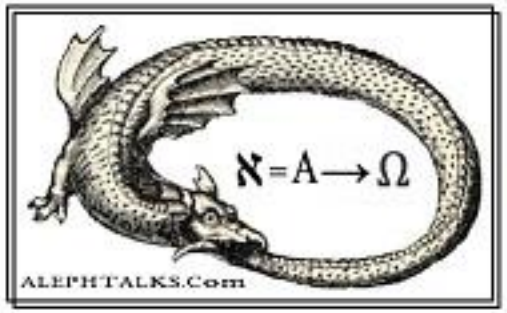
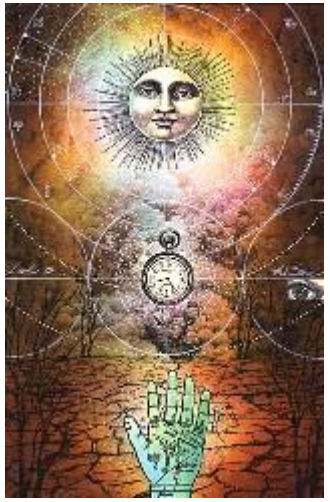
Is Mysticism Where Science, Art and Religion Meet?





Guest Lecture Bruce Cowen
Practicing Buddhism
And Enlightenment

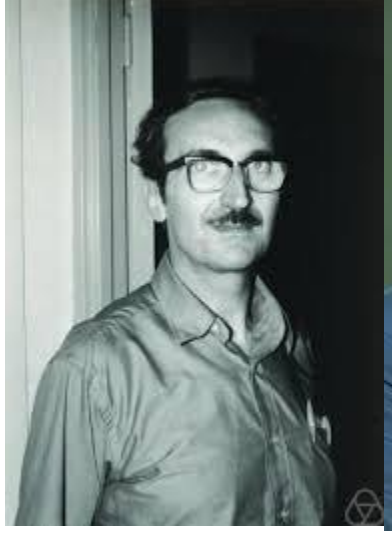
Overview

- **Bart Stuck**
  - **Theoretical physics introduction**
- **Bruce Cowen**
  - **Personal Background**
  - **Buddhism Training**
  - **Practical Enlightenment/Natural Awakening**
- **Marjorie Partch**
  - **Enlightenment and Love**
  - **Jungian Archetypes**
- **Bart Stuck**
  - **Standard Model of Particle Physics**
  - **26 Dimensional Space-Time Model**
  - **Compactified Dimensions and Enlightenment**

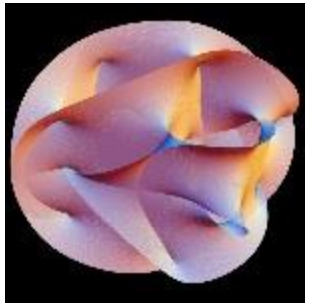
Where Are We Going: A Picture

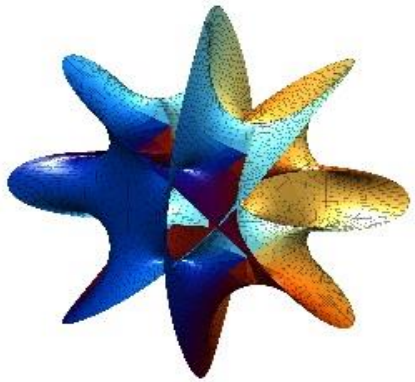
MATTER	DARK MATTER
Space Time 4 DImensions	Space Time 4 Dimensions
Calabi Yau Manifold 6 Compactified Dimensions 3 Holes Hodge Diamond (9,11,6,7)	Calabi Yau Manifold 6 Compactified DImension 4 Holes Hodge Diamond (17,12,21,12)
Calabi Yau Manifold 6 Compactified Dimensions 8 Holes Hodge Diamond (8,23,21,17)	

Compactified Dimensions

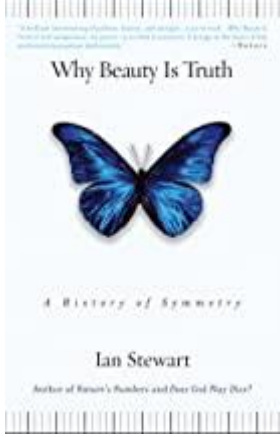


- Calabi-Yau Manifold
- Calabi proposed these geometric structures in 1954
- Yau proved these geometric structures exist in 1976
- http://www.scholarpedia.org/article/Calabi-Yau_manifold#:~:text=Rooted%20in%20his%20attempt%20to,Conjecture.





Four Normed Division Algebras



- **In mathematics, a normed division algebra A is a division algebra over the real or complex numbers which is also a normed vector space, with norm || . || satisfying. ||xy|| = ||x|| ||y|| for all x and y in A. While the definition allows normed division algebras to be infinite-dimensional, this, in fact, does not occur**

- **Real(x): x**

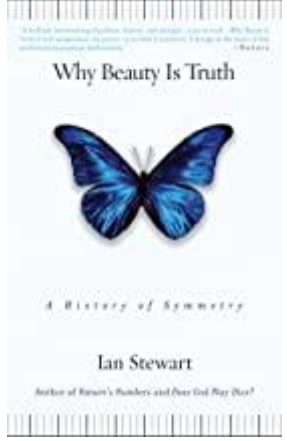
- **Multiplication Table**

	+1	-1
+1	+1	-1
-1	-1	+1

- **Complex(x,y)-x+iy, i*i=-1**

	+1	-1	i
+1	+1	-1	i
-1	-1	+1	-i
i	i	-i	-1

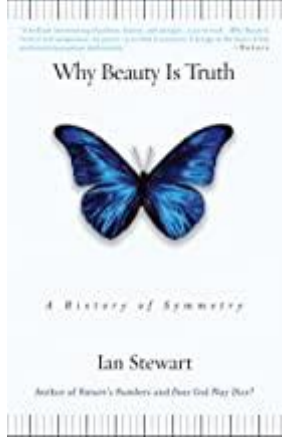
Four Normed Division Algebras: There Are No More



Quaternion: (x,y,z,w)-xi+jy+zk+w, i*i=j*j=k*k=i*j*k=-1, i*j=-j*I, i*j=k=-j*I

A quaternion equals a complex number plus a complex number multiplying a vector j

	1	i	j	k
1	1	i	j	k
i	i	-1	k	-j
j	j	-k	-1	i
k	k	-j	-i	-1

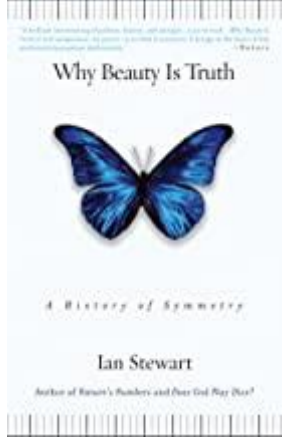


Octonion Normed Division Algebra

Octonion: (x,y,z,w,s,t,u,v)=x+y*e1+z*e2+w*e3+s*e4+t*e5+t*e6+u*e7

- **e1*e1=…=e7*e7=-1 but eX*(eY*eZ) != (eX*eY)*eZ but eX*(eY*eX)=(eX*eY)*eX**
- **ei*ej=-ej*ei**
- **ei*ej=e(i+1)*e(j+1)**

	1	u1	u2	u3	u4	u5	u6	u7
1	1	u1	u2	u3	u4	u5	u6	u7
u1	u1	-1	-u3	u2	-u5	-u7	u4	u5
u2	u2	u3	-1	-u1	-u6	-u7	u3	u5
u3	u3	-u2	u1	-1	-u7	u6	-u5	u4
u4	u4	u5	u6	u7	-1	-u1	-u2	-u3
u5	u5	-u4	u7	-u6	u1	-1	u2	-u3
u6	u6	-u7	-u4	u5	u2	-u3	-1	u1
u7	u7	u6	-u5	-u4	u3	u2	-u1	-1



Mathematical Physics Ties to Four Normed Division Algebras

Number of copies of real numbers

- **Real=1**
- **Complex=2**
- **Quaternion=4**
- **Octonion=8**

Plus two

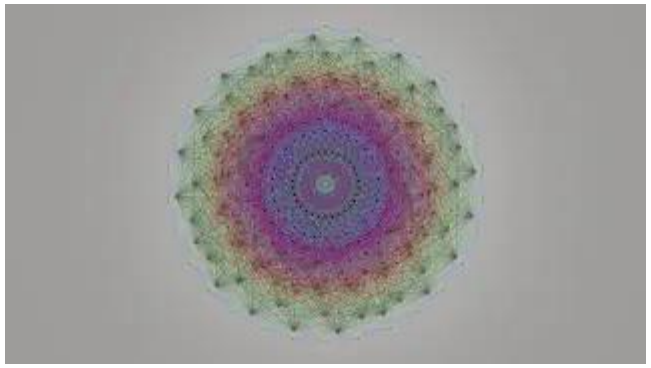
3 dimensions for space

4 dimensions for space-time

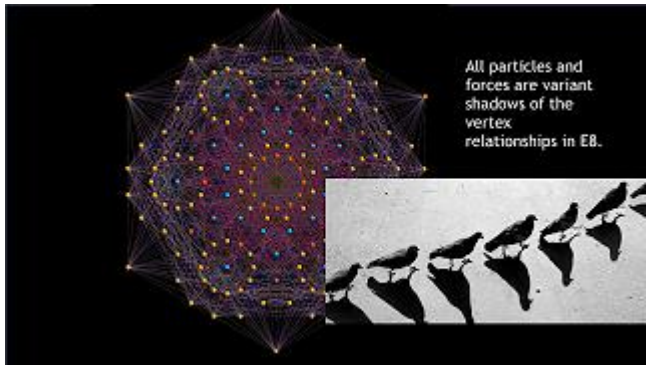
6 dimensions for Calabi-Yau

10 dimensions for matter/dark matter

Exceptional Lie Group E8
All Exceptional Lie Groups Tied to Octonions In Different Way



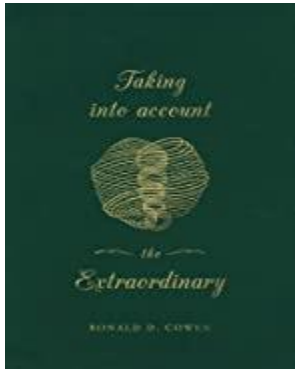
Is E8 Lattice the True Nature of Reality? Or Theory of Everything?
Arvin Ash
https://www.youtube.com/watch?v=aR88KR4sg-w



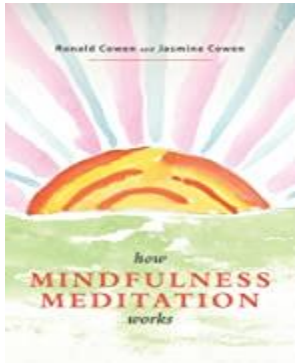
Scientific Clues That We Are Living In the Matrix
Klee Irwin
https://www.youtube.com/watch?v=fV07SJz1YXI

Ronald Cowen, 1941-2019

The Path of Love: The Future Of Buddhism as a Science
by Ronald D. Cowen | Feb 10, 2015



Taking into Account the Extraordinary
by Ronald D. Cowen | Feb 16, 2016
Note Cover Drawing of Subquark with Ten Strings

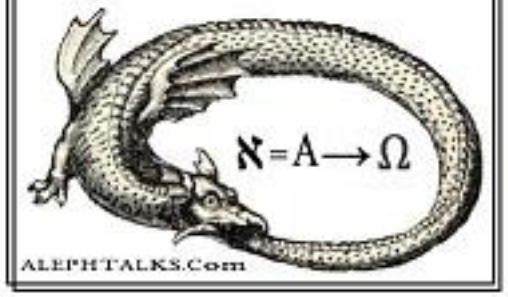


How Mindfulness Meditation Works: A Modern Buddhist View
by Ronald Cowen and Jasmine Cowen | Sep 1, 2016

Bruce Cowen

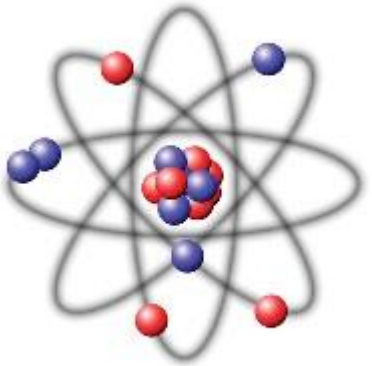
- Personal Background
- Twin Brother to Ronald Cowen
- Buddhism Training 1968-
- Namgyal Rinpoche, mentor
- Practical Enlightenment, 1990-
- Natural Awareness
- Non-Duality
- Love Complexity/Manifestations
- Self vs Wish Fulling Love

Marjorie Partch



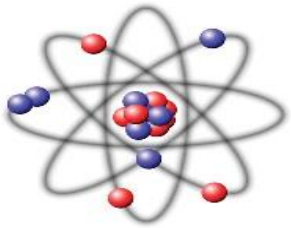
- Enlightenment/Awakening and Love
- Jungian Archetypes
- Natal Birth Chart

The Scale of the Universe



- **Matter in Its Ten Dimensional Subspace**
- Space compartments holds subquarks or electrons or bosons, Higgs boson
- Subquarks contain ten strings each of matter neutrinos
- Subquarks with fractional charge +5/9,-4/9 make up matter quarks
- Quarks with fractional charge +2/3, -1/3make up matter (protons and neutrons)
- Protons and neutrons make up nuclei in matter atoms
- Electrons, protons and neutrons make up matter atoms
- 1.33*10^50 atoms comprise the earth=>5.972*10^24 kg
- 1.989*10^30 kg equals the mass of the sun
- 10^8stars in a typical galaxy
- 10^8 galaxies in the universe

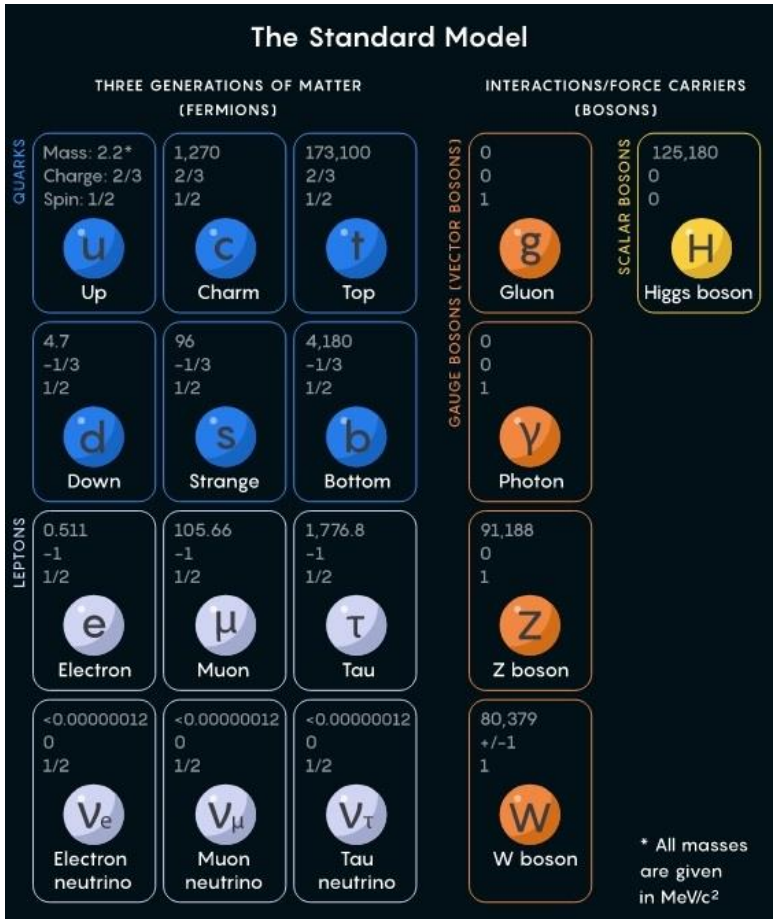
The Scale of the Universe

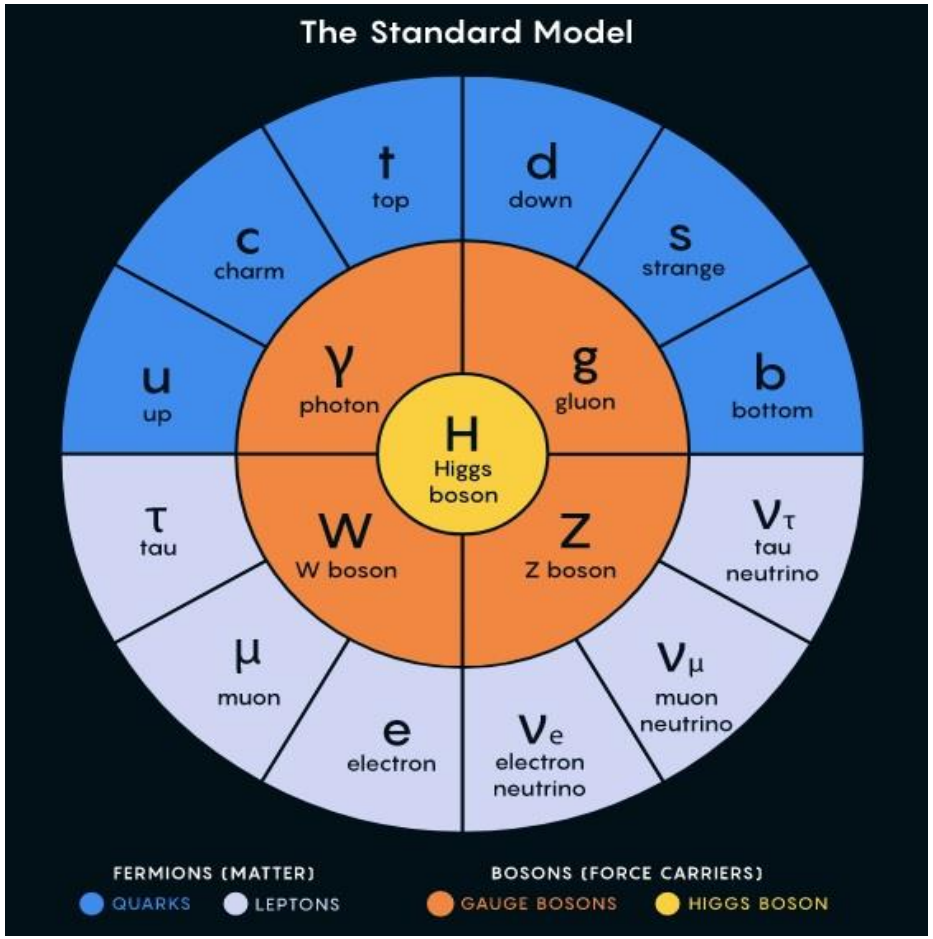


- **Dark Matter in Its Ten Dimensional Subspace**

- Space compartments contain dark subquarks with no charge, Higgs boson
- Subquarks contain five strings made of dark matter neutrinos
- Subquarks bind to one another, either active (close to thermal energy source which it can link to via gravity) or quiescent
- Quiescent dark matter quarks form tubes hundreds of kilometers long in space: https://futurism.com/the-byte/scientists-found-missing-40-percent-universe-matter?fbclid=IwAR2kskyr-4VQ51dkQKRSWvTDKAqpgjMeFlTFer8Py2mD6LXkc-59182jbho
- Active aggregations of subquarks form sentient beings on planets and stars

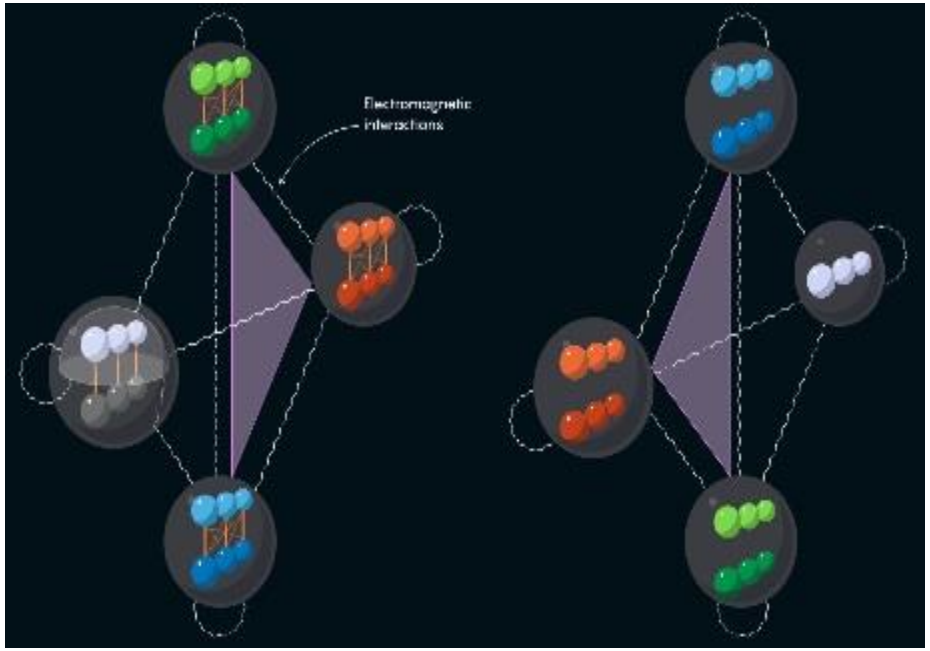
The Standard Model of Particle Physics
12 Particles and Five Bosons/Fields

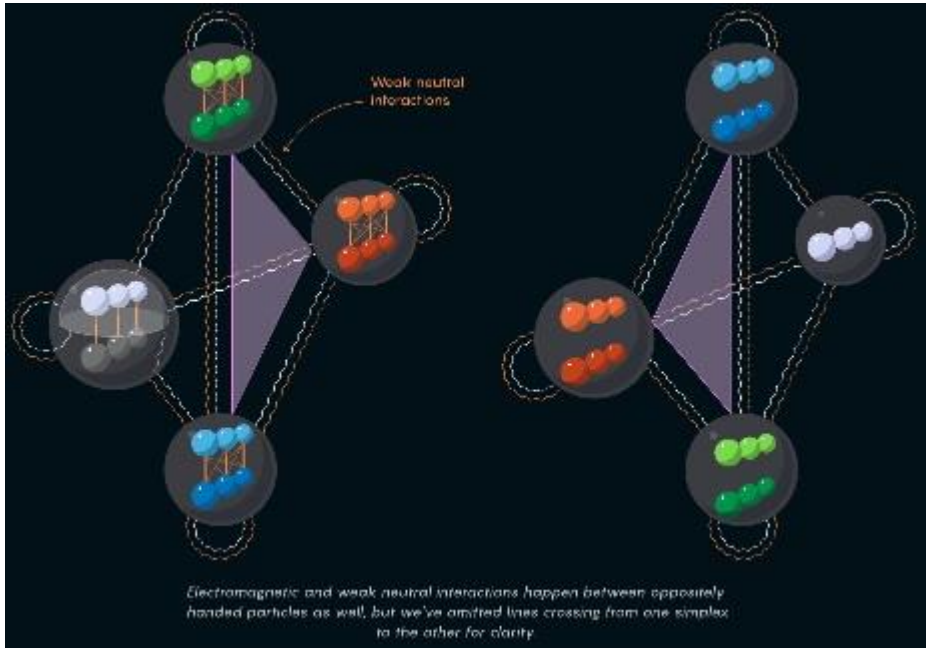




Standard Model of Physics

https://sketchfab.com/3d-models/the-standard-model-of-particle-physics-95f060e8f9a845ddb5a9cf0441f4978a

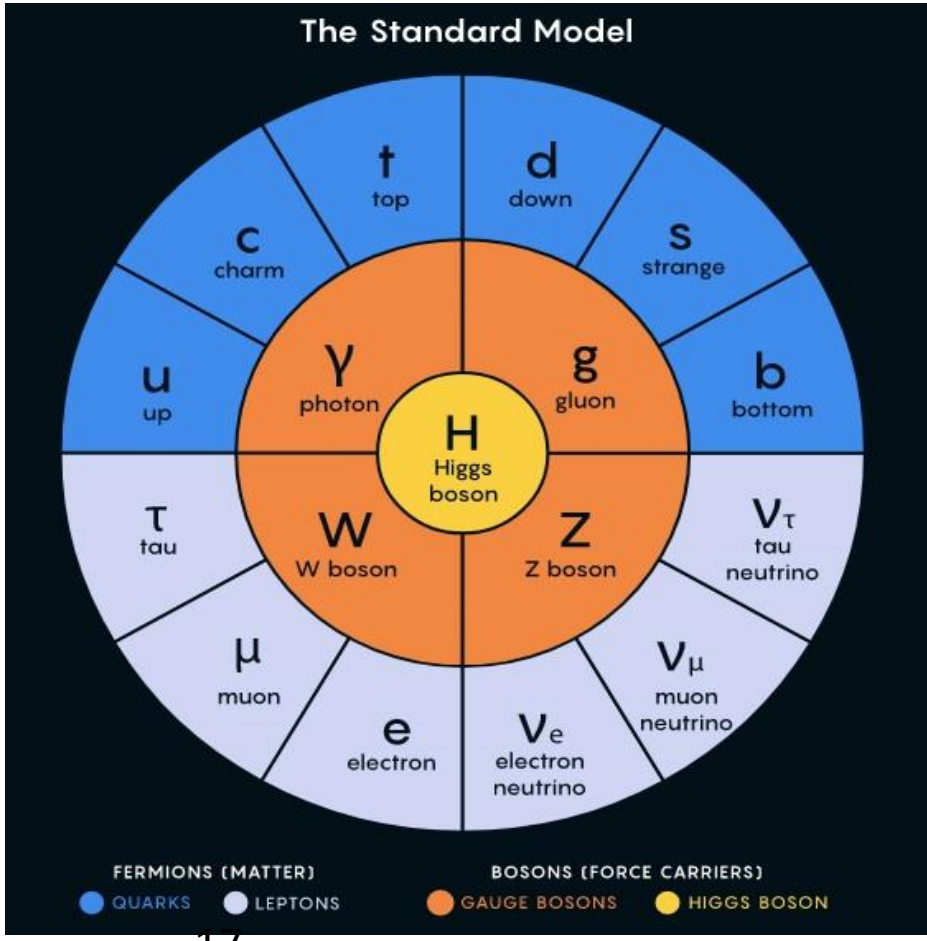




What Is a Particle?

https://www.quantamagazine.org/what-is-a-particle-20201112/

A collapsed wavefunction
Quantum excitation of a field
Irreducible representation of a group'
Multiple layers
Vibrating strings
Deformation of the qubit ocean



Where Are We Going: A Picture

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Space Time 4 DImensions	Space Time 4 Dimensions
Calabi Yau Manifold 6 Compactified Dimensions 3 Holes Hodge Diamond (9,11,6,7)	Calabi Yau Manifold 6 Compactified DImension 4 Holes Hodge Diamond (17,12,21,12)
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