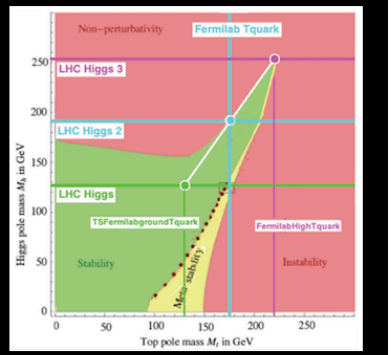
10^19 E8 Lattice 240-vertex Polytope Cells in Universe at End of Inflation







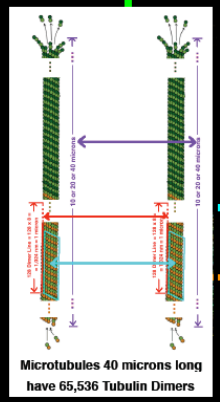




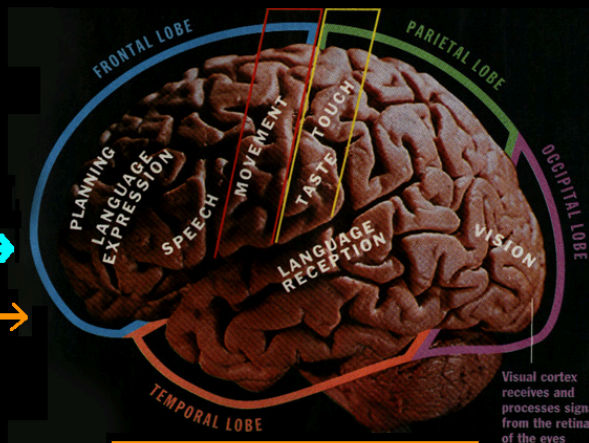
Cl(0,16) x Cl(0,8) = Cl(0,24)

M(2,Cl(0,24)) = Cl(1,25)

Completion of Union of
All Tensor Products of Cl(1,25) = **AQFT**



Penrose-Hameroff Quantum Condensate



10^19 Tubulin Dimers in a Human Brain

What is Fundamental ? NOTHING

Frank Dodd (Tony) Smith, Jr. - 2017

Fundamental = Starting Point of a Process Describing Realistic Physics
including Lagrangian and Algebraic Quantum Field Theory (AQFT).
This paper explores the Process through detailed worked examples.
(for further details and calculations see Smith references)

The Starting Point of Our Universe was a Fundamental Spinor Void
Void = NOTHING so NOTHING is Fundamental

Fundamental Spinor Void  **based on 0-dim Real Clifford Algebra Cl(Void)**
from which emerged by Finkelstein's process of Iterating Clifford Algebra Formation
(Finkelstein, Int. J. Theor. Phys. 2017 56 : 2-39)

Cl(0) = 2^0 = 1-dim

Cl(1) = 2^1 = 2-dim

Cl(2) = 2^2 = 4-dim with 2^1 = 1+1 half-spinor fermions/antifermions

 and 

Cl(4) = 2^4 = 16-dim with 2^2 = 2+2 half-spinor fermions/antifermions

 and 

Cl(16) = 2^16 = 65,536-dim with 2^8 = 128 + 128 half-spinor fermions/antifermions

128-dim Cl(16) Half-Spinors = 2 copies of Geoffrey Dixon's 64-dim RxCxHxO
where R = Real, C = Complex, H = Quaternion, O = Octonion Division Algebras
(Dixon, Division Algebras (O, H, C, and R) and Windmill Tilting)

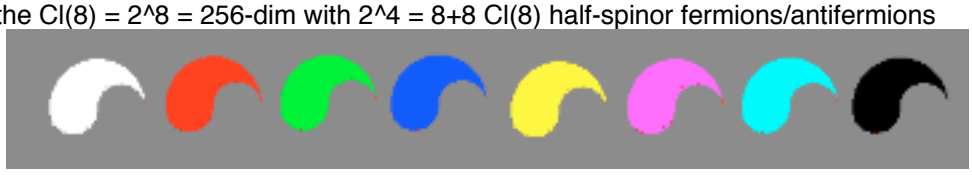
248-dim E8 = 128-dim Cl(16) Half-Spinors + 120-dim Cl(16) BiVectors

By **8-Periodicity of Real Clifford Algebras**

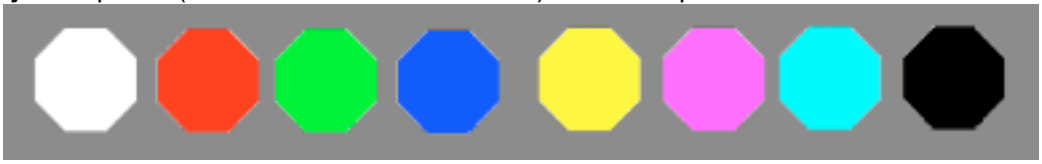
Cl(8) x ...(N times tensor product)... x Cl(8) = Cl(8N)

Cl(16) can be factored into the tensor product Cl(8) x Cl(8)

Each of the Cl(8) = 2^8 = 256-dim with 2^4 = 8+8 Cl(8) half-spinor fermions/antifermions


and


By Triality half-spinors (8 fermions and 8 antifermions) are isomorphic to each other and to 8 vectors



By 8-Periodicity Cl(8) and Cl(16) have basic structure underlying all Real Clifford Algebras.

The Iterated Clifford Algebra Creation Sequence begins with
a Compact Quantum Fluctuation in a Parent Universe (Real Form E8(-248))
that Unfolds into an Octonionic Inflation of Our Universe (Real Form E8(8))

(Smith, viXra 1709.0265)

The Creation Sequence can also be seen in terms of Spinor/Clifford Algebra Doubling

$$Cl(0,0) \to Cl(0,2) \to Cl(0,4) \to Cl(0,6) \to Cl(0,8) \to$$

that goes to Cl(0,8) which has Vector - Half-Spinor Triality
and by 8-Periodicity is the Basic Building Block of Real Clifford Algebras.
The Creation Sequence continues by Tensor Product

$$\to Cl(0,8) \times Cl(0,8) = Cl(0,16) \to Cl(0,16) \times Cl(0,8) = Cl(0,24) \to$$

Cl(0,16) contains the Maximal Exceptional E8 Lie Algebra
Cl(0,24) contains the Vector Space of the 24-dim Leech Lattice Λ24 that is composed of
3 copies of E8 Lattices (2 being Integral Domains and 1 not Algebraically closed)
The Creation Sequence continues by constructing the Conformal Structure
of 2x2 matrices with entries in Cl(0,24) = M(2,Cl(0,24))

(Porteous, Clifford Algebras and the Classical Groups and
Lounesto and Porteous, Lectures on Clifford (Geometric) Algebras and Applications)

$$\to M(2,Cl(0,24)) = Cl(1,25) \to$$

Since all the matrix entries are Cl(0,24) = tensor product of 3 copies of Cl(0,8)
8-Periodicity allows formation of the tensor products of copies of Cl(1,25)

-> Completion of Union of All Tensor Products of Cl(1,25) = hyperfinite AQFT

The hyperfinite AQFT has Real / Octonionic structure inherited from Cl(0,8)
and
it also has Quaternionic structure due to

$Cl(1,25) = Cl(1,9) \times Cl(0,8) \times Cl(0,8)$ and $Cl(1,9) = Cl(1,5) \times Cl(0,4) = Cl(2,4) \times Cl(0,4)$
where
the vector space of Cl(2,4) is 6-dim Conformal Spacetime
which contains 4-dim Minkowski Spacetime M4 of Cl(1,3)
and
the vector space of Cl(0,4) corresponds to CP2 = SU(3) / SU(2)xU(1)
so that **before breaking Octonionic symmetry non-unitarity of Octonion Quantum Processes allows particle creation during the Inflation Era**

(Adler, Quaternionic Quantum Mechanics and Quantum Fields, pages 50-52, 561)

and **after breaking non-unitary Octonionic 8-dim Spacetime**
to unitary Quaternionic Spacetime, thus ending the Inflation Era,
the Spacetime of the hyperfinite AQFT is (4+4)-dim M4 x CP2 Kaluza-Klein
(Real Form E8(-24))

The E8 contained in Cl(0,16) is not a conventional Gauge Group
but
is a Recipe for a Realistic Physics Lagrangian:

Fermion Terms:
E8 / D8 = 128-dim = 8-dim Spacetime Components of 8 Fermion Particles
+
8-dim Spacetime Components of 8 Fermion AntiParticles

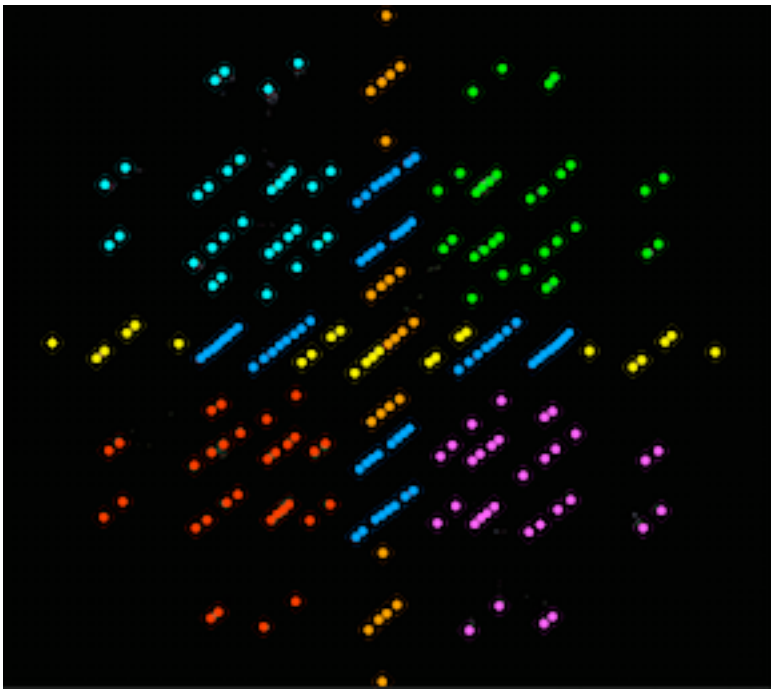
Spacetime Base Manifold Terms:
D8 / D4 x D4 = 64-dim = 8-dim Spacetime Position x 8-dim Spacetime Momentum

Gauge Boson and Ghost Terms:
The two 28-dim D4 correspond to the M4 and CP2 of M4 x CP2 Kaluza-Klein

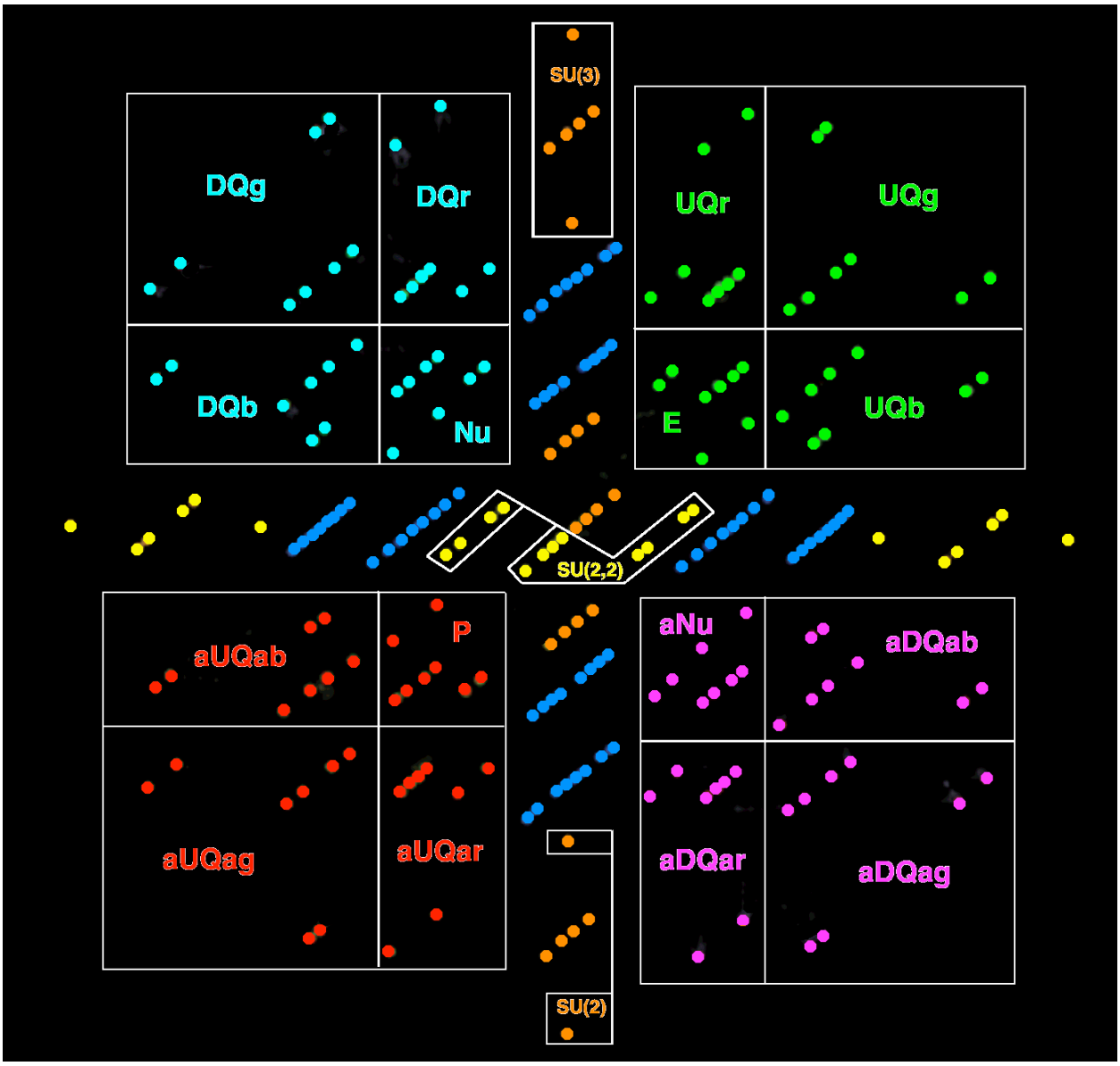
D4_M4 = 16-dim U(2,2) containing SU(2,2) = Spin(2,4) Conformal Gravity
and 12 Standard Model Ghosts

D4_CP2 = 8-dim SU(3) Color Force plus 4 Translation Gravity Ghosts
and 12 Conformal Gravity Ghosts
Electroweak SU(2) x U(1) come from Little Group of CP2 = SU(3) / SU(2) x U(1)
(Batakis, Class. Quantum Grav.3 (1986) L99-L105)

This E8 Structure can be seen in terms of its 240 Root Vectors



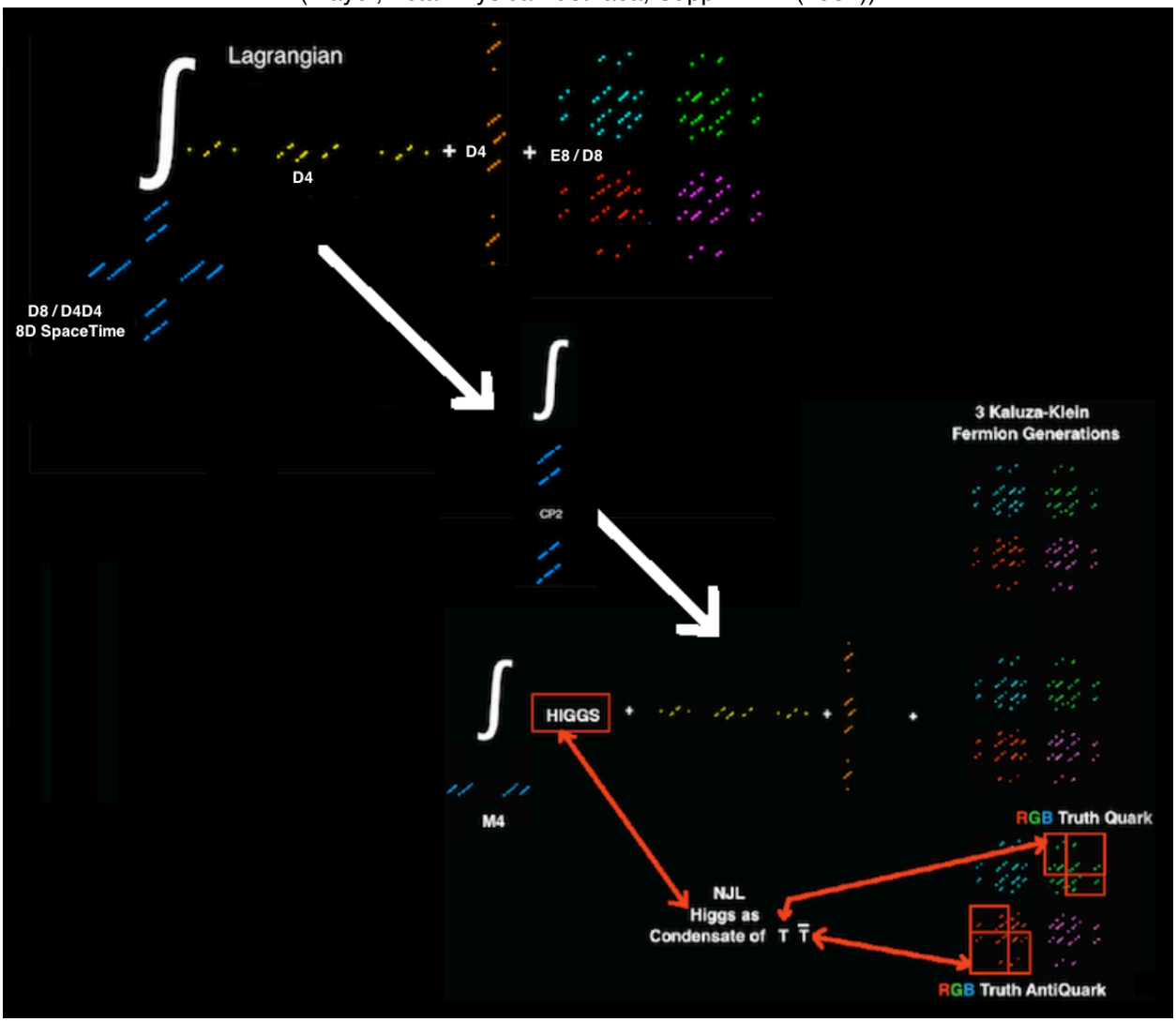
each of which has a realistic Physics Interpretation:



E = electron, UQr = red up quark, UQg = green up quark, UQb = blue up quark
Nu = neutrino, DQr = red down quark, DQg = green down quark, DQb = blue down quark
P = positron, aUQar = anti-red up antiquark,
aUQag = anti-green up antiquark, aUQab = anti-blue up antiquark
aNu = antineutrino, aDQar = anti-red down antiquark,
aDQag = anti-green down antiquark, aDQab = anti-blue down antiquark

Each Lepton and Quark has 8 components with respect to 4+4 dim Kaluza-Klein
6 orange SU(3) and 2 orange SU(2) represent Standard Model root vectors
24-6-2 = 16 orange represent U(2,2) Conformal Gravity Ghosts
12 yellow SU(2,2) represent Conformal Gravity SU(2,2) root vectors
24-12 = 12 yellow represent Standard Model Ghosts
32+32 = 64 blue represent 4+4 dim Kaluza-Klein M4 x CP2 Spacetime Base Manifold
32 for M4 position x 8 momentum and 32 for CP2 position x 8 momentum

Higgs and Second and Third Generation Fermions emerge from breaking
Octonionic Symmetry of the Inflation Era to Quaternionic Symmetry of Present Era.
(Mayer, Acta Physica Austriaca, Suppl. XXIII (1981))

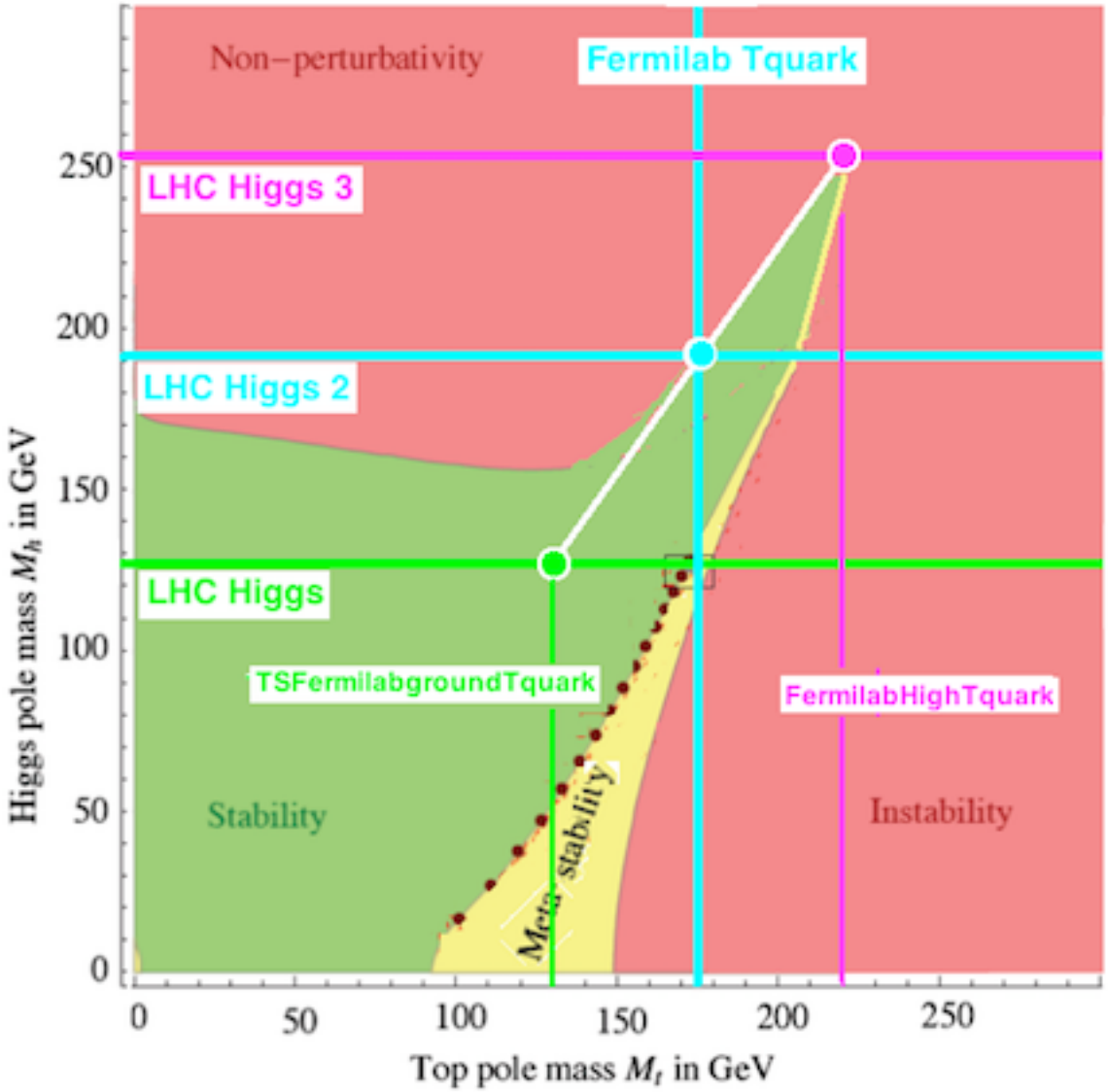


The Higgs is a Condensate of Tquark and Tantiquark resulting in
3 mass states for the Higgs and the Tquark
(Smith, viXra 1701.0496)

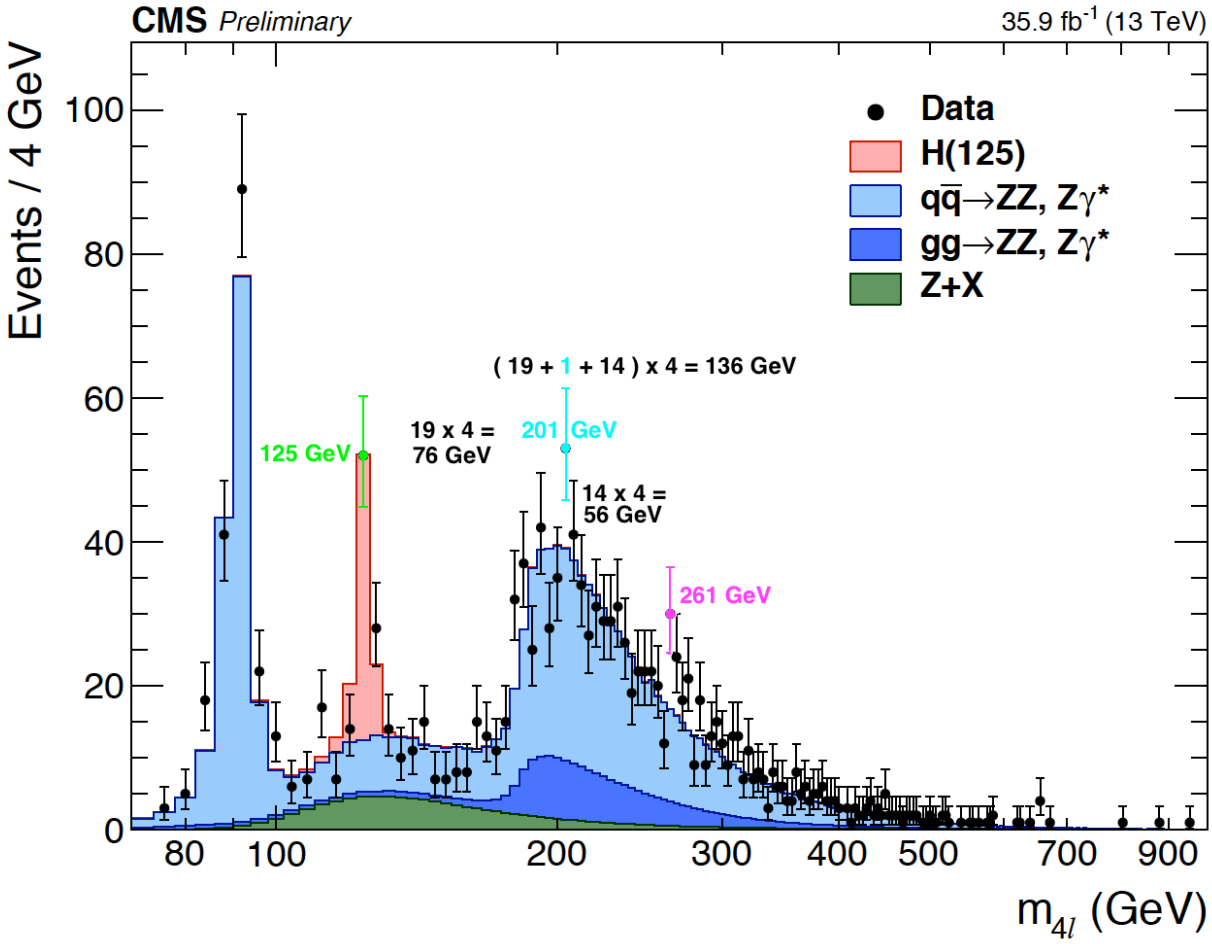
As to the unconventional mass states other than 125 GeV Higgs and 174 GeV Tquark:
ATLAS, for the Full 2016 36.1 fb-1 of 2016 data in the Higgs -> ZZ* -> 4l channel,
on 5 July 2017 released ATLAS-CONF-2017-058 saying:
"... A search for heavy resonances ...[in the Higgs -> ZZ* -> 4l channel]...
uses proton–proton collision data at a centre-of-mass energy of 13 TeV
corresponding to an integrated luminosity of 36.1 fb-1 collected with the ATLAS
detector during 2015 and 2016 at the Large Hadron Collider ...

excess ...[is]... observed in the data for m4l around 240 ... GeV ...
with a local significance of 3.6 sigma ...".
It will be interesting to see whether the 2017 ATLAS data of over 45 fb-1
will confirm or refute the excess at 240 GeV as a Higgs mass state.

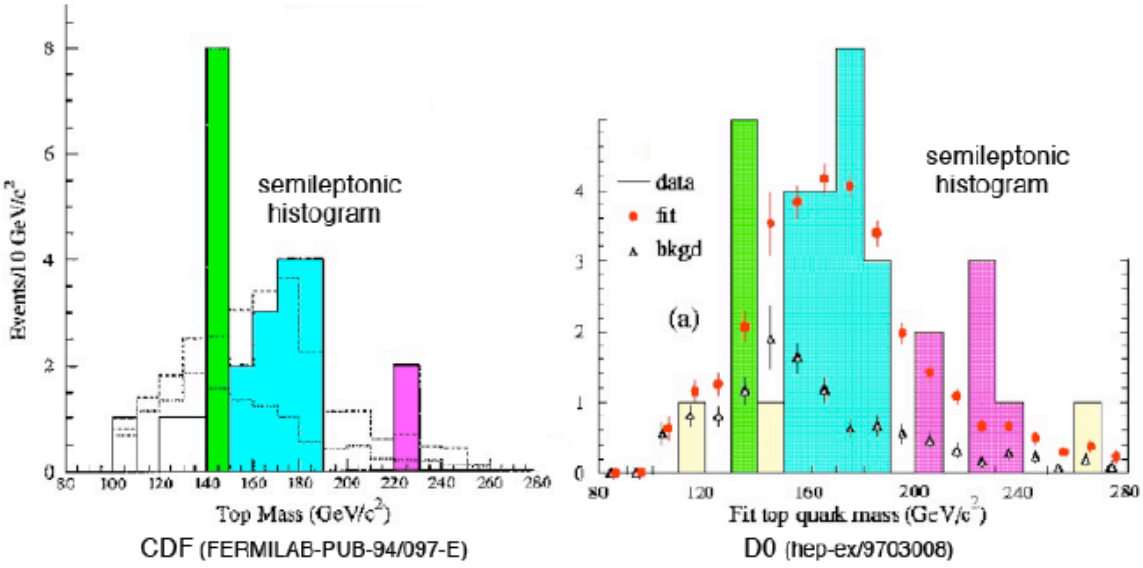
Here is a chart showing the 3 Mass States for Higgs and Tquark (viXra 1701.0496):
green dot in the Stable region (green) has 125 GeV Higgs and 130 GeV Tquark
cyan dot on the Non-perturbativity Boundary has 190 GeV Higgs and 174 GeV Tquark
magenta dot at the Critical Point has 250 GeV Higgs and 220 GeV Tquark



CMS, for their Full 35.9 fb-1 of 2016 data in the Higgs -> ZZ* -> 4l channel,
in CMS-PAS-HIG-16-041 has bins of 4 GeV width and shows all 3 Higgs mass states:
low-mass Higgs state (green) with mass 125 GeV
middle-mass Higgs state (cyan) with mass 201 GeV (close to 190 GeV)
high-mass Higgs state (magenta) with mass 261 GeV (close to 240 and 250 GeV)



Semileptonic histograms of CDF and D0 show all 3 Truth Quark Mass States



low-mass Tquark state (green) with mass 130 GeV
middle-mass Tquark state (cyan) with mass 174 GeV
high-mass Tquark state (magenta) with mass 220 GeV

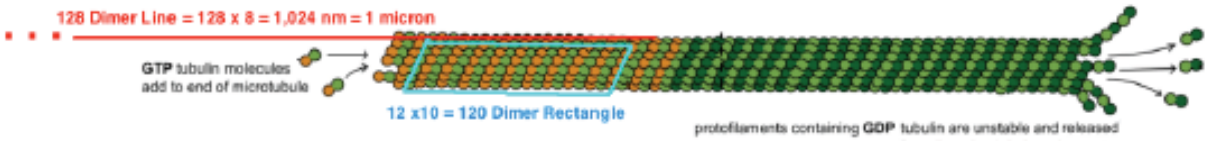
The Completion of Union of All Tensor Products of Cl(1,25) = hyperfinite AQFT

(Smith, viXra 1701.0495)

containing the Realistic Physics of the Lagrangian.
It also contains, due to its Cl(1,25) components,
the structure of 26-dim String Theory
in which Strings are seen as Particle World-Lines,
the massless spin 2 state is the carrier of the Bohm Quantum Potential, and
the SO(24) little group is related to the Monster automorphism group
that is the symmetry of each cell of Planck-scale local lattice structure.

(Green, Schwartz, and Witten, "Superstring Theory" vol. 1)

10-dim String Spacetime is Kaluza-Klein 6-dim Conformal x 4-dim CP2 giving M4 x CP2
8-dim K-K Classical Lagrangian Spacetime as an NJL condensate of Dixon's
64-dim Particle spinor T = RxCxHxO and the 64-dim AntiParticle spinor Tbar
Each cell of E8 Classical Lagrangian Spacetime corresponds to 65,536-dim Cl(16)
which contains 248-dim E8 = 120-dim D8 bivectors +128-dim D8 half-spinors
Human Brain Microtubules 40 microns long have 65,536 Tubulin Dimers



(image adapted from 12biophys.blogspot.com Lecture 11)

and so can have Bohm Quantum Resonance with Cl(16) Spacetime cells
so that **the State of Consciousness of a Human is in exact resonant**
correspondence with a subset of the cells of E8 Classical Lagrangian Spacetime
Therefore **E8 Classical Lagrangian Spacetime NJL Condensate** is effectively the
Spirit World in which the **Human States of Consciousness = Souls exist.**

What happens to a Fundamental Fermion Particle whose World-Line string intersects a Single Cell ?

The Fundamental Fermion Particle does not remain a single Planck-scale entity.
Tachyons create clouds of particles/antiparticles.

(Schroer, hep-th/9908021)

The Fundamental Fermion Cloud looks like a Kerr-Newman Black Hole.

(Arcos and Pereira, hep-th/0210103)

What is the size of the Fundamental Fermion Kerr-Newman Cloud ?

The Cloud is one Planck-scale Fundamental Fermion Valence Particle plus
an effectively neutral cloud of particle/antiparticle pairs. The symmetry of the cloud
is governed by the 24-dimensional Leech lattice by which the Single Cell was formed.
According to the ATLAS at brauer.maths.qmul.ac.uk/Atlas/v3/spor/M/
the maximal subgroup of the Monster M involving Co1 is 2^(1+24).Co1 of order
139511839126336328171520000 = 1.4 x 10^26 As 2.Co1 is the Automorphism group
of the Leech Lattice modulo to which the Single Cell was formed,
and as the 26-dim String Theory Leech Lattice is a superposition of 8 Leech Lattices,
8 x 2^(1+24).Co1 describes the structure of the Cloud. Therefore,
the volume of the Cloud should be on the order of 10^27 x Planck scale containing
10^27 particle/antiparticle pairs with size 10^(27/3) x 1.6 x 10^(-33) cm = 10^(-24) cm.

Fundamental Fermion Clouds are Schwinger Sources.

Sources require Linear Operators
"... represented by a definite integral [of a]... kernel ... function ...".
(Fock, "Fundamental of Quantum Mechanics" (1931))

Kernel Functions for Complex Classical Domains were described by Hua.
(Hua, "Harmonic Analysis of Functions of Several Complex Variables in the Classical Domains" (1958))

Schwinger in 1951 "... introduced a description in terms of Green's functions, what Feynman had called propagators ... The Green's functions are vacuum expectation values of time-ordered Heisenberg operators, and the field theory can be defined non-perturbatively in terms of these functions ...[which]... gave deep structural insights into QFTs; in particular ... the structure of the Green's functions when their variables are analytically continued to complex values ...".
(Schweber, PNAS 102, 7783-7788)

The Classical Domains (complete simply connected Riemannian symmetric spaces) representing 4-dim Spacetime with Quaternionic Structure are:
S1 x S1 x S1 x S1 = 4 copies of U(1)
S2 x S2 = 2 copies of SU(2)
CP2 = SU(3) / SU(2)xU(1)
S4 = Spin(5) / Spin(4) = Euclidean version of Spin(2,3) / Spin(1,3)
(Wolf, J. Math. Mech 14 (1965) 1033-1047)

Wyler showed how to use Green's Functions = Kernel Functions of Classical Domain structures characterizing Sources = Leptons, Quarks, and Gauge Bosons, to calculate Particle Masses and Force Strengths
(Wyler, 1971 - C. R. Acad. Sc. Paris, t. 271, 186-188)

"... We introduce a quantitative description of the particle source in terms of a source function ... we do not have to claim that we can make the source arbitrarily small ... the experimeter... must detect the particles ...[by]... collision that annihilates the particle ... the source ... can be ... an abstraction of an annilhilation collision, with the source acting negatively, as a sink ... The basic things are ... the source functions ... describing the intermediate propagation of the particle ..."
(Schwinger, 1969 - see physics/0610054)

Schwinger Sources can be described by continuous manifold structures of Bounded Complex Domains and their Shilov Boundaries
and
Wyler's techniques allow calculation of Particle Masses and Force Strengths
(Smith, viXra 1602.0319)

Results of such calculations are shown in the Technical Endnotes:

Technical Endnotes:

Results of Calculations:

Quark masses are constituent masses. Most of the calculations are tree-level.
Fermions are Schwinger Sources with geometry of Complex Bounded Domains
and Kerr-Newman Black Hole structure size about 10^(-24) cm.
Since ratios are calculated, values for one particle mass and one force strength are assumed.

Particle/Force	Tree-Level	Higher-Order
e-neutrino	0	0 for nu_1
mu-neutrino	0	9 x 10^(-3) eV for nu_2
tau-neutrino	0	5.4 x 10^(-2) eV for nu_3
electron	0.5110 MeV	
down quark	312.8 MeV	charged pion = 139 MeV
up quark	312.8 MeV	proton = 938.25 MeV
		neutron - proton = 1.1 MeV
muon	104.8 MeV	106.2 MeV
strange quark	625 MeV	
charm quark	2090 MeV	
tauon	1.88 GeV	
beauty quark	5.63 GeV	
truth quark (low state)	130 GeV	(middle state) 174 GeV
		(high state) 218 GeV
W+	80.326 GeV	
W-	80.326 GeV	
W0	98.379 GeV	Z0 = 91.862 GeV
Mplanck 1.217x10^19 GeV		
Higgs VEV (assumed)	252.5 GeV	
Higgs (low state)	126 GeV	(middle state) 182 GeV
		(high state) 239 GeV
Gravity Gg (assumed)	1	
(Gg)(Mproton^2 / Mplanck^2)		5 x 10^(-39)
EM fine structure	1/137.03608	
Weak Gw	0.2535	
Gw(Mproton^2 / (Mw+^2 + Mw-^2 + Mz0^2))		1.05 x 10^(-5)
Color Force at 0.245 GeV	0.6286	0.106 at 91 GeV

Kobayashi-Maskawa parameters for W+ and W- processes are:

	d	s	b
u	0.975	0.222	0.00249 -0.00388i
c	-0.222 -0.000161i	0.974 -0.0000365i	0.0423
t	0.00698 -0.00378i	-0.0418 -0.00086i	0.999

The phase angle d13 is taken to be 1 radian.

Dark Energy : Dark Matter : Ordinary Matter = 0.75 : 0.21 : 0.04

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Schwinger, 1969 - see physics/0610054

Smith, viXra 1602.0319

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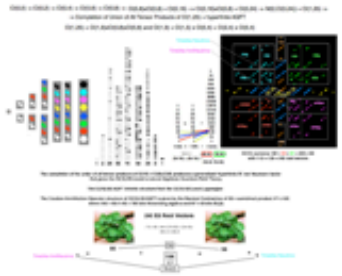
Smith, viXra 1701.0496

Smith, viXra 1709.0265

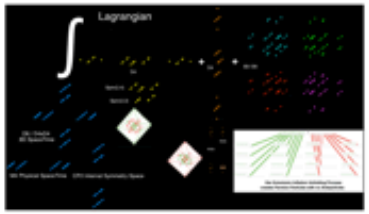
Wolf, J. Math. Mech 14 (1965) 1033-1047

Wyler, 1971 - C. R. Acad. Sc. Paris, t. 271, 186-188

Duchamp Mind - Matter

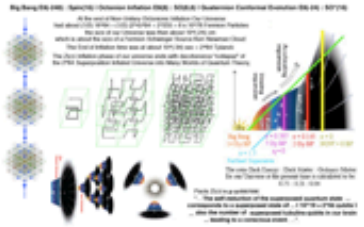


Cl(16) Spinors

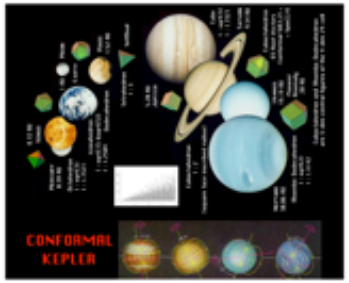


Lagrangian

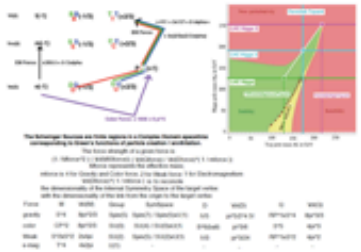
AQFT Cl(16) x Cl(16) ...



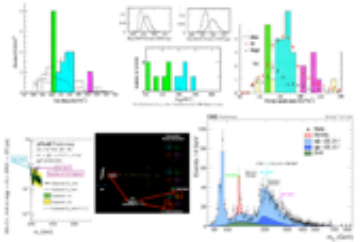
E8(-248) E8(8) E8(-24)



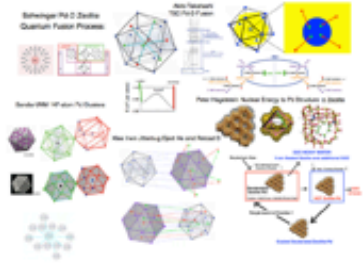
Conformal Kepler



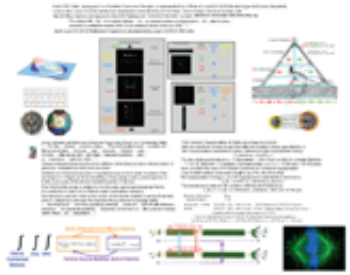
Higgs-TruthQuark NJL



3-state Higgs-TruthQuark



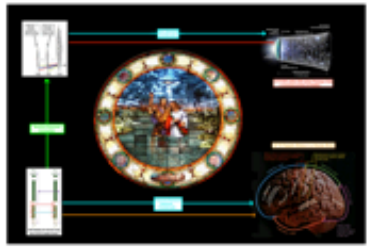
Pd Cluster - Zeolite - D Fusion



Conformal Warp
Pyramid Microtubule

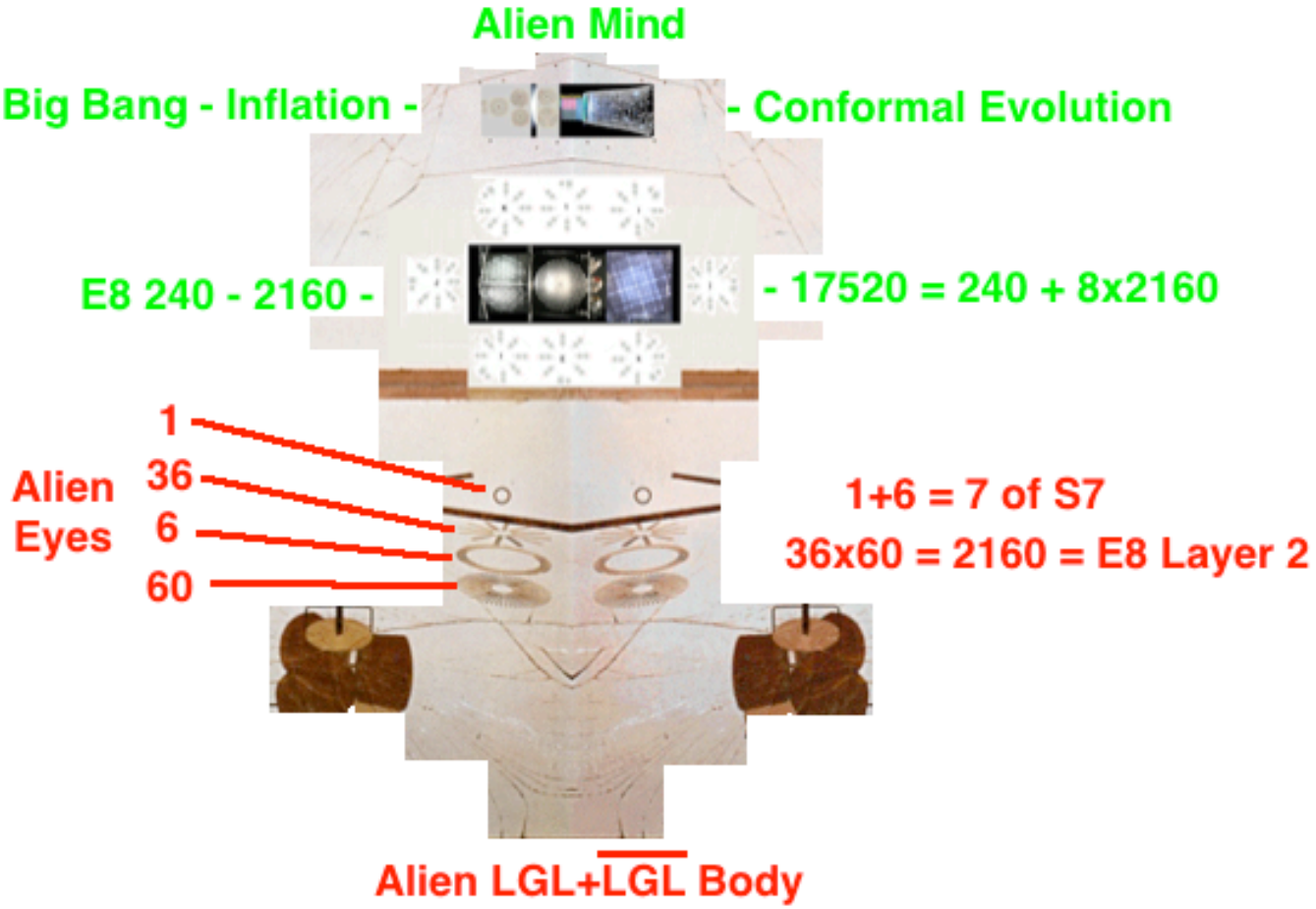
IFA RigVeda I Ching Torah Llull

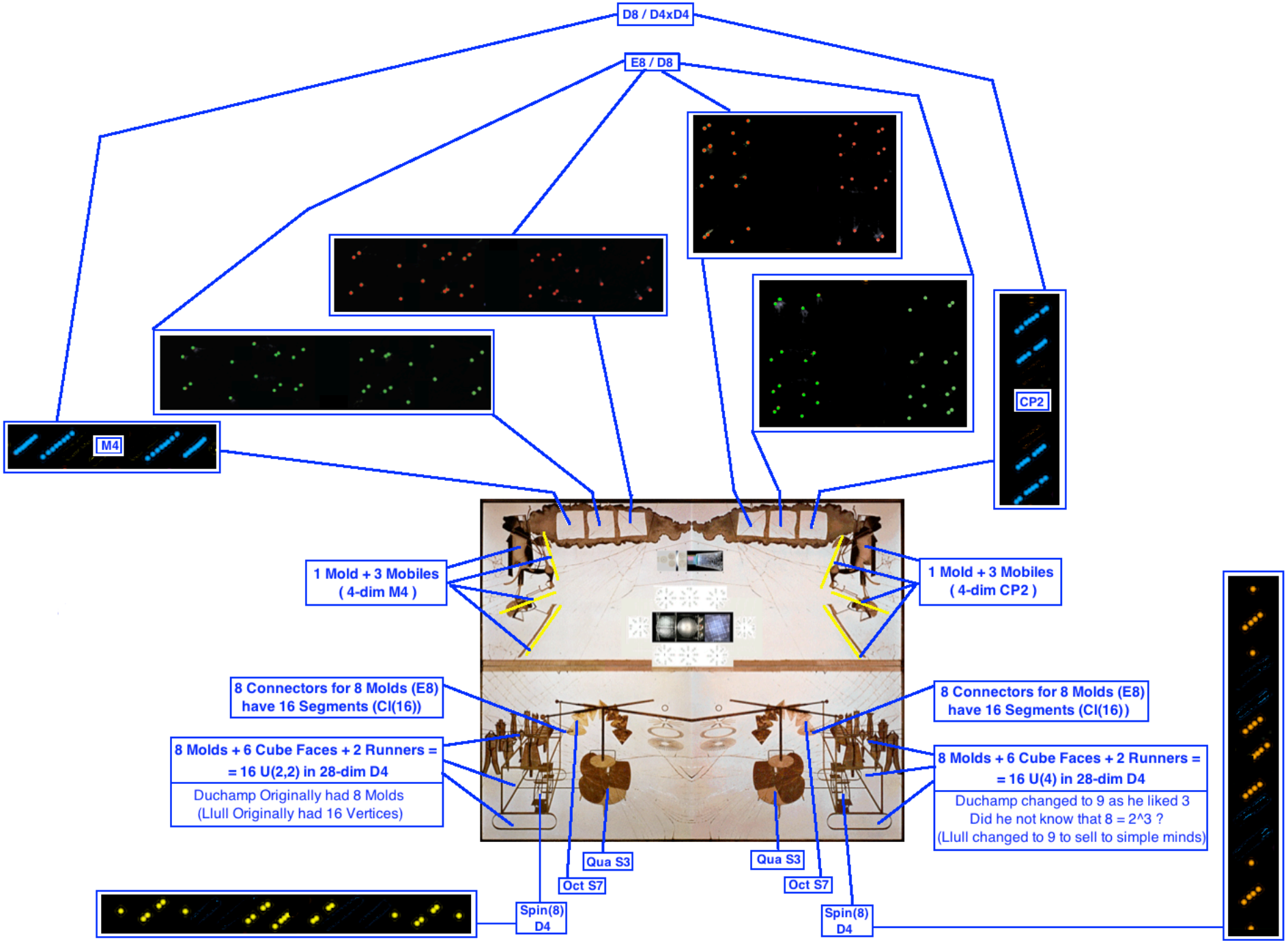
Africa Pyramid Roman Legion



Body Spirit Soul


K
1
i
J
j
I
E
k


Alien Mind
Big Bang - Inflation -
- Conformal Evolution
E8 240 - 2160 -
- 17520 = 240 + 8x2160
1
Alien
36
Eyes
6
60
1+6 = 7 of S7
36x60 = 2160 = E8 Layer 2
Alien LGL+LGL Body


D8 / D4xD4
E8 / D8
M4
CP2
1 Mold + 3 Mobiles
(4-dim M4)
1 Mold + 3 Mobiles
(4-dim CP2)
8 Connectors for 8 Molds (E8)
have 16 Segments (Cl(16))
8 Molds + 6 Cube Faces + 2 Runners =
= 16 U(2,2) in 28-dim D4
Duchamp Originally had 8 Molds
(Llull Originally had 16 Vertices)
8 Connectors for 8 Molds (E8)
have 16 Segments (Cl(16))
8 Molds + 6 Cube Faces + 2 Runners =
= 16 U(4) in 28-dim D4
Duchamp changed to 9 as he liked 3
Did he not know that 8 = 2^3 ?
(Llull changed to 9 to sell to simple minds)
Qua S3
Oct S7
Spin(8)
D4
Qua S3
Oct S7
Spin(8)
D4

Void -> Cl(Void) -> Cl(0) -> Cl(1) -> Cl(2) -> Cl(4) -> Cl(16)

Kaluza-Klein Spacetime
M4 x CP2

Cl(8) that contains 28 = D4 for M4 Gravity	Cl(8) that contains 28 = D4 for CP2 Std Model	
		1
		16
		120
		560
		1820
		4368
		8008
		11440
1	1	12870
8	8	11440
28	28	8008
56	56	4368
70	70	1820
56	56	560
28	28	120
8	8	16
1	1	1

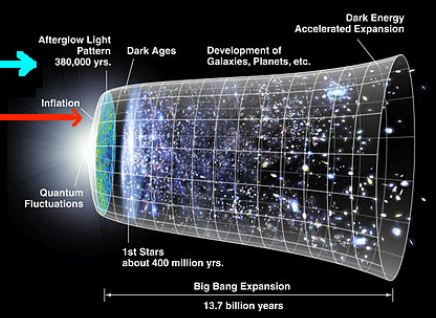
Cl(8) x Cl(8) = Cl(16)

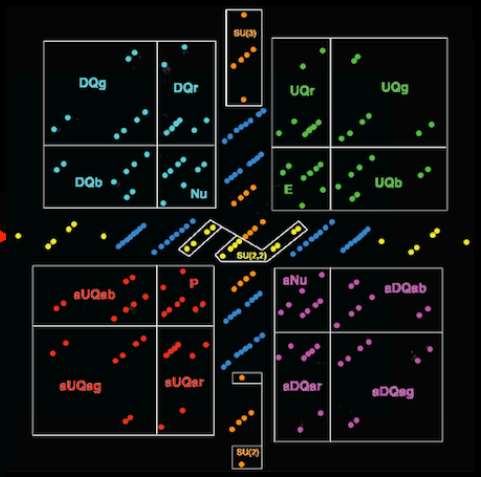
Spinors: $(8_s+8_c) \times (8_s+8_c) = (8_s \times 8_s + 8_s \times 8_c) + (8_c \times 8_s + 8_c \times 8_c)$

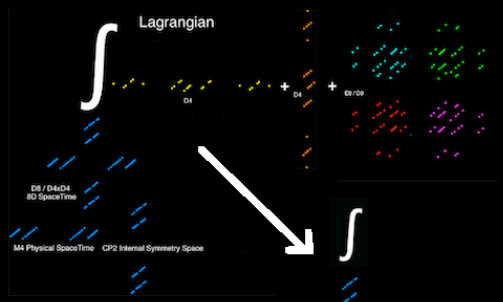
Quantum Resonant Connection

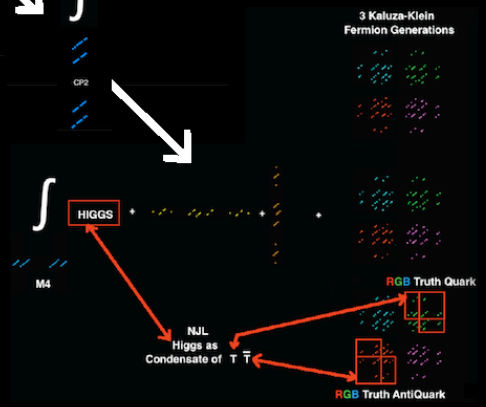
NJL Quantum Condensate

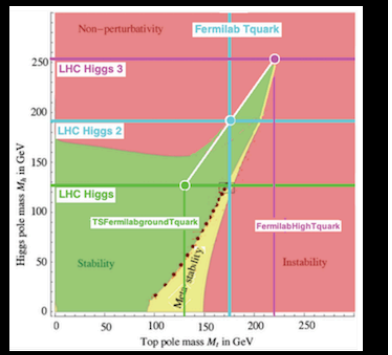
10^19 E8 Lattice 240-vertex Polytope Cells in Universe at End of Inflation







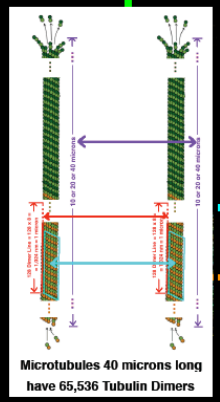




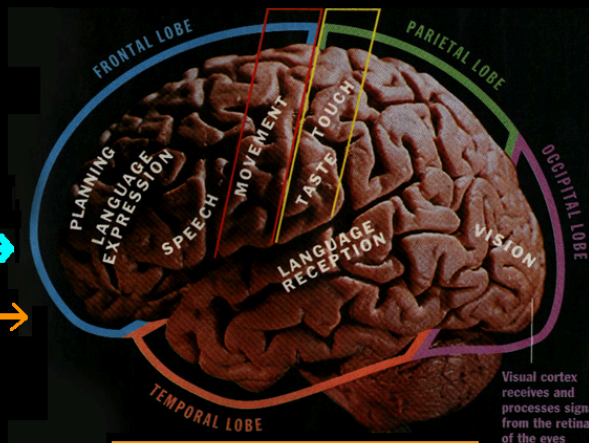
Cl(0,16) x Cl(0,8) = Cl(0,24)

M(2,Cl(0,24)) = Cl(1,25)

Completion of Union of
All Tensor Products of Cl(1,25) = **AQFT**



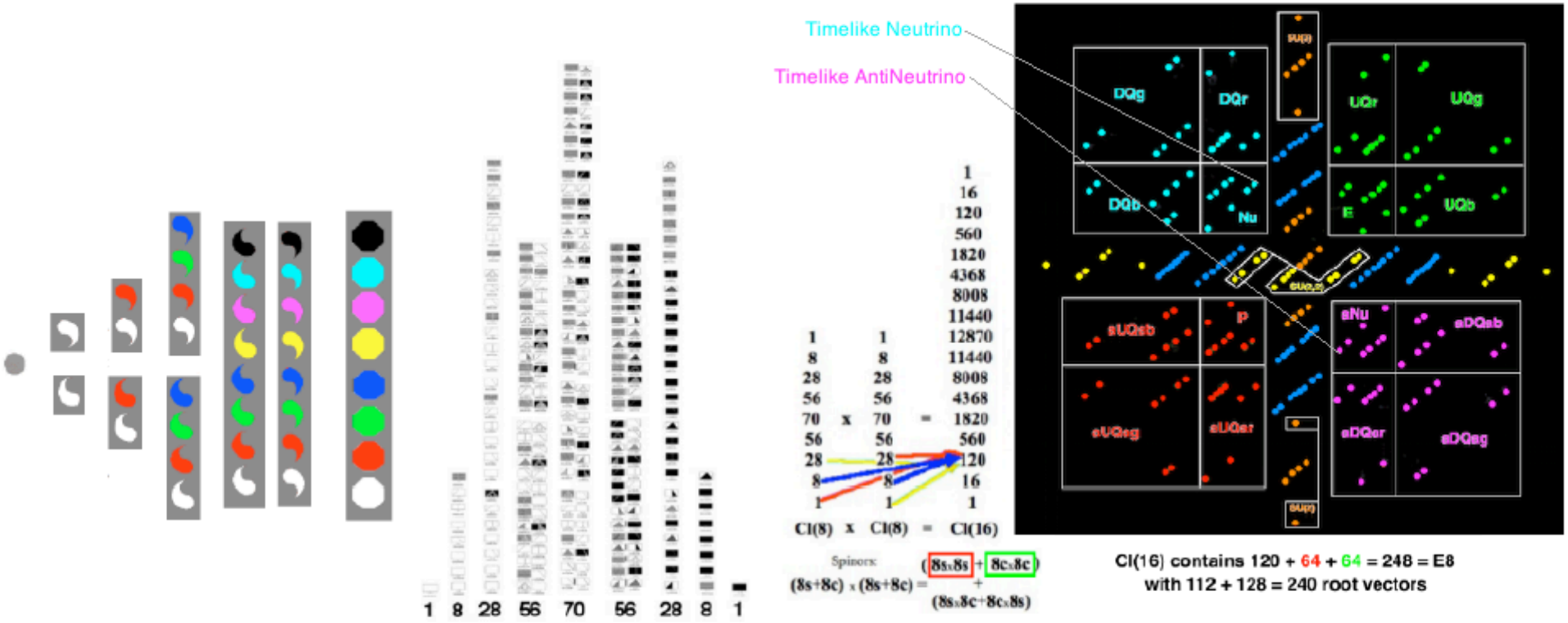
Penrose-Hameroff Quantum Condensate



10^19 Tubulin Dimers in a Human Brain

Cl(0,0) -> Cl(0,2) -> Cl(0,4) -> Cl(0,6) -> Cl(0,8) -> Cl(0,8)xCl(0,8) = Cl(0,16) --> Cl(0,16)xCl(0,8) = Cl(0,24) -> M(2,Cl(0,24)) = Cl(1,25) ->
-> Completion of Union of All Tensor Products of Cl(1,25) = hyperfinite AQFT

Cl(1,25) = Cl(1,9)xCl(0,8)xCl(0,8) and Cl(1,9) = Cl(1,5) x Cl(0,4) = Cl(2,4) x Cl(0,4)

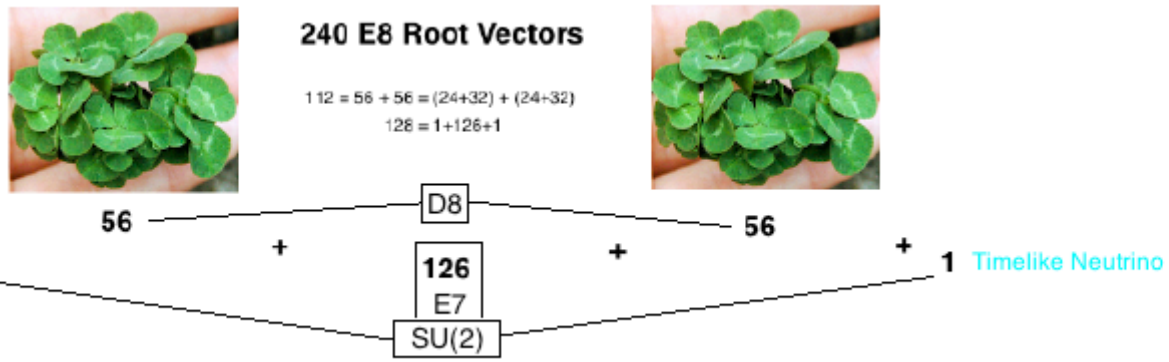


Cl(16) contains 120 + 64 + 64 = 248 = E8
with 112 + 128 = 240 root vectors

The completion of the union of all tensor products of Cl(16) = Cl(8)xCl(8) produces a generalized Hyperfinite II1 von Neumann factor that gives the Cl(16)-E8 model a natural Algebraic Quantum Field Theory

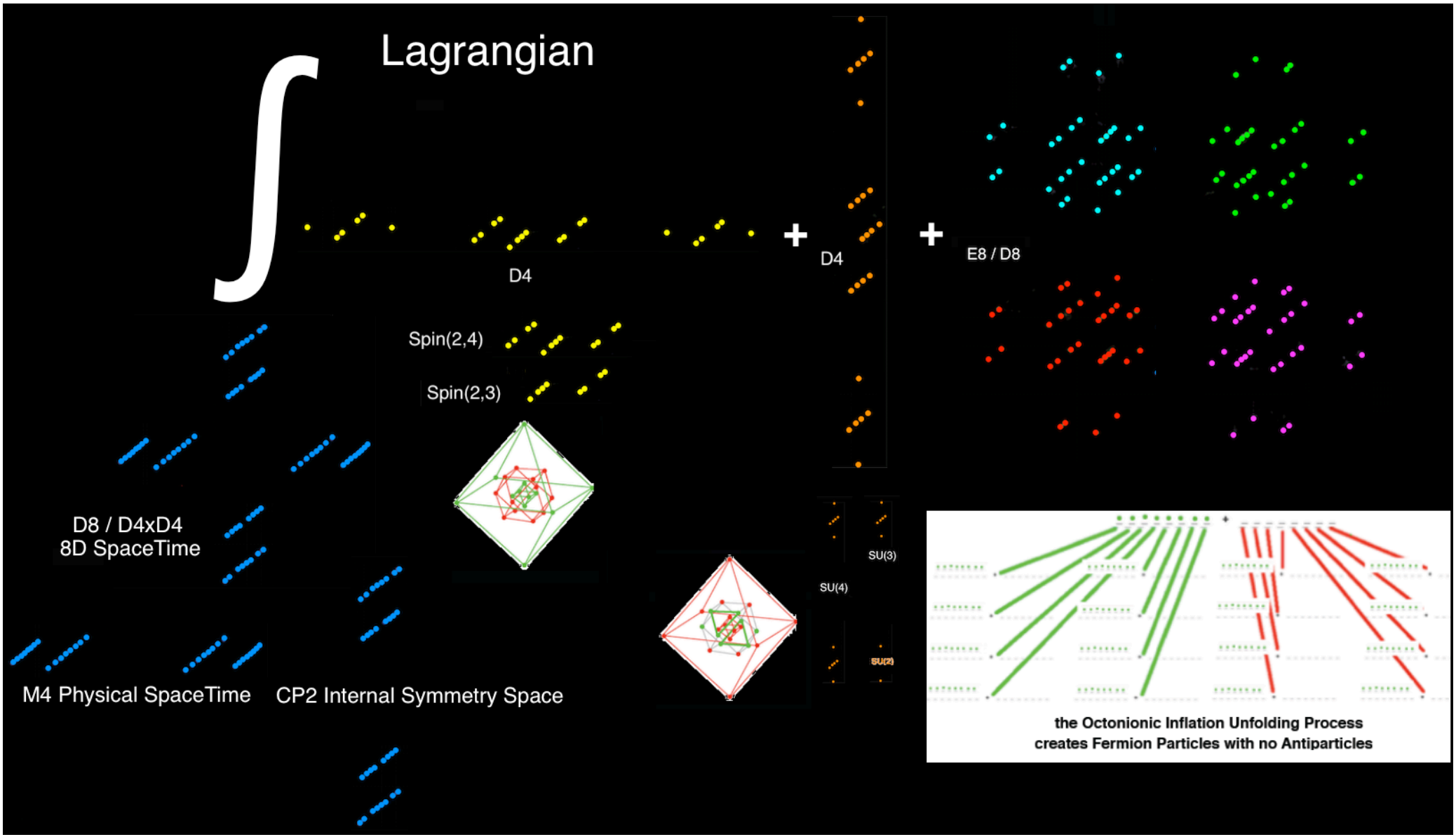
The Cl(16)-E8 AQFT inherits structure from the Cl(16)-E8 Local Lagrangian

The Creation-Annihilation Operator structure of Cl(16)-E8 AQFT is given by the Maximal Contraction of E8 = semidirect product A7 x h92 where h92 = 92+1+92 = 185-dim Heisenberg algebra and A7 = 63-dim SL(8)



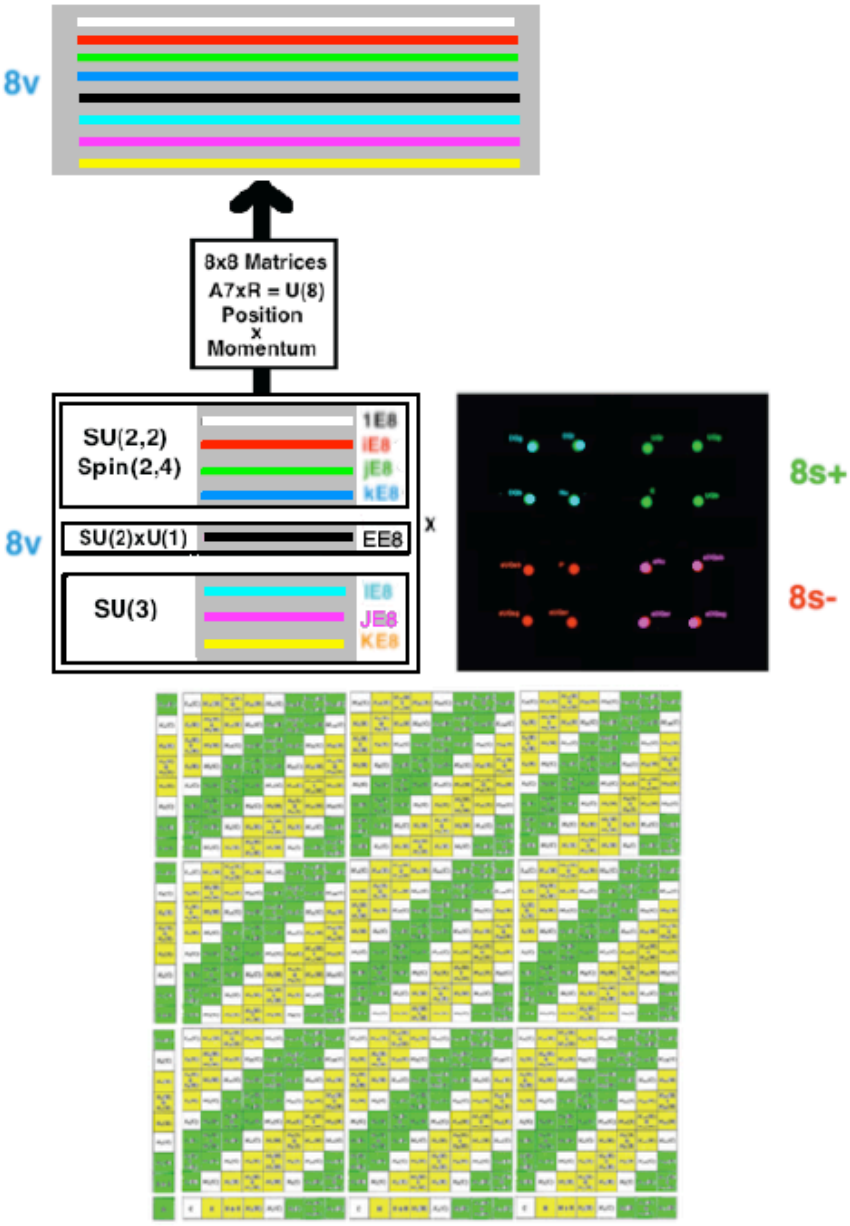
January 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 New Year's Day	2	3	4	5	6
7	8	9	10	11	12	13
14	15 Martin Luther King, Jr. Day	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			


Lagrangian
D4
D4
E8 / D8
Spin(2,4)
Spin(2,3)
SU(3)
SU(4)
SU(2)
D8 / D4xD4
8D SpaceTime
M4 Physical SpaceTime
CP2 Internal Symmetry Space
the Octonionic Inflation Unfolding Process
creates Fermion Particles with no Antiparticles

February 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2 Groundhog Day	3
4	5	6	7	8	9	10
11	12 Lincoln's Birthday	13	14 St. Valentine's Day Ash Wednesday	15	16 Chinese New Year	17
18	19 President's Day	20	21	22	23	24
25	26	27	28 Purim			



The Cl(16)-E8 AQFT inherits structure from the Cl(16)-E8 Local Lagrangian

$\int$ Standard Model Gauge Gravity + Fermion Particle-AntiParticle

8-dim SpaceTime

the Cl(16)-E8 model at the Planck Scale has spacetime condensing out of Clifford structures forming a Leech lattice underlying 26-dim String Theory of World-Lines with 8 + 8 + 8 = 24-dim of fermion particles and antiparticles and of spacetime.

Slices of 8v SpaceTime are represented as D8 branes. Each D8 brane has
Planck-Scale Lattice Structure superpositions of 8 types of E8 Lattice
denoted by 1E8, iE8, jE8, kE8, EE8, IE8, JE8, KE8

Stack D8 branes to get SpaceTime with Strings = World-Lines

Let Oct16 = discrete multiplicative group { +/-1, +/-i, +/-j, +/-k, +/-E, +/-I, +/-J, +/-K}.
Orbifold by Oct16 the 8s+ to get 8 Fermion Particle Types
Orbifold by Oct16 the 8s- to get 8 Fermion AntiParticle Types

Gauge Bosons from 1E8 and EE8 parts of a D8 give U(2) Electroweak Force
Gauge Bosons from IE8, JE8, and KE8 parts of a D8 give SU(3) Color Force
Gauge Bosons from 1E8, iE8, JE8, and kE8 parts of a D8 give U(2,2) Conformal Gravity

The 8x8 matrices for collective coordinates linking one D8 to the next D8
give Position x Momentum

The automorphism group of a single 26-dim String Theory cell modulo the Leech lattice is the Monster Group of order about 8 x 10^53.

When a fermion particle/antiparticle appearsTachyons create a cloud of particles/antiparticles. The cloud is one Planck-scale Fundamental Fermion Valence Particle plus an effectively neutral cloud of particle/antiparticle pairs forming a Kerr-Newman black hole.
That cloud constitutes the Schwinger Source.

The Schwinger Sources are finite regions in a Complex Domain spacetime corresponding to Green's functions of particle creation / annihilation.

Its structure comes from the 24-dim Leech lattice part of the Monster Group which is 2^(1+24) times the double cover of Co1, for a total order of about 10^26.

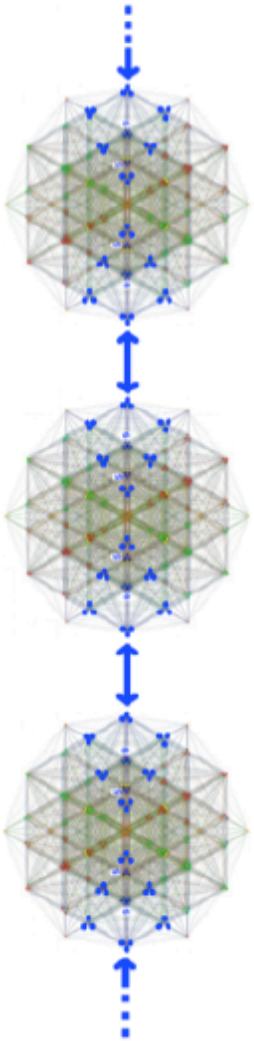
(Since a Leech lattice is based on copies of an E8 lattice and since there are 7 distinct E8 integral domain lattices there are 7 (or 8 if you include a non-integral domain E8 lattice)mdistinct Leech lattices.
The physical Leech lattice is a superposition of them, effectively adding a factor of 8 to the order.)

The volume of the Kerr-Newman Cloud is on the order of 10^27 x Planck scale,
= roughly 10^(-24) cm.

March 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11 Daylight Savings Begins	12	13	14	15	16	17 St. Patrick's Day
18	19	20 Spring Begins	21	22	23	24
25 Palm Sunday	26	27	28	29	30 Passover	31

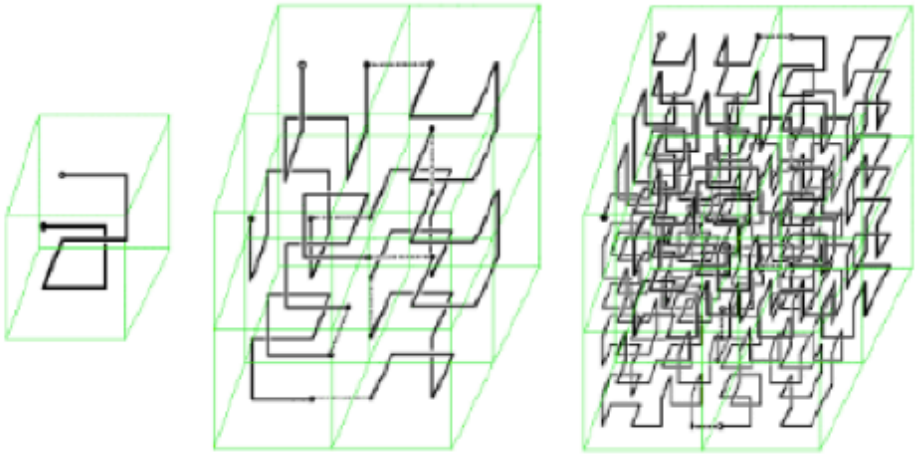
Big Bang E8(-248) : Spin(16) I Octonion Inflation E8(8) : SO(8,8) I Quaternion Conformal Evolution E8(-24) : SO*(16)

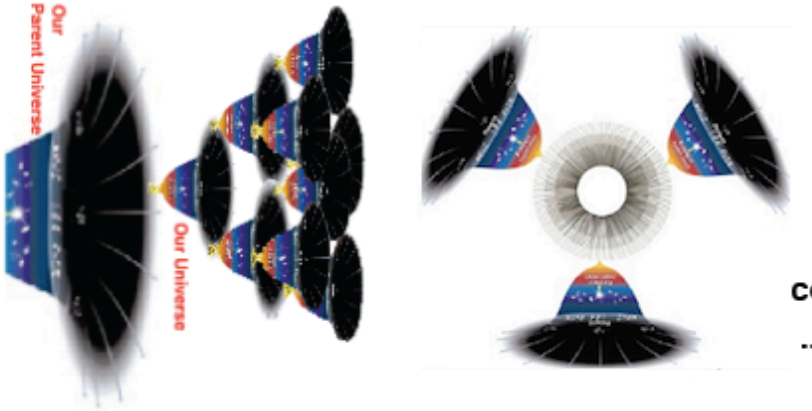


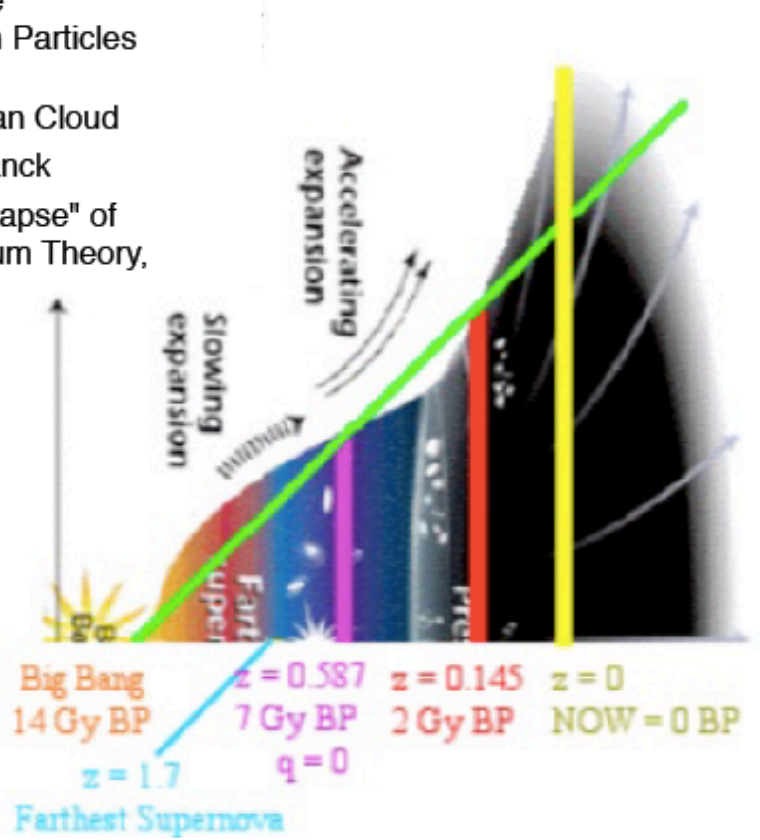
At the end of Non-Unitary Octonionic Inflation Our Universe
had about (1/2) 16^64 = (1/2) (2^4)^64 = 2^255 = 6 x 10^76 Fermion Particles
the size of our Universe was then about 10^(-24) cm
which is about the size of a Fermion Schwinger Source Kerr-Newman Cloud

The End of Inflation time was at about 10^(-34) sec = 2^64 Tplanck

The Zizzi Inflation phase of our universe ends with decoherence "collapse" of the 2^64 Superposition Inflated Universe into Many Worlds of Quantum Theory,







The ratio Dark Energy : Dark Matter : Ordinary Matter for our Universe at the present time is calculated to be:
0.75 : 0.21 : 0.04

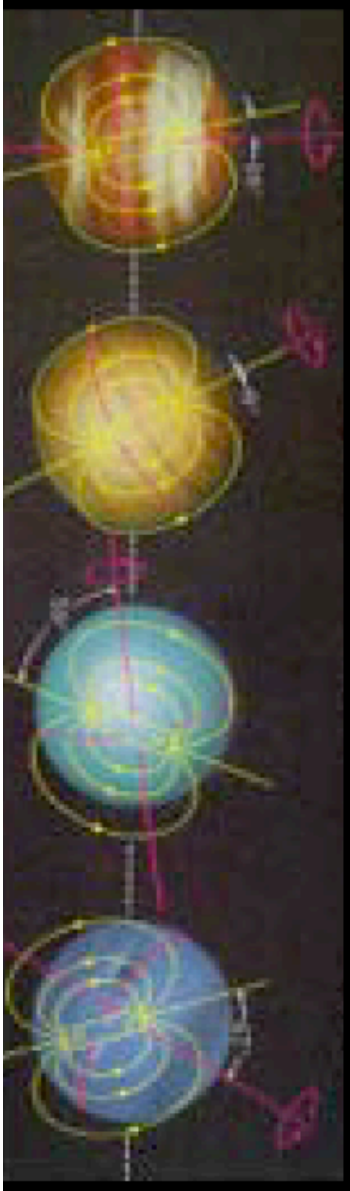
Paola Zizzi in gr-qc/0007006:

"... **The self-reduction of the superposed quantum state ... corresponds to a superposed state of ... [10^19 = 2^64 qubits] ... also the number of superposed tubulins-qubits in our brain ... leading to a conscious event**. ...".

April 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 April Fool's Day Easter Sunday	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22 Earth Day	23	24	25	26	27	28
29	30					

CONFORMAL
KEPLER



0.72 AU
VENUS

MERCURY
0.39 AU

Octahedron
1 : sqrt(3)
1 : 1.7321

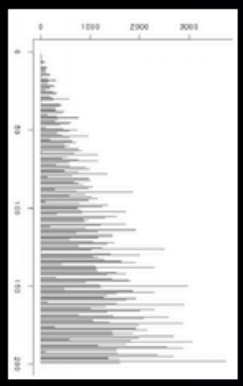
1 AU
MOON

EARTH

Icosahedron
1 : sqrt(15-6sqrt(5))
1 : 1.2584

Dodecahedron

MARS
1.52 AU



Tetrahedron
1 : 3

SelfDual

5.20 AU
JUPITER

Cuboctahedron
1 : 2
(square face inscribed radius)

Cube
1 : sqrt(3)
1 : 1.7321

SATURN
9.54 AU

Cuboctahedron
D3 Root Vectors
Conformal SU(2,2) =
= Spin(2,4)

NEPTUNE
30.06 AU

URANUS
19.19 AU

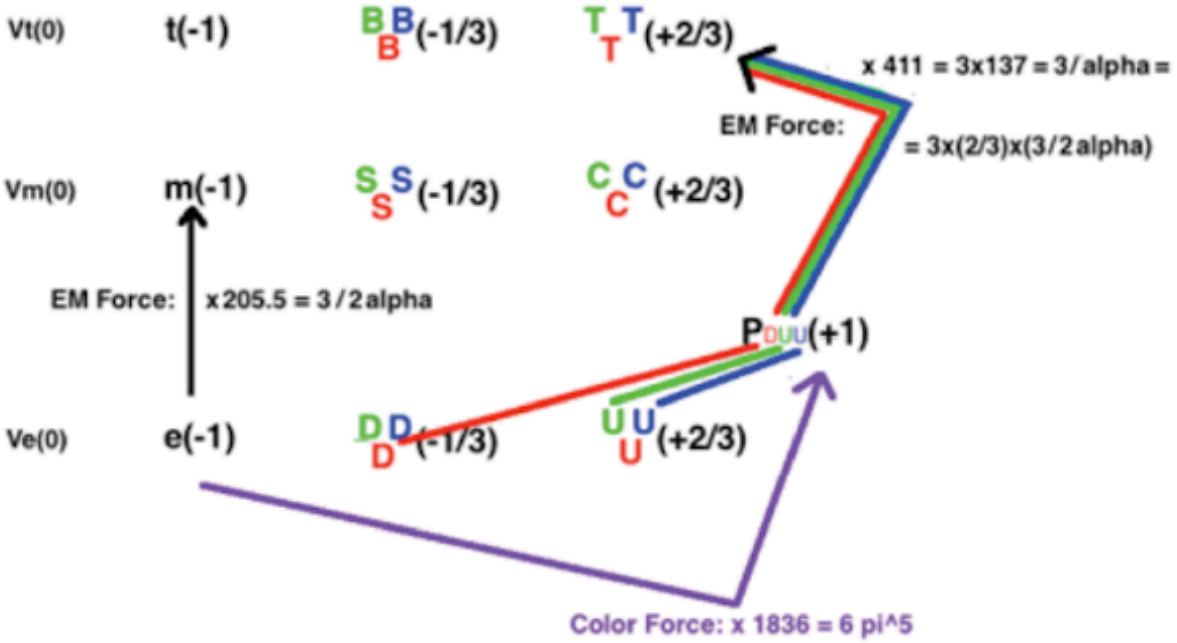
Pioneer
Anomaly
20 AU

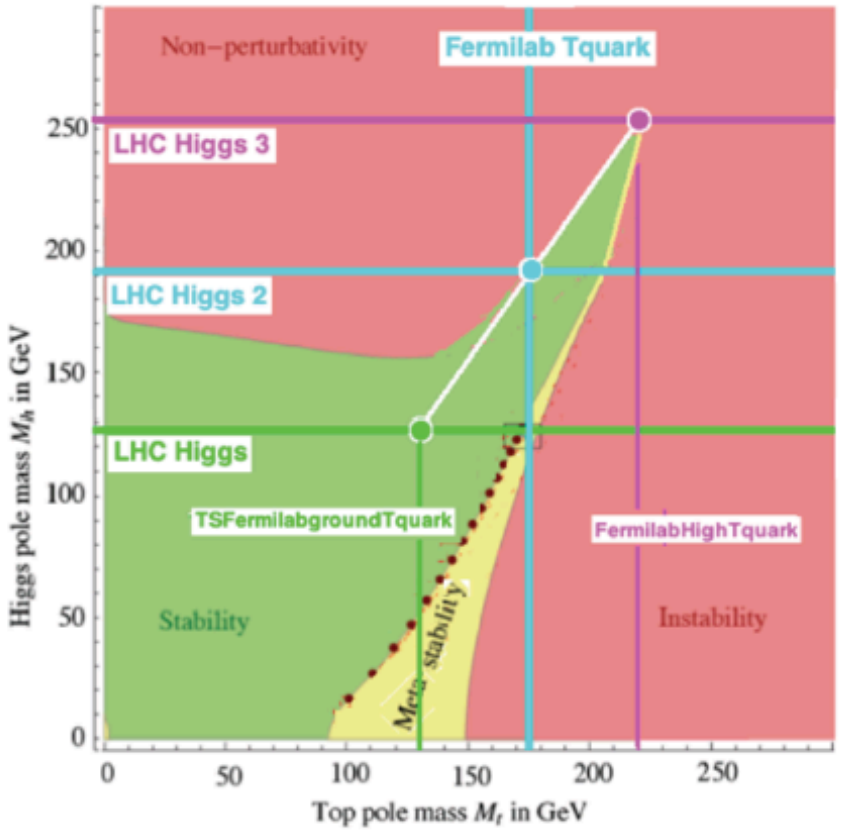
Rhombic Dodecahedron
1 : sqrt(2)
1 : 1.4142

Cuboctahedron and Rhombic Dodecahedron
are 3-dim central figures of the 4-dim 24-cell

May 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 May Day	2	3	4	5 Cinco de Mayo
6	7	8	9	10	11	12
13 Mother's Day	14	15	16	17	18	19 Shavuot Begins Sundown
20	21 Victoria Day	22	23	24	25	26
27	28 Memorial Day	29	30	31		





The Schwinger Sources are finite regions in a Complex Domain spacetime corresponding to Green's functions of particle creation / annihilation.

The force strength of a given force is

(1 / Mforce^2) (Vol(MISforce)) (Vol(Qforce) / Vol(Dforce)^(1 / mforce))

Mforce represents the effective mass;

mforce is 4 for Gravity and Color force, 2 for Weak force 1 for Electromagnetism

Vol(Dforce)^(1 / mforce) is to reconcile

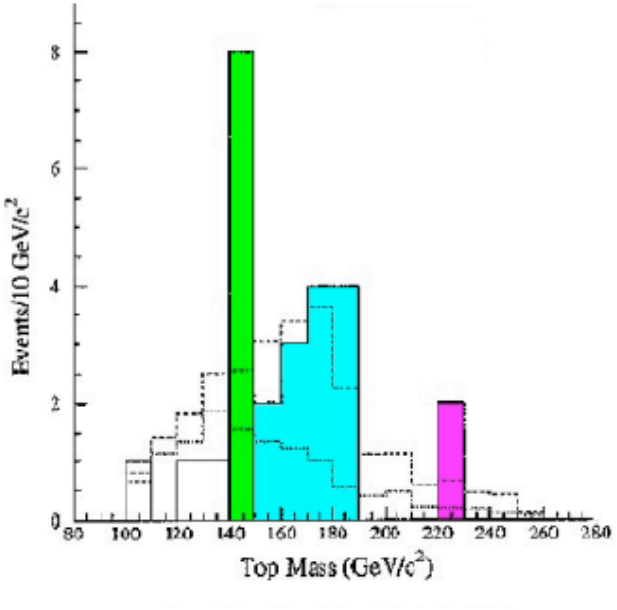
the dimensionality of the Internal Symmetry Space of the target vertex

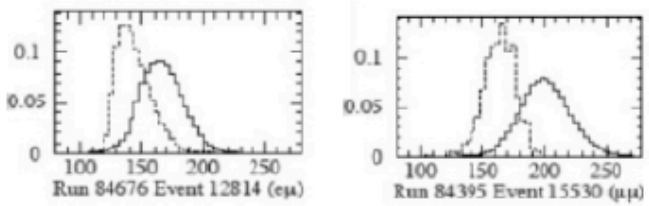
with the dimensionality of the link from the origin to the target vertex

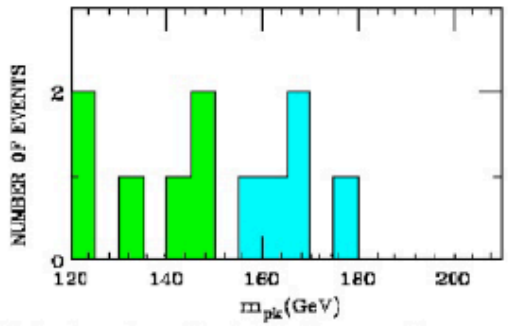
Force	M	Vol(M)	Group	SymSpace	D	Vol(D)	Q	Vol(Q)
gravity	S^4	8pi^2/3	Spin(5)	Spin(7) / Spin(5)xU(1)	IV5	pi^5/2^4 5!	RP^1xS^4	8pi^3/3
color	CP^2	8pi^2/3	SU(3)	SU(4) / SU(3)xU(1)	B^6(ball)	pi^3/6	S^5	4pi^3
Weak	S^2xS^2	2x4pi	SU(2)	Spin(5) / SU(2)xU(1)	IV3	pi^3/24	RP^1xS^2	4pi^2
e-mag	T^4	4x2pi	U(1)	-	-	-	-	-

June 2018

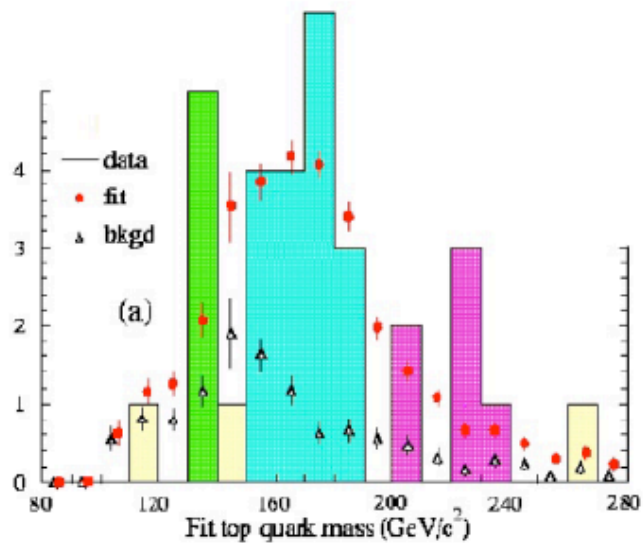
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14 Flag Day	15	16
17 Father's Day	18	19	20	21 Summer Begins	22	23
24	25	26	27	28	29	30

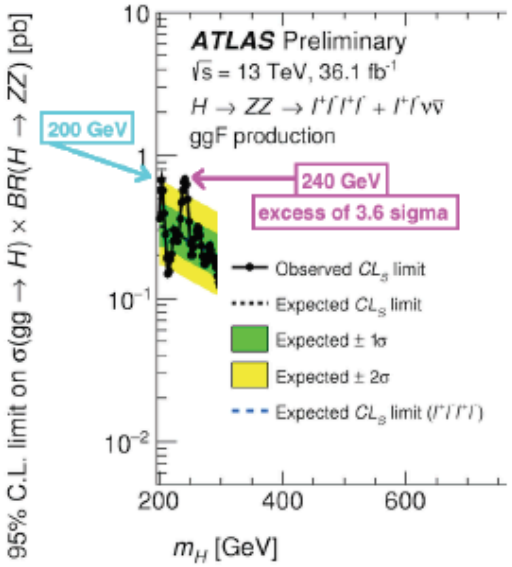


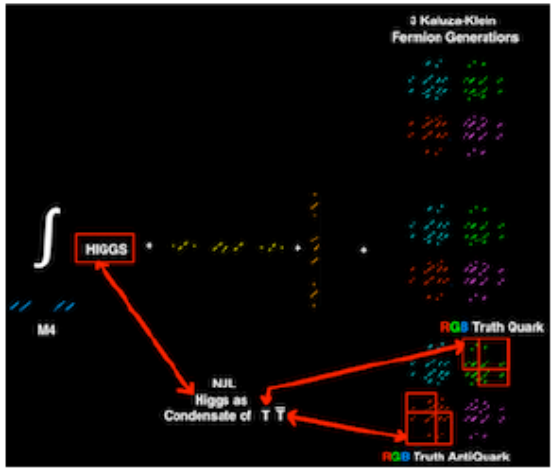


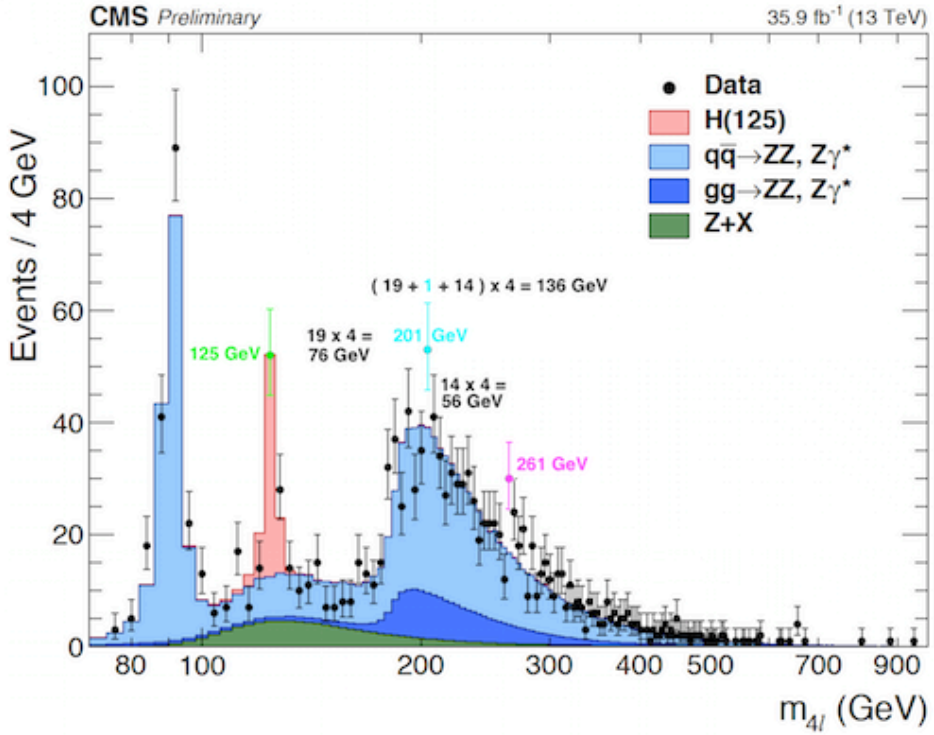


The distribution of $m_{\mu j}$ values determined from 11 CDF dilepton events





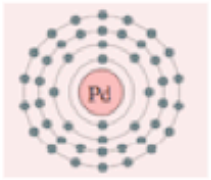


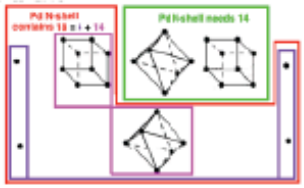


July 2018

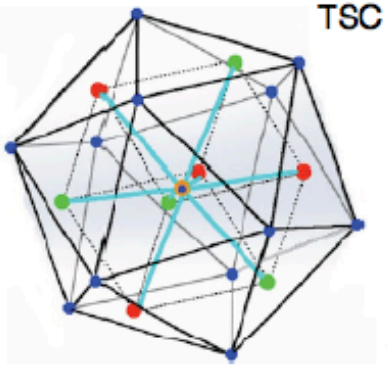
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Canada Day	2	3	4 Independence Day	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

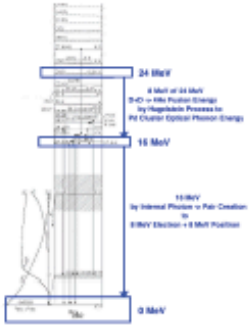
Schwinger Pd-D Zeolite Quantum Fusion Process:

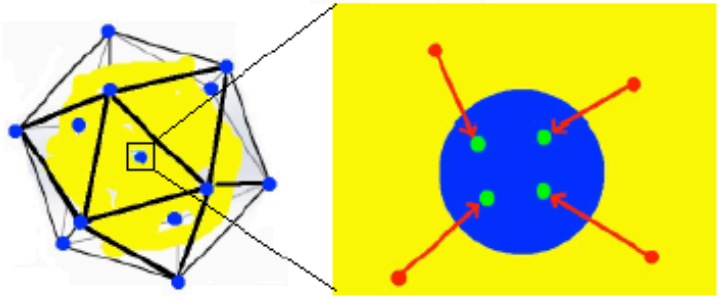


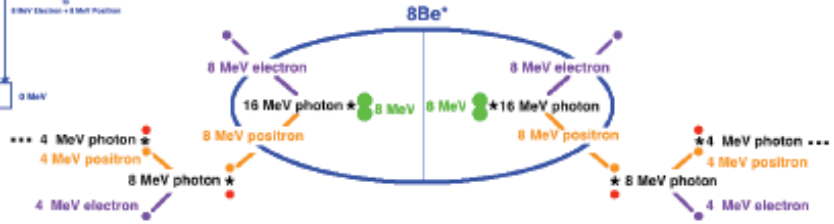


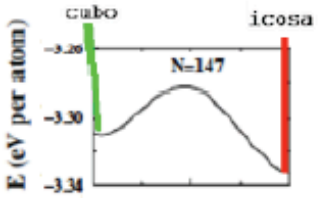
Akito Takahashi TSC Pd-D Fusion



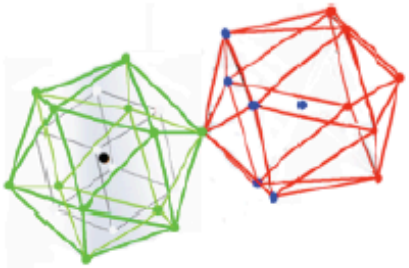


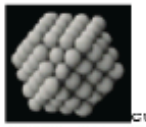


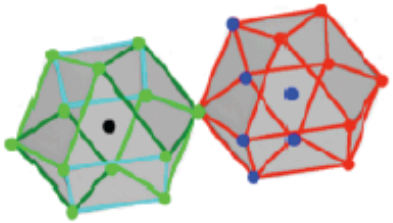


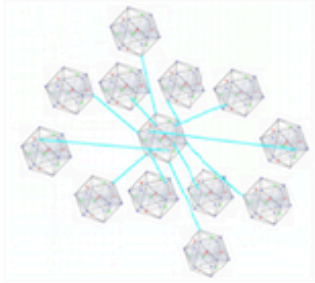


Sandia-UNM 147-atom Pd Clusters

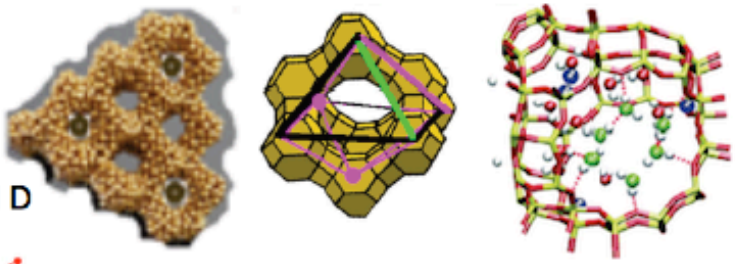




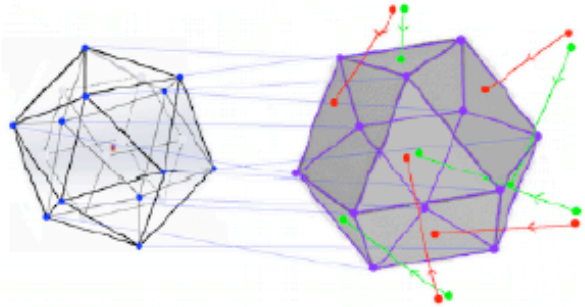


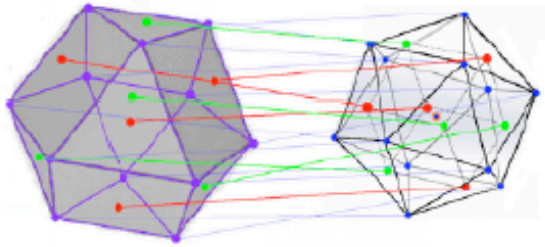


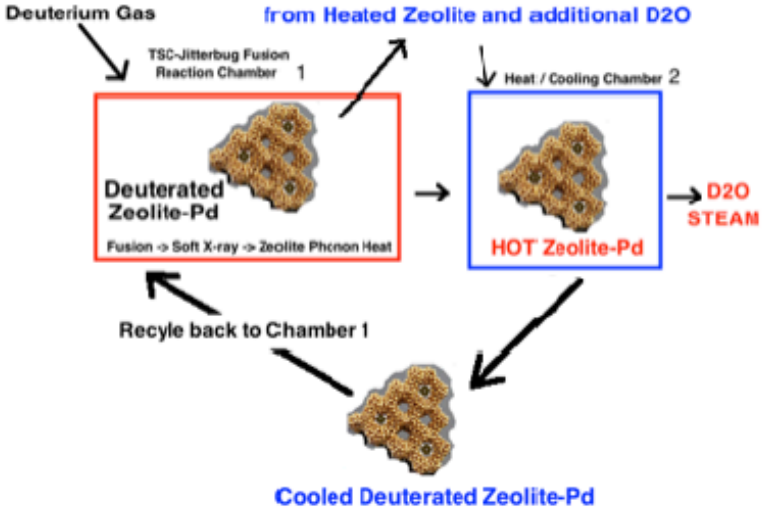
Peter Hagelstein Nuclear Energy to Pd Structure to Zeolite



Klee Irwin Jitterbug Eject He and Reload D







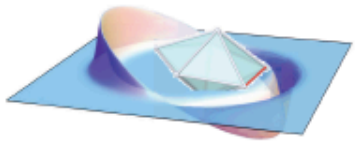
August 2018

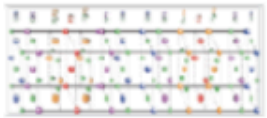
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

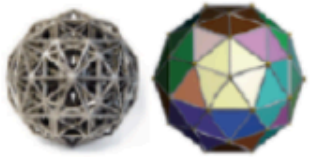
Each ORC State, analagous to a Possible Conscious Thought, is represented by a Chain of Local E8-Cl(16) Deutsch-type Multiverse Snapshots
Each of the Local E8-Cl(16) Multiverse Snapshots is described by an E8 State. Since E8 has 240 Root Vectors and
the 240 Root Vectors correspond to the 240-Polytope (see "Geometric Frustration" by Sadoc and Mosseri (Cambridge 2006) where they say

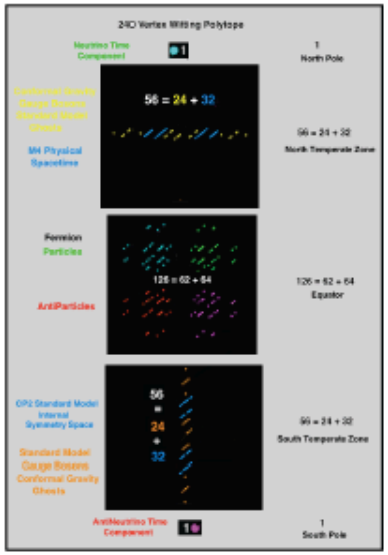
"The polytope 240 ...[is]... not a regular polytope ... but ... an ordered structure on a hypersphere ... S3 ... which is chiral ...
generated by adding two replicas of the {3,3,5}, displaced along a screw axis of S3 ..."

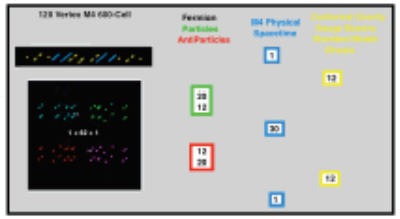
each Local E8-Cl(16) Multiverse Snapshot is represented by a pair of {3,3,5} 600-cells.

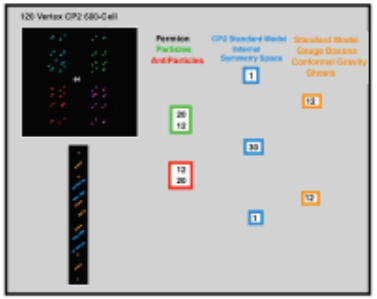


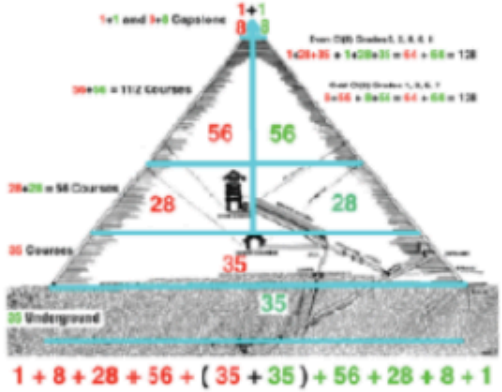












Green, Schwartz, and Witten say in their book "Superstring Theory" vol. 1 (Cambridge 1986)
"... For the ... closed ... bosonic string ... The first excited level ... consists of ... the ground state ... tachyon ... and ... a scalar ... 'dilaton' ... and ... SO(24) ... little group of a ...[26-dim]... massless particle ... and ... a ... massless ... spin two state ...".

Closed string tachyons localized at orbifolds of fermions produce virtual clouds of particles / antiparticles that dress fermions.

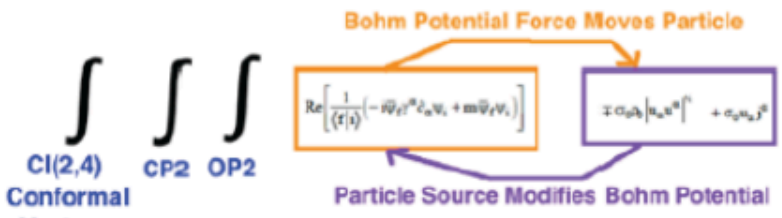
Dilatons are Goldstone bosons of spontaneously broken scale invariance that (analagous to Higgs) go from mediating a long-range scalar gravity-type force to the nonlocality of the Bohm-Sarfatti Quantum Potential.

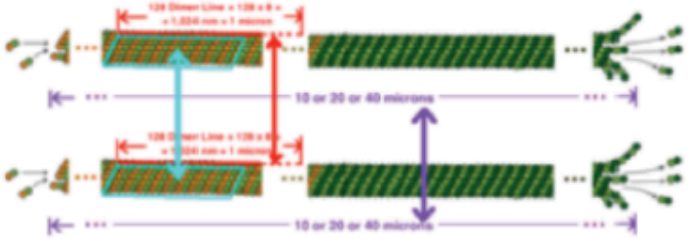
The SO(24) little group is related to the Monster automorphism group that is the symmetry of each cell of Planck scale local lattice structure.

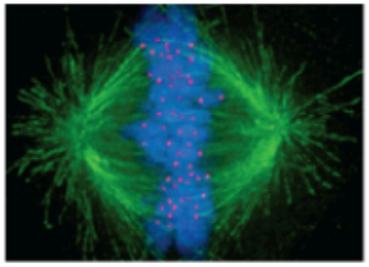
The massless spin two state is the carrier of the Bohm-Sarfatti Quantum Potential.
Peter R. Holland says in his book "The Quantum Theory of Motion" (Cambridge 1993)
"... the total force ... from the quantum potential ... does not ... fall off with distance ... because ... the quantum potential ... depends on the form of ...[the quantum state]... rather than ... its ... magnitude ...".

First consider Superposition of States involving one tubulin
with one electron of mass m and two different position states separated by a .
The Superposition Separation Energy Difference is the gravitational energy
E_electron = G m^2 / a
For any single given tubulin a = 1 nanometer = 10^(-7) cm so that for a single Electron
T = h / E_electron = (Compton / Schwarzschild) (a / c) = 10^26 sec = 10^19 years
Now consider the case of N Tubulin Electrons in Coherent Superposition
Jack Sarfatti defines coherence length L by L^3 = N a^3 so that
the Superposition Energy E_N of N superposed Conformation Electrons is
E_N = G M^2 / L = N^(5/3) E_electron
The decoherence time for the system of N Tubulin Electrons is
T_N = h / E_N = h / N^(5/3) E_electron = N^(-5/3) 10^26 sec

Number of Involved Tubulin Dimers	Time T_N
10^(11+9) = 10^20	10^(-33 + 26) = 10^(-7) sec 10^11 neurons x 10^9 TD / neuron
10^16	10^(-27 + 26) = 10^(-1) sec - 10 Hz - Human Alpha EEG is 8 to 13 Hz - Fundamental Schumann Resonance is 7.8 Hz - Time of Hamiltonian Circuit of 10^16 TD separated from nearest neighbors by 10 nm is 10^16 x 10 nm / c = (10^16 x 10^(-6)) cm / c = 10^10 cm / c = 0.3 sec -

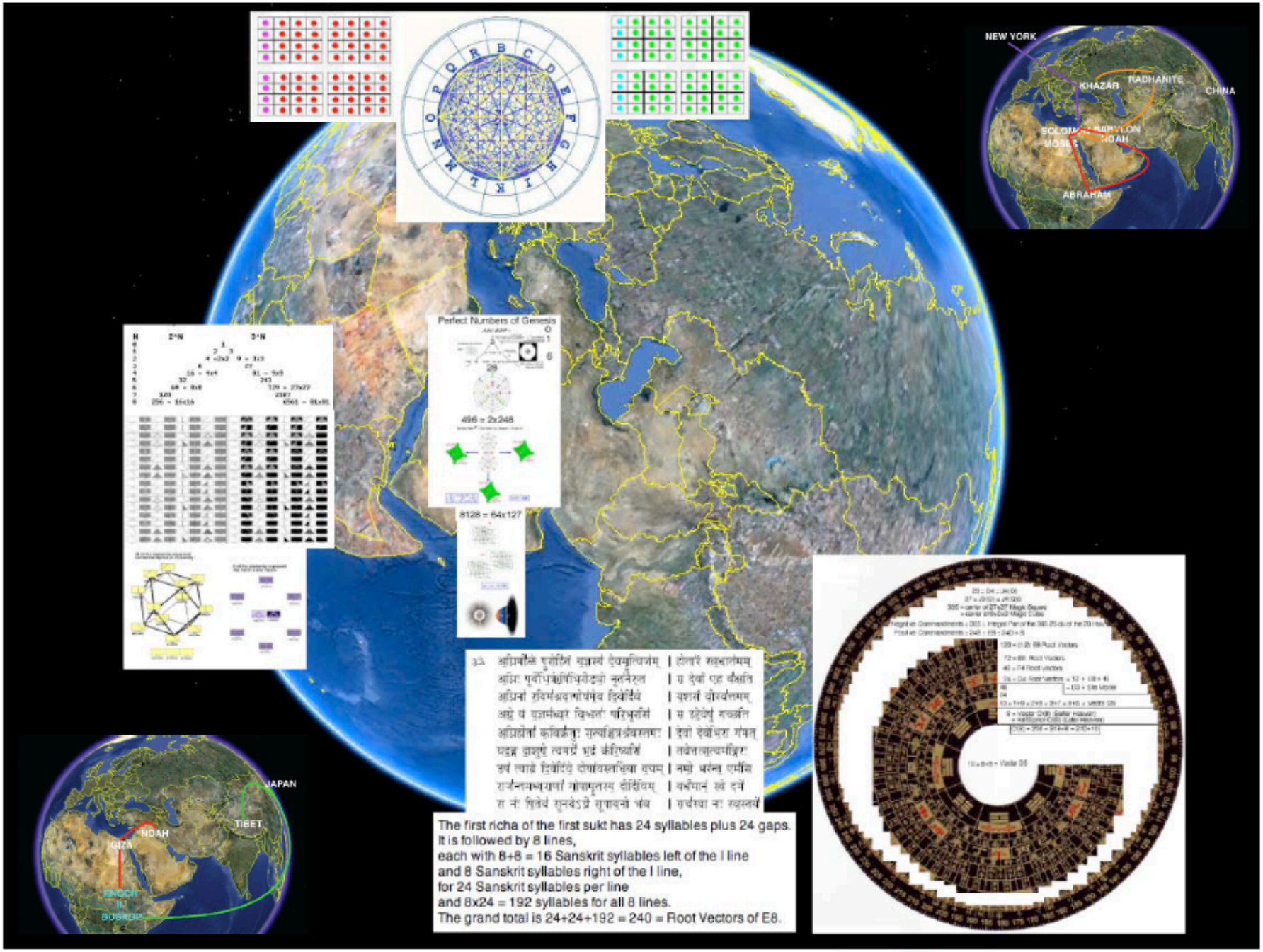






September 2018

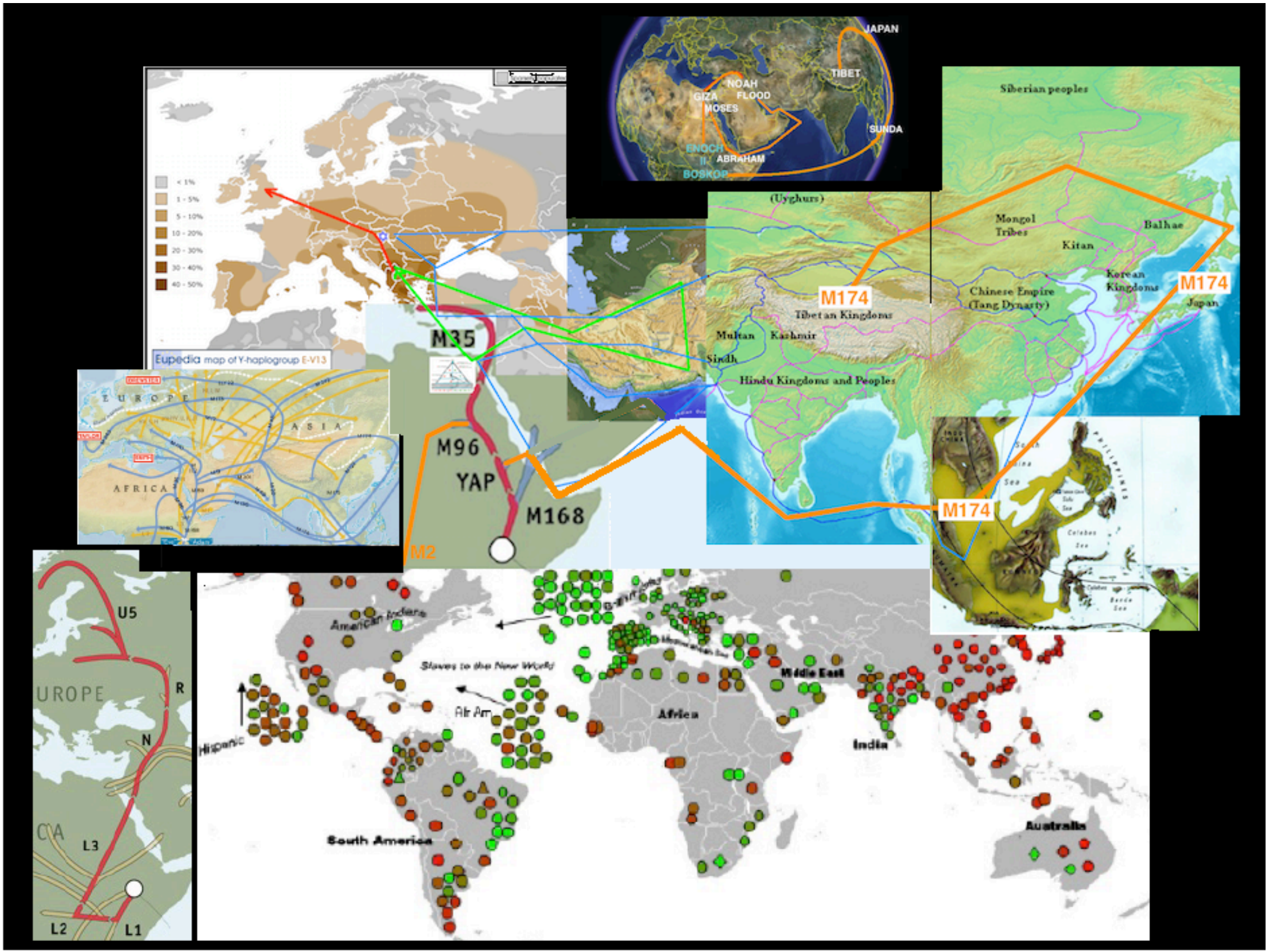
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 Labor Day	4	5	6	7	8
9 Grandparents Day Rosh Hashanah	10	11	12	13	14	15
16	17	18 Yom Kippur	19	20	21	22 Autumn Begins
23 30	24	25	26	27	28	29



The first richa of the first sukt has 24 syllables plus 24 gaps.
It is followed by 8 lines,
each with 8+8 = 16 Sanskrit syllables left of the I line
and 8 Sanskrit syllables right of the I line,
for 24 Sanskrit syllables per line
and 8x24 = 192 syllables for all 8 lines.
The grand total is 24+24+192 = 240 = Root Vectors of E8.

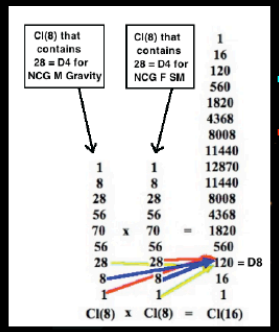
October 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8 Columbus Day	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31 Halloween			

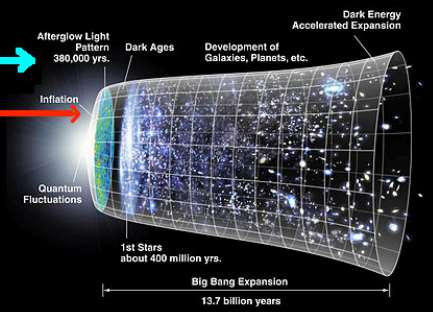

JAPAN
TIBET
NOAH
FLOOD
GIZA
MOSES
SUNDA
ENOCH
ABRAHAM
BOSKOP
Eupedia map of Y-haplogroup E-V13
< 1%
1 - 5%
5 - 10%
10 - 20%
20 - 30%
30 - 40%
40 - 50%
EUROPE
ASIA
AFRICA
M35
M96
YAP
M168
M2
Siberian peoples
(Uyghurs)
Mongol Tribes
Balhae
Kitan
Korean Kingdoms
Chinese Empire (Tang Dynasty)
M174
Tibetan Kingdoms
Multan
Kashmir
Sindh
Hindu Kingdoms and Peoples
Japan
M174
M174
U5
R
N
L3
L2
L1
American Indians
Slaves to the New World
Hispanic
Middle East
Africa
India
Australia
South America

November 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4 Daylight Savings Ends	5	6	7	8	9	10
11 Veterans Day	12 Veterans Day (Observed)	13	14	15	16	17
18	19	20	21	22 Thanksgiving	23	24
25	26	27	28	29	30	

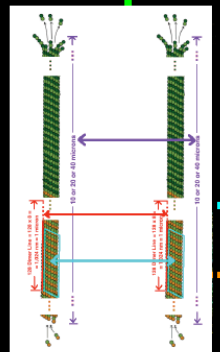


NJL Quantum Condensate



10^19 E8 Lattice 240-vertex Polytope Cells in Universe at End of Inflation

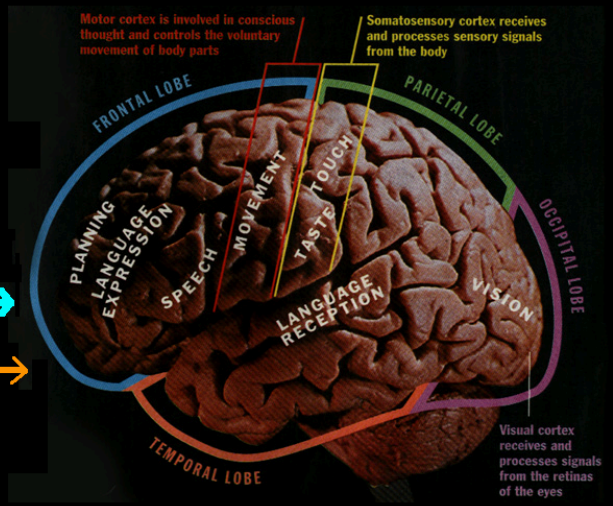
Quantum Resonant Connection



Microtubules 40 microns long have 65,536 Tubulin Dimers

Penrose-Hameroff Quantum Condensate

10^19 Tubulin Dimers in a Human Brain



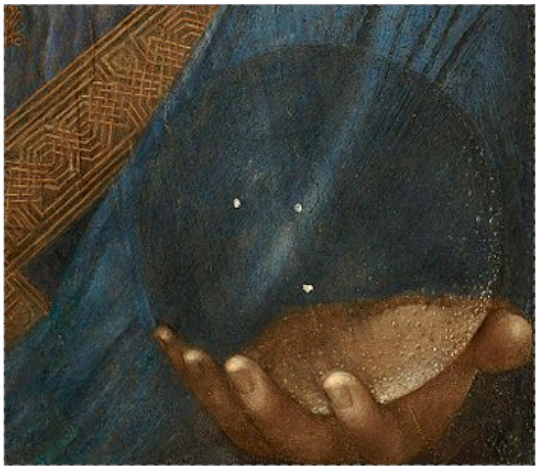
December 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2 Hanukkah	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21 Winter Begins	22
23 30	24 New Year's Eve 31	25 Christmas Day	26 Kwanzaa	27	28	29

Leonardo da Vinci E8

Frank Dodd (Tony) Smith, Jr. - 2017

Wikipedia: “... Christ as Salvator Mundi (Saviour of The World) ... is a painting ... from c. 1500 ... by Leonardo da Vinci ... The painting shows Christ, in Renaissance dress, giving a benediction with his raised right hand and crossed fingers while holding a crystal sphere in his left hand ...



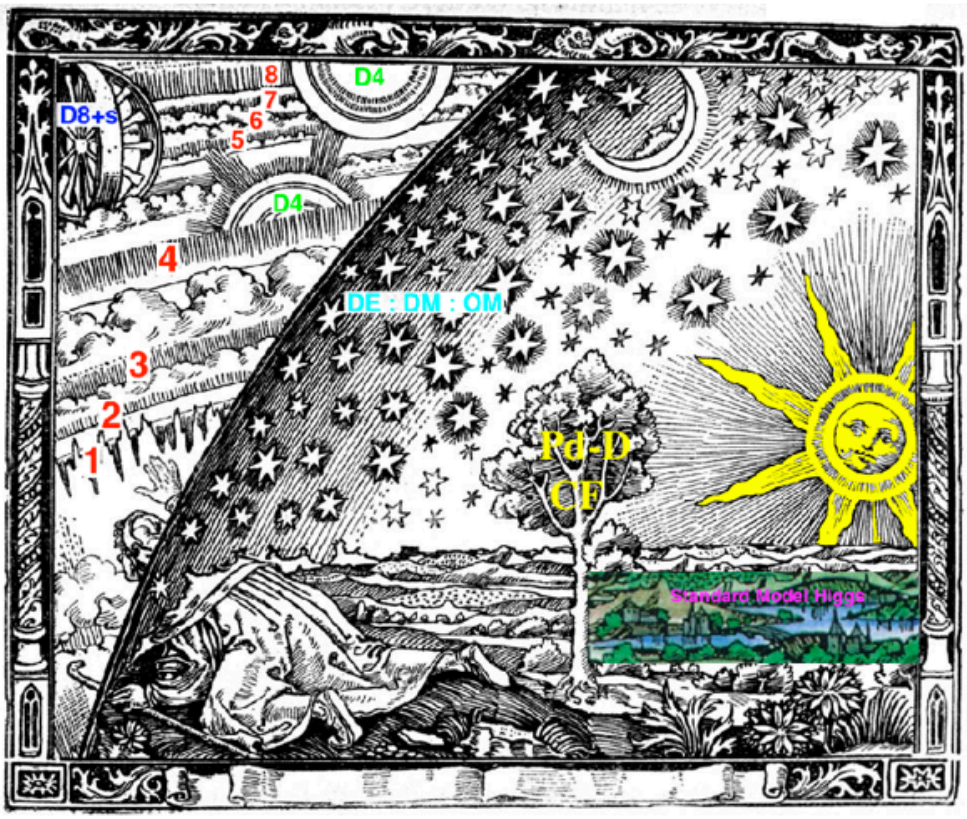
... It was ... possibly painted for Louis XII of France and his consort, Anne of Brittany ... shortly after the conquests of Milan and Genoa around 1500 [and] subsequently owned by Charles I of England and recorded in his art collection in 1649 ... Leonardo painted the orb as if it were a hollow glass bubble that does not refract or distort the light passing through it ...[instead of]... paint[ing] the distortion that would occur when looking through a solid clear orb ...”.

Since Leonardo’s orb is a hollow sphere instead of a solid ball Leonardo’s markings are all on the surface of the 2-dim sphere boundary of the ball in 3-dim space.

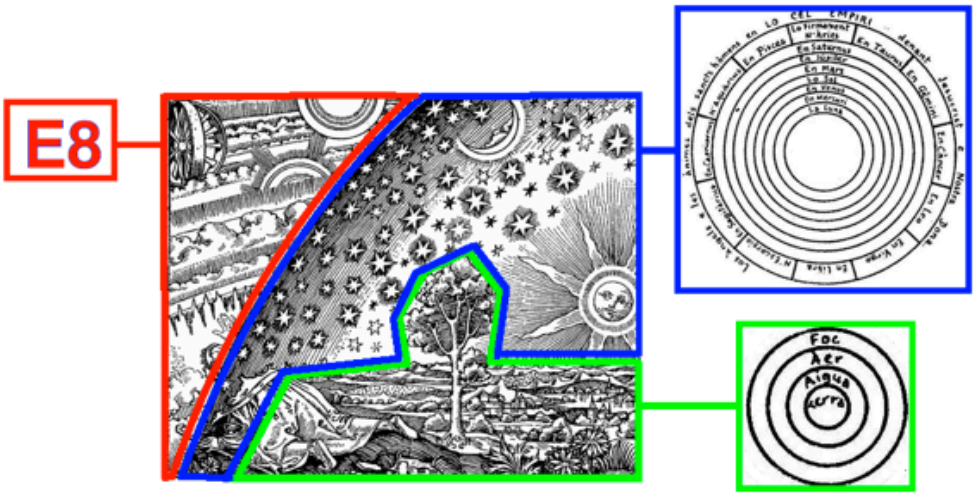
E8-Cl(16) Physics (viXra 1602.0319) is based on the 240 Root Vectors of E8 which are points on the 7-dim sphere boundary of the ball in 8-dim space.

248-dim E8 = 120-dim D8 + 128-dim D8 +half-spinor =
= D4xD4 + 8x8 + 128-dim D8 +half-spinor D8+s

The structure of E8 was depicted by Flammarion (wood engraving on page 163 of his 1888 book "L'Atmosphere Meteorologie Populaire") on a Celestial Sphere beyond our Earthly Plane and its Star-Sun-Moon-Planets Sphere (viXra 1304.0071):

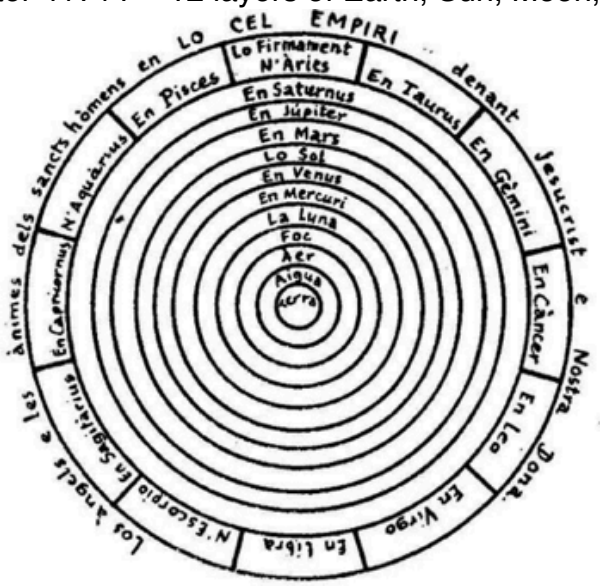


Flammarion's 1888 engraving was much later than Leonardo's 1500 painting
so it did not directly influence Leonardo, but its basic components were well known
from at least the time of Ramon Llull (1232-1315)



who, according to R. Pring-Mill, Studies on Ramon Llull , Barcelona, PAM-Curial, 1991,
p. 62, produced a "Scheme of the simplified aristotelian cosmos"
as a circle centered by 4 layers Earth, Water, Air, and Fire
and then by 7 layers Moon, Mercury, Venus, Sun, Mars, Jupiter, and Saturn
and an 8th layer for the fixed Stars described by the Zodiac

and the 13th layer of Angels, Saints, and the Heavenly Empire of Jesus and G-d
which I interpret as E8 Physics by which G-d governs Our Universe.
that is beyond the outer 4+7+1 = 12 layers of Earth, Sun, Moon, Planets, Stars:



The Flammarion Celestial Sphere representation of E8
corresponds to Leonardo's Sphere with markings also representing E8.

Flammarion's Celestial Sphere has two copies of D4 each with 24 Root Vectors
and 128 Root Vectors from +half-spinors D8+s of D8
and
8 levels of 8 Spacetime dimensions for position x momentum = 8x8 = 64 Root Vectors
thus giving 24 + 24 + 128 + 64 = 240 Root Vectors of E8.

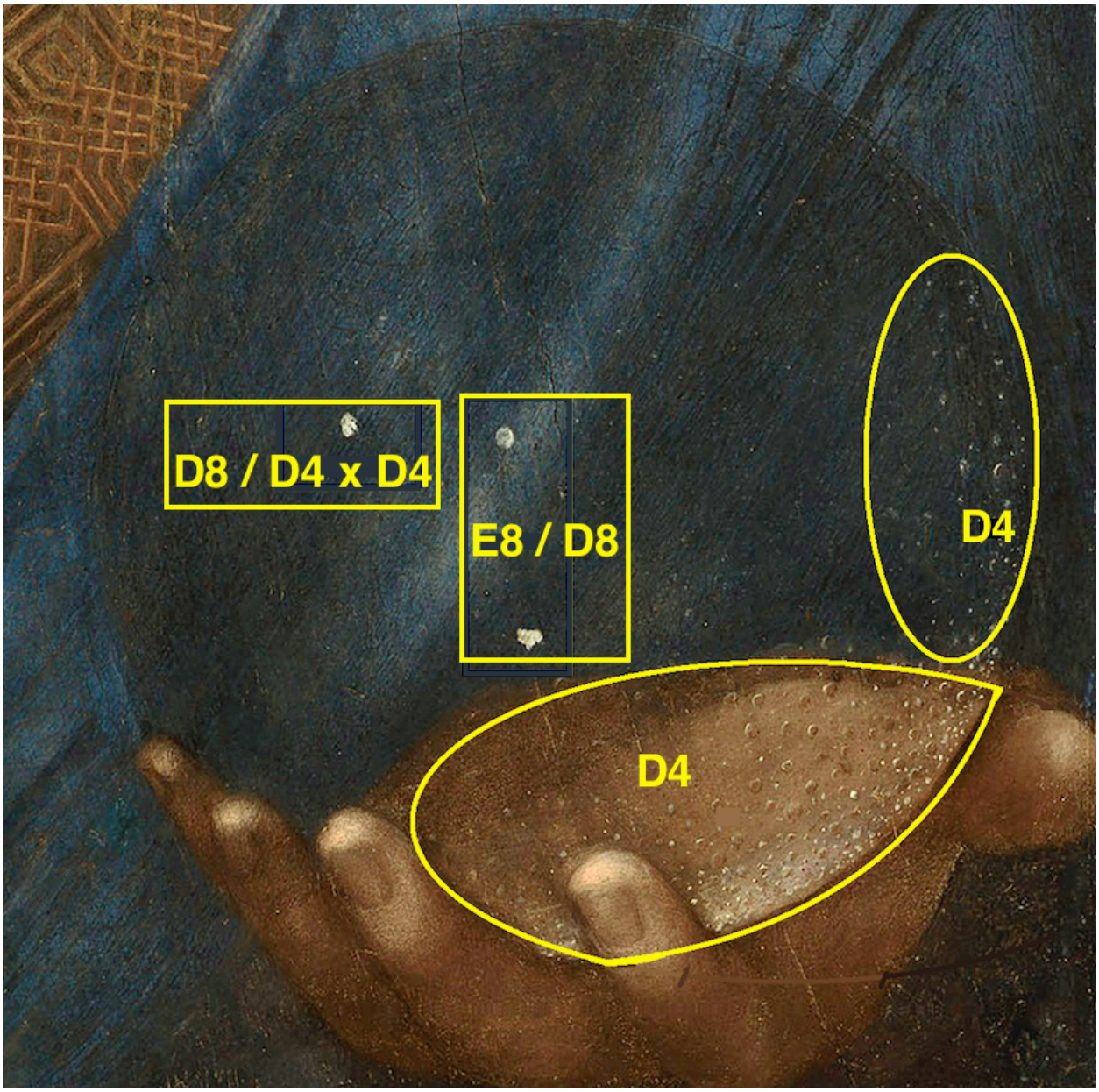
Flammarion's Earthly Plane and Stars-Sun-Moon-Panets Sphere corresponding to

Gravity , Dark Energy ratio DE:DM:OM , Higgs , Solar Fusion , and Pd-D Cold Fusion

is not shown explicitly by Leonardo, but is represented by Leonardo as

Earthly Plane = Brown Hand and Stars-Sun-Moon-Panets Sphere = Blue Garment.

Leonardo's Celestial Sphere represents E8 in this way:



Two markings correspond to 64+64 = 128-dim E8 / D8
(8x8 Fermion and 8x8 AntiFermion components)
The third marking corresponds to 64-dim D8 / D4 x D4
(8-dim Spacetime 8x8 Position x Momentum)
One of the D4 groups of markings corresponds to
the Standard Model and Gravity-Dark Energy Ghosts.
The other D4 group of markings corresponds to
Gravity-Dark Energy and Standard Model Ghosts.
24 of each D4 group of markings are D4 Root Vectors,
the others are composite structures such as
Gauge-Boson-bound (mesons, baryons, atoms) and Gravity-bound (black holes, planets, stars, galaxies).

E8-Cl(16) Physics Calculations of Particle Masses and Force Strengths
from Green's Functions = Kernel Functions of Schwinger Sources
make use of Shilov Boundaries of Complex Domains whose structure
is inherited from the geometry of E8.