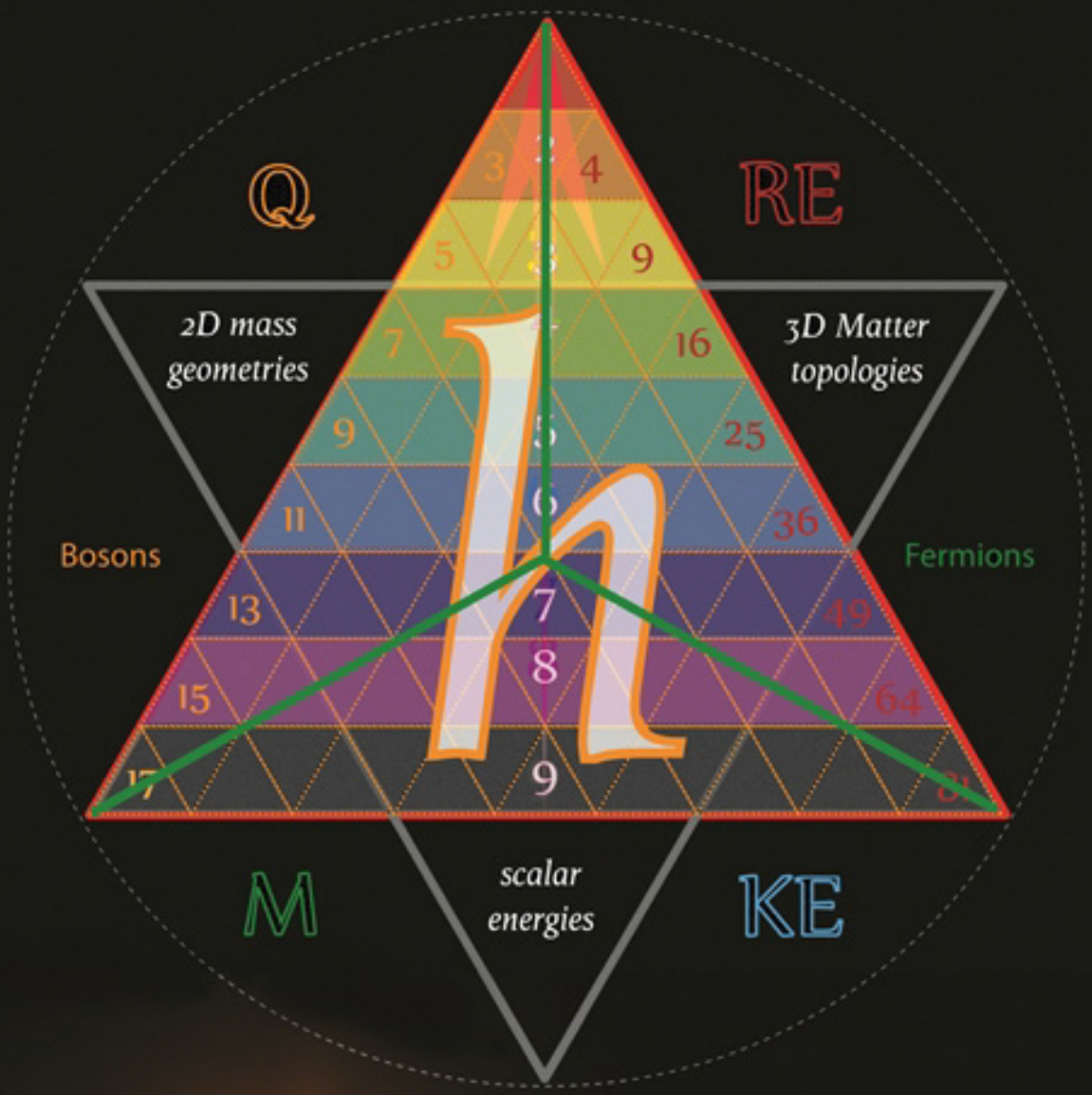
TETRYONICS

The charged geometry of mass-ENERGY-Matter



Foundational Quantum Mechanics

Abraham

ISBN 978-0-9872884-1-7
[Second Edition © 2012]

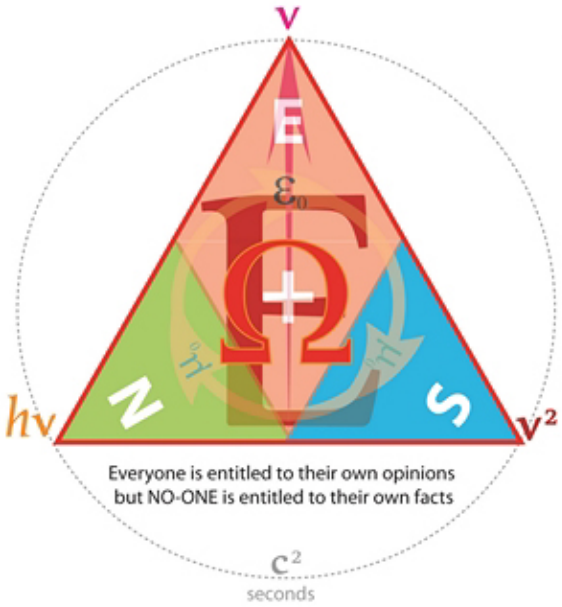
questions **Q**

FUNDAMENTUM QUANTUM MECHANICA

A answers

[TETRYONICS]

A fundamental re-interpretation of the geometry of quantised angular momentum is required to complete the physics of 'The Standard model'



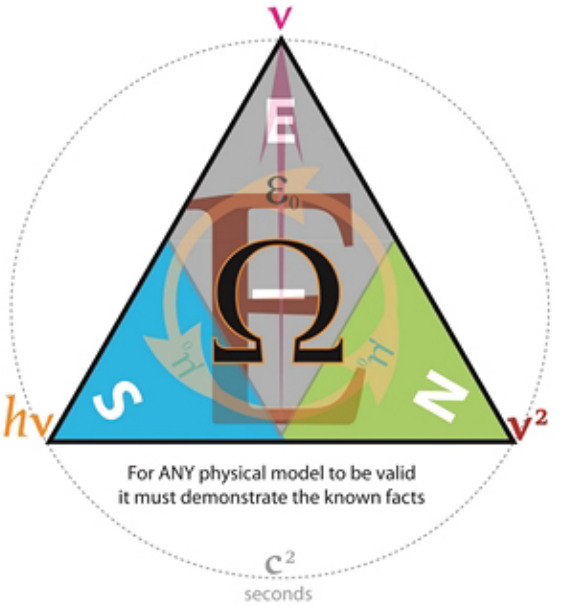
Having removed the impossible, anything that remains, however improbable, must be the truth

Mathematics is the language of Physics, and Geometry is its grammar

Philosophiae Naturalis Principia geometricae

"...the scientist makes use of a whole arsenal of concepts which he imbibed practically with his mother's milk; and seldom if ever is he aware of the eternally problematic character of his concepts. He uses this conceptual material, or, speaking more exactly, these conceptual tools of thought, as something obviously, immutably given; something having an objective value of truth which is hardly even, and in any case not seriously, to be doubted. ...in the interests of science it is necessary over and over again to engage in the critique of these fundamental concepts, in order that we may not unconsciously be ruled by them."

[Albert Einstein]



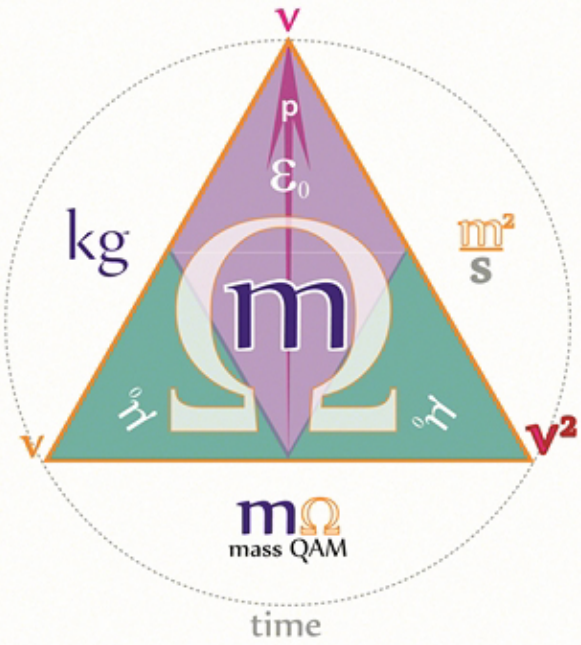
Science is born from observation, and the reasoning of known facts in search of underlying truths

In the following pages the true geometry of quantum mechanics is revealed, leading scientific endeavour into new realms of understanding

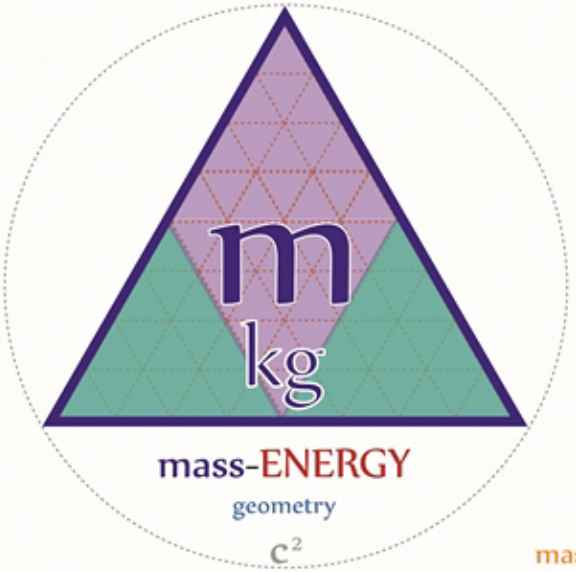
mass-ENERGY-Matter

The a-priori revelation of Tetryonic theory is that all square mass-energies possess equilateral momenta geometries

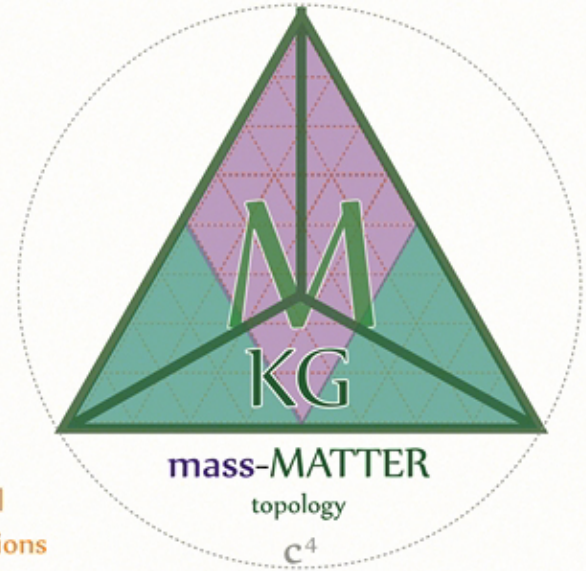
The equilateral Quantised Angular Momentum intrinsic to Planck mass-energy momenta produces charged geometries



The quantum mechanics of velocity, quanta, EM fields and mass-Energy-Matter can be fully revealed through their equilateral geometries

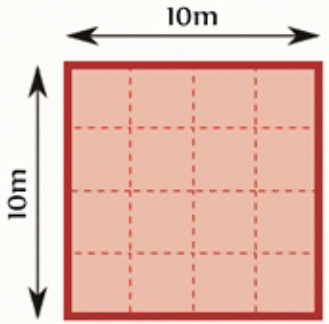


A long hidden topology is revealed



Equilateral triangles are the foundational geometry for all mass-ENERGY-Matter topologies and physical Force interactions

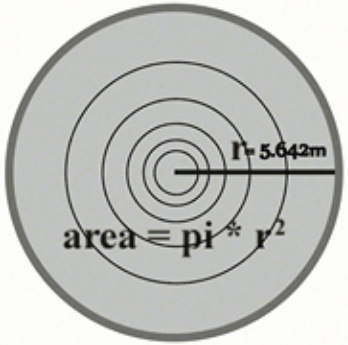
SQUARED energies in quantum mechanics are EQUILATERAL geometries



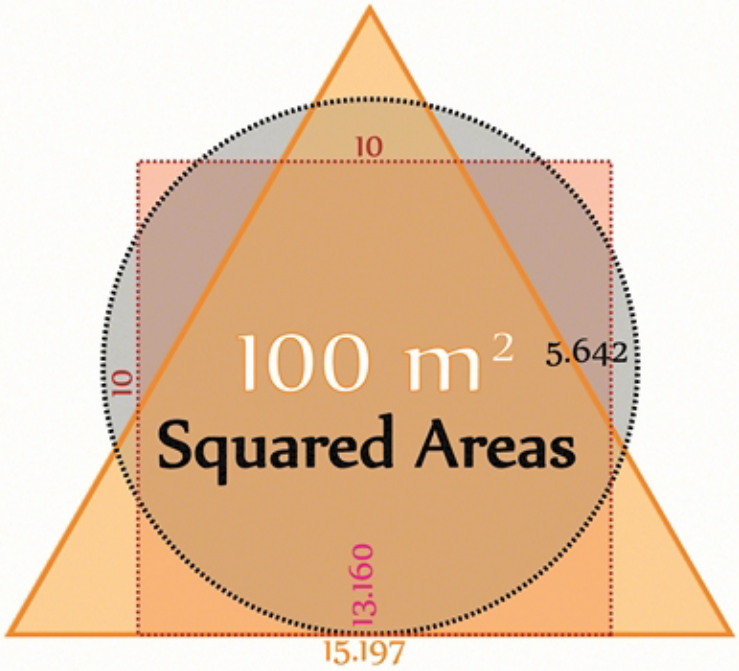
Square

area = s^2 = [100]

Circles



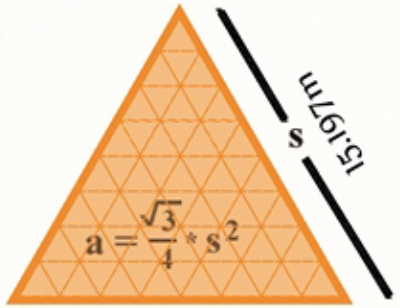
= pi *$[5.642]^2$
= 100



can be created by a number of planar geometries

For a long time it has been assumed by scientists (and mathematicians) that circular [and squared] geometries are the geometric foundation of all physics, leading to a serioulsy flawed model of particles and forces in quantum mechanics

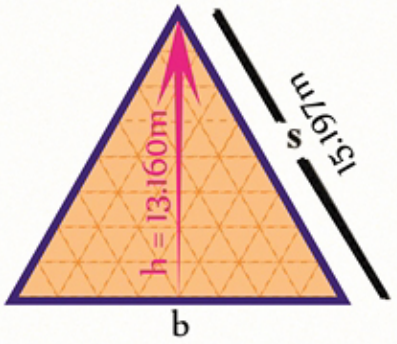
Tetryonic theory now reveals that quantised equilateral angular momenta creates the foundational geometry of all the mass-Energy-Matter & forces of physics



Equilateral

area = $(\frac{1}{2}*b)*h$

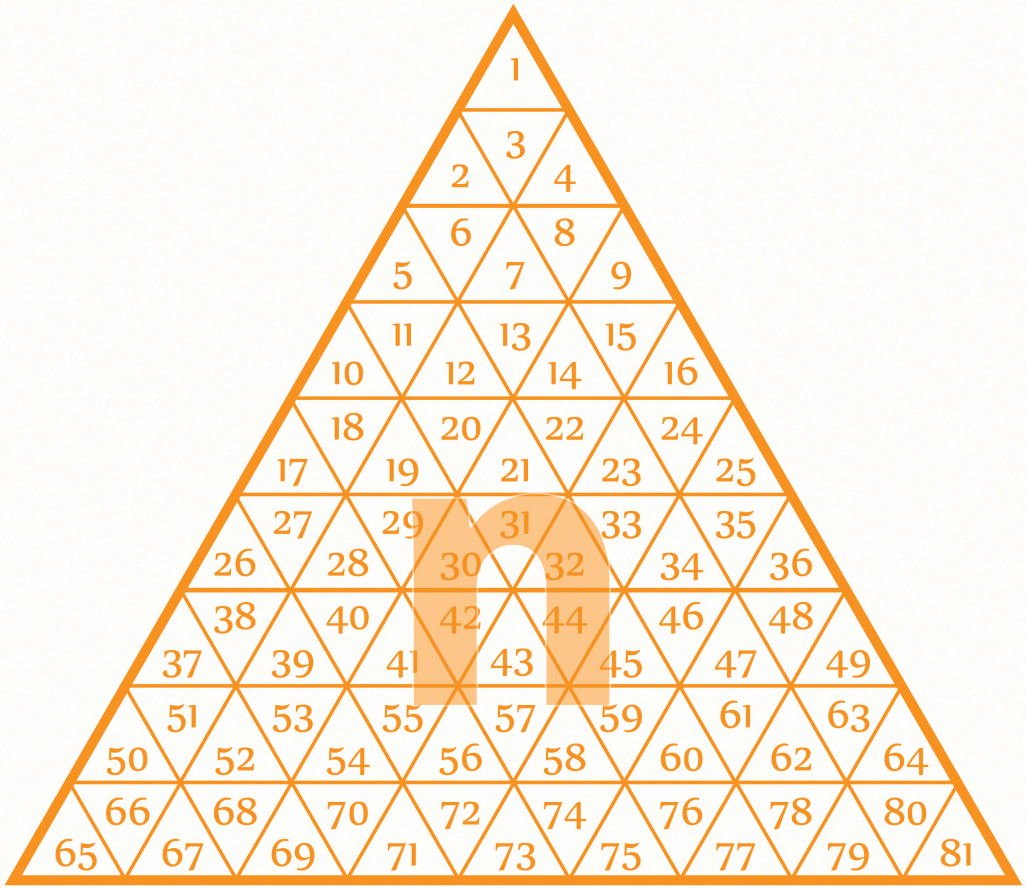
Triangles



b h
[.5x15.197] x 13.160
= 100

Integers

The integers (from the Latin integer), literally "untouched", hence "whole"
in Tetryonics it is the basis for the quantum



Viewed as a subset of the real numbers, they are numbers that can be written without a fractional or decimal component

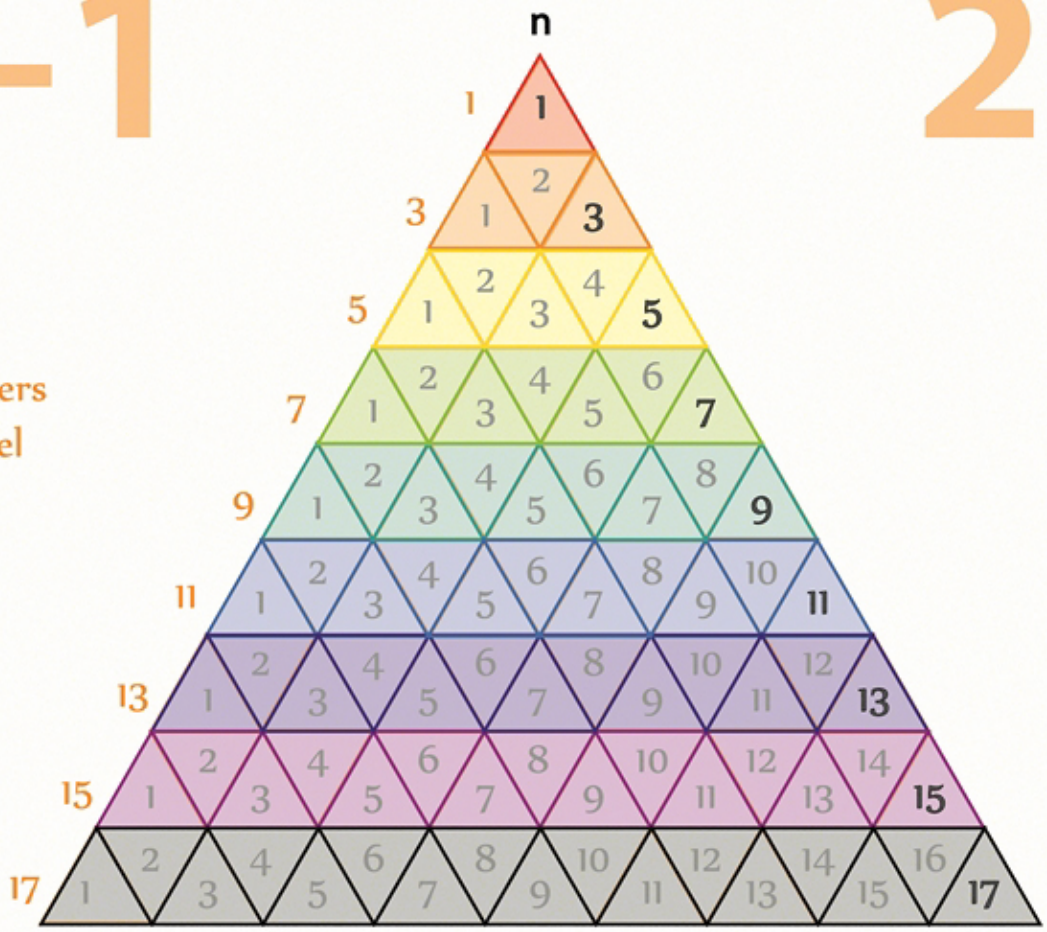
ODD numbers

An odd number is an integer which is not a multiple of two.

2n-1

2n+1

ODD numbers
in each level



Bosons have
ODD number
quanta

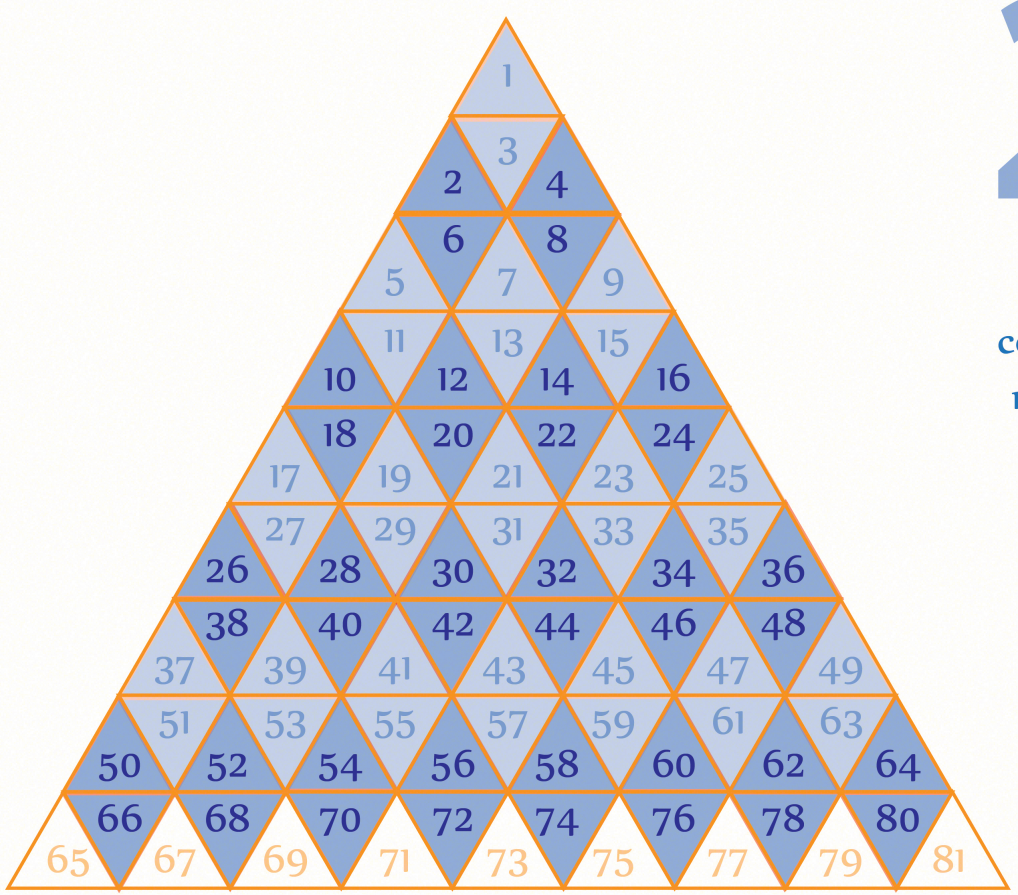
An odd number, when divided by two, will result in a fraction

EVEN numbers

An integer that is not an odd number is an even number.

2

Photons have EVEN number quanta



2n

EM waves are comprised of EVEN numbered quanta

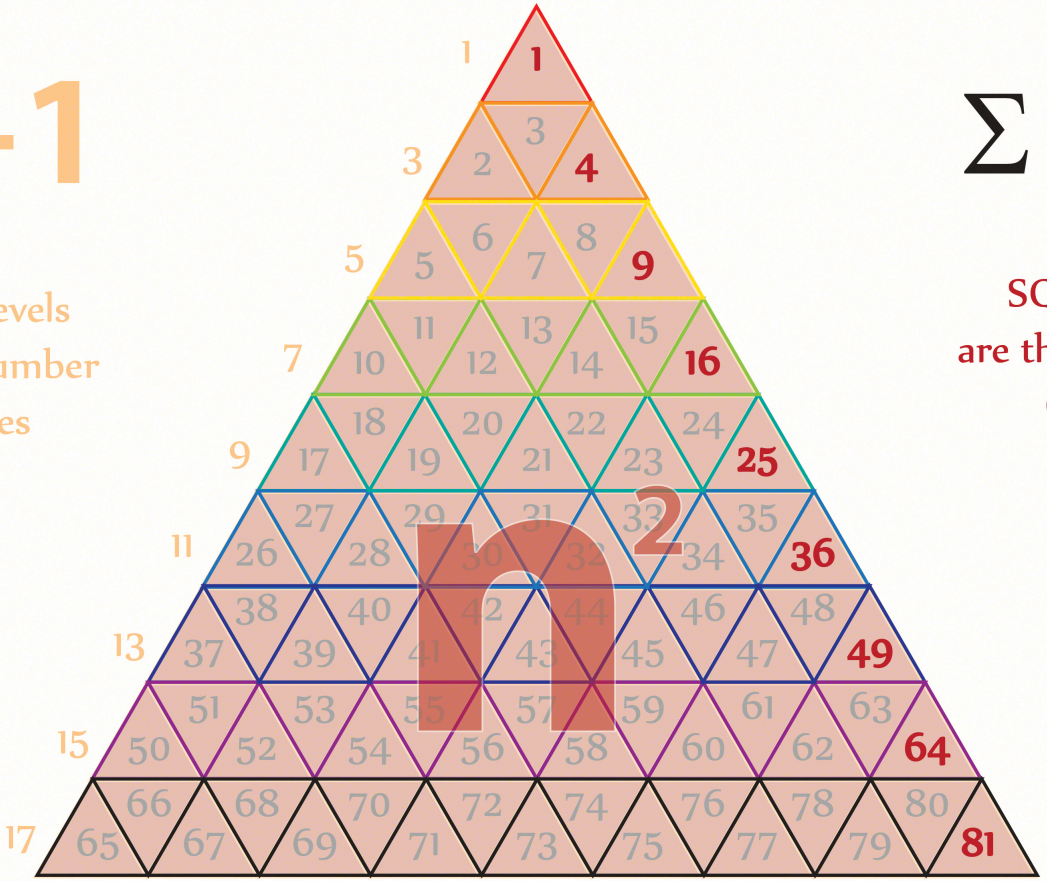
An even number is defined as a whole number that is a multiple of two.
If an even number is divided by two, the result is another whole number.

Square numbers

A square number, sometimes also called a perfect square,
is the result of an integer multiplied by itself

2n-1

Quantum levels
have ODD number
geometries



Σ 2n-1

SQUARE numbers
are the sum of successive
ODD numbers

Square numbers

In Tetryonics SQUARE numbers are EQUILATERAL geometries

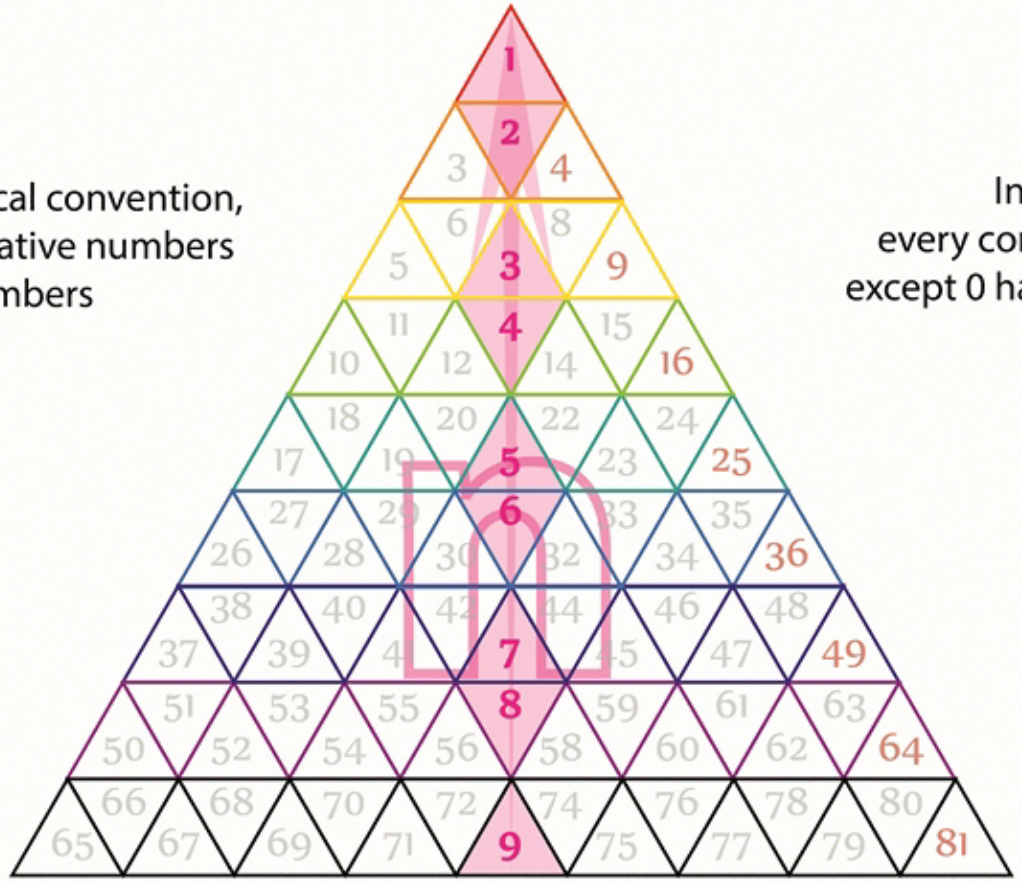
Square roots

A square root of a number is a number that, when it is multiplied by itself (squared) , gives the first number again.

$-i$ and $+i$

Against Mathematical convention, square roots of negative numbers are real numbers

In Physics every complex number except 0 has 2 square roots.



$2n-1$

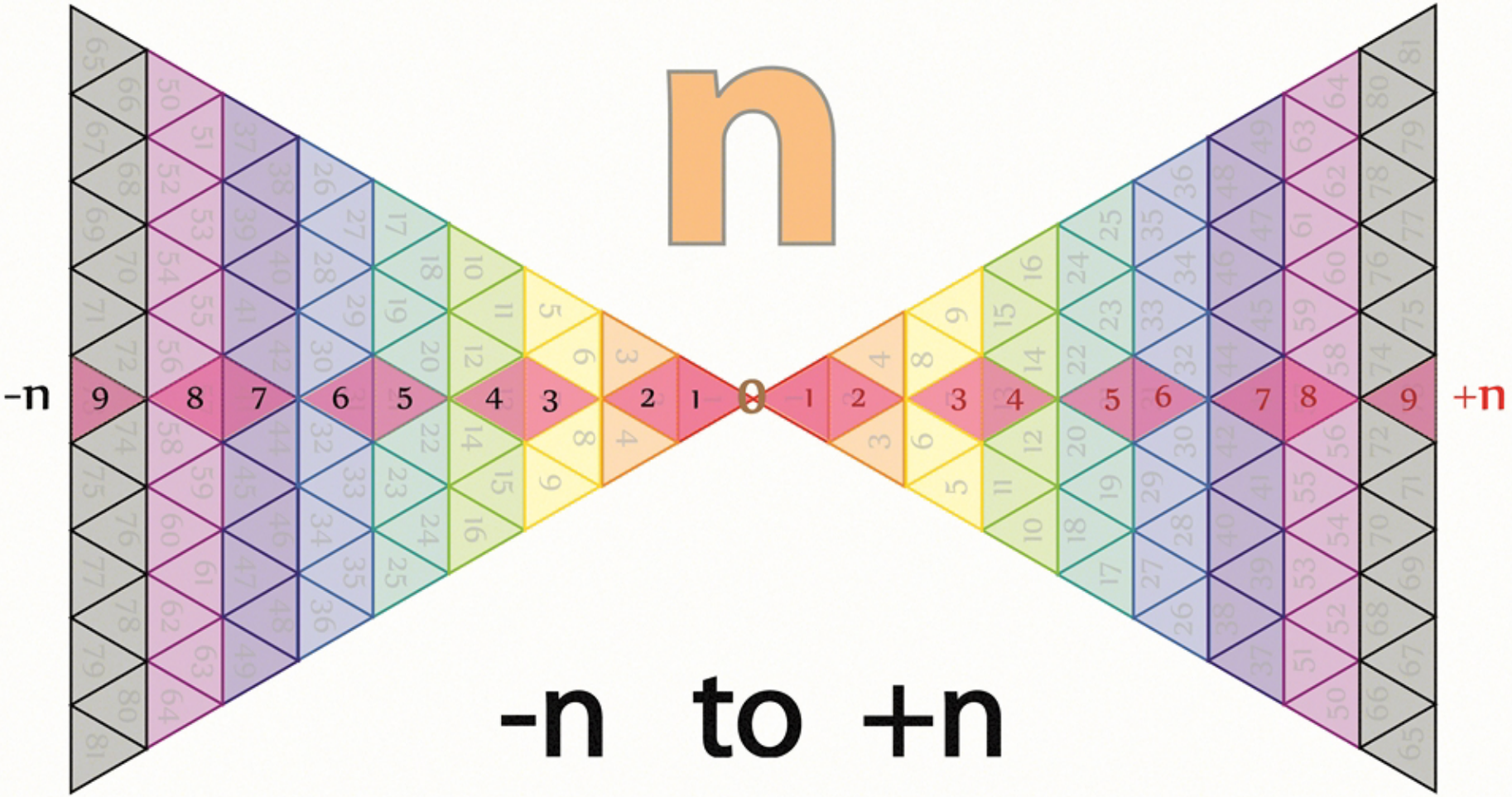
n^2

A whole number with a square root that is also a whole number is called a perfect square

Real Numbers

A real number is a value that represents a quantity along a continuous line.

The real numbers include all the rational numbers,



Irrational Numbers

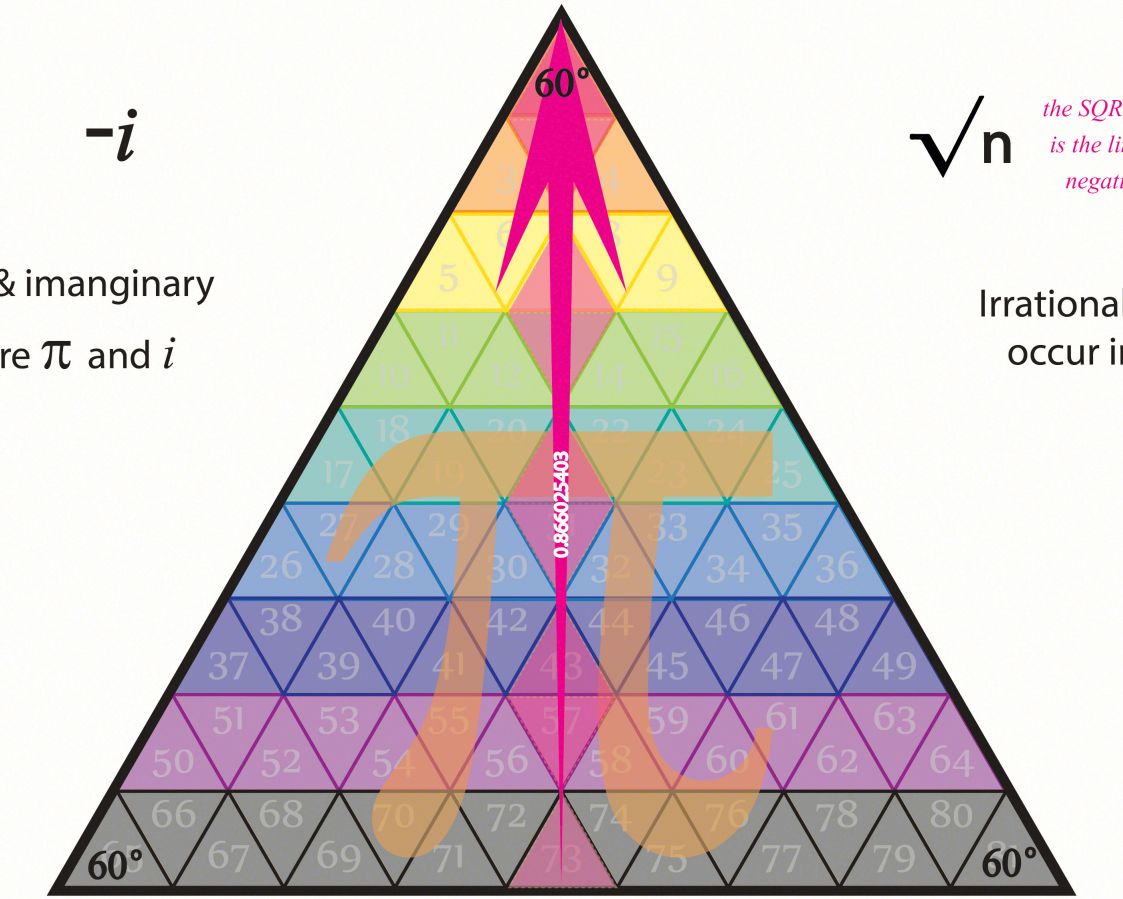
An irrational number is defined to be any real number that cannot be written as a complete ratio of two integers

$i^2 = -1$

$+i$ and $-i$

Well known irrational & imanginary numbers in Math are π and i

π



$\sqrt{n}$ *in Tetryonics the SQR of a negative number is the linear momentum of a negative charge EM field* $\sqrt{-n}$

Irrational numbers often occur in mathematics

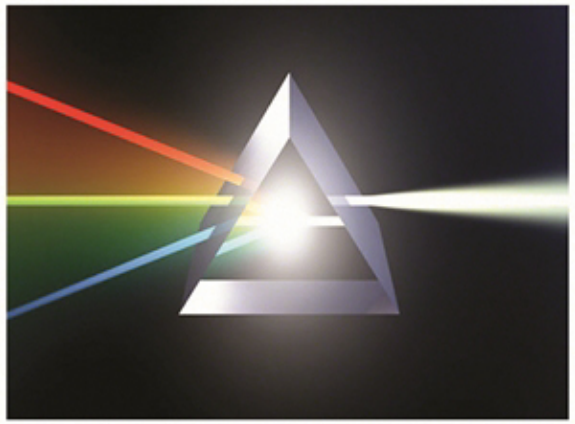
$\sqrt{-n}$

Sin 60

$\sqrt{3}/2$

Sin $\pi/3$

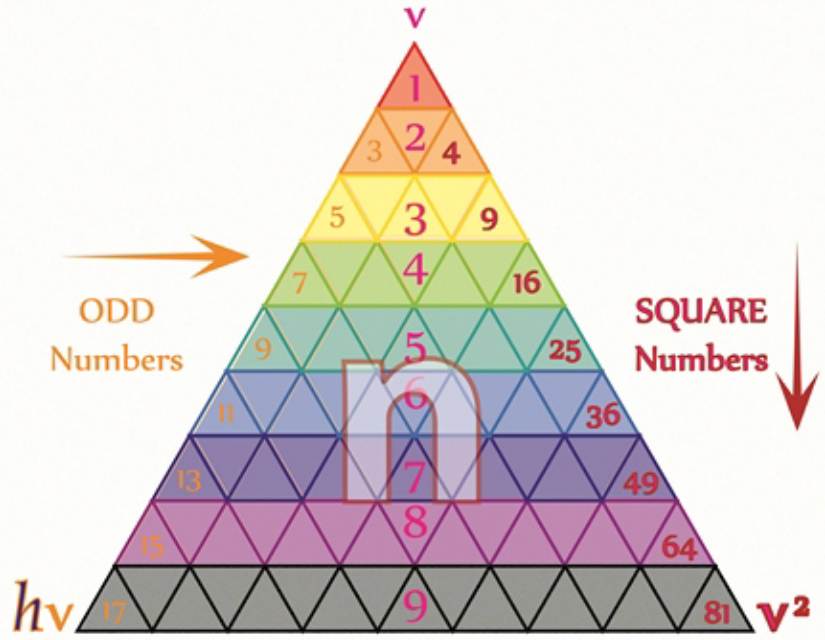
Tetryonic Colour Code



Tetryonics uses a colour code that is based on the spectral colours of dispersed White Light

0	Brown
1	Red
2	Orange
3	Yellow
4	Green
5	Aqua
6	Blue
7	Indigo
8	Violet
9	Black

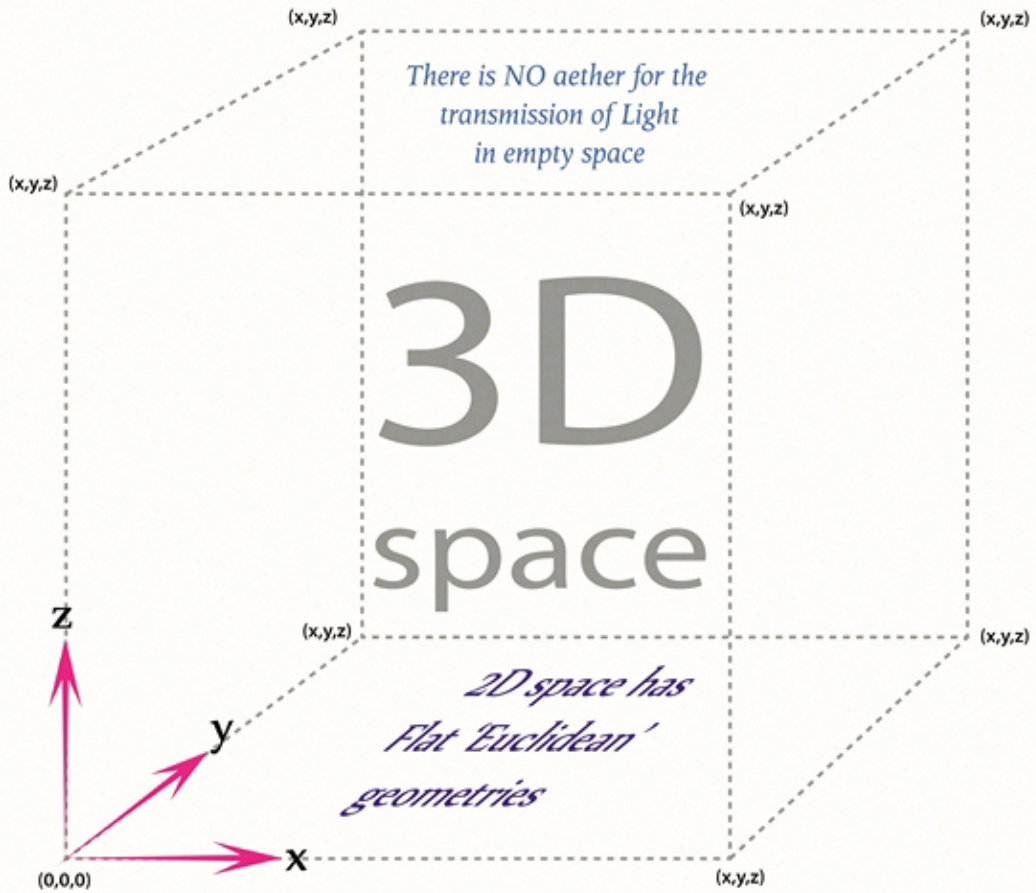
A colour code is used to indicate the varying quantum levels of the numerous forms of mass-ENERGY-Matter and serves to illustrate relationships between various Physical properties.



Free Space

A contiguous volume or area
of any regular geometry
that is free, available, or unoccupied

$E = 0$
in any form



A Spatial region
is defined so as to
measure the physics
of mass-ENERGY-Matter
within its confines

Energy moves through Space
in various forms:
radiant energies, Matter etc

Space can be
Cubic, Spherical or
Tetrahedral as defined by
the spatial co-ordinates
used to define the region

Empty Space is defined as a topology whose volume is devoid of Energy

Space-Time co-ordinates

The linear vector of divergent Energy forms various co-ordinate systems based on its vector directions per unit of Time

Charge radiates unilaterally in line with its vector linear momentum

Vector forces

Euclidean planar space-time

c
299,792,458
linear metres
per sec

c^2
8.987551787 e16
radial square metres
per sec

Time in Physics is a measure of how long it takes for light to travel 299,792,458 metres from its source in a vacuum

metre
299,792,458 sec

A metre in Physics is the distance light travels in 1/ 299,792,458 of a second from its source

299,792,458 m
second

c^3
2.694400242 e25
cubic metres
per sec

c^4
8.077608713 e33
spherical metres
per sec

Cartesian rectilinear space time

Cartesian and Curvilinear spatial co-ordinate systems both measure 3D Matter

Riemannian curvilinear space-time

Spatial geometries

based on the vector speed of Light
form distinct spatial co-ordinate systems
for the measurement of physics

vector lines

1 Dimensional velocity

linear metres

Planar Circles

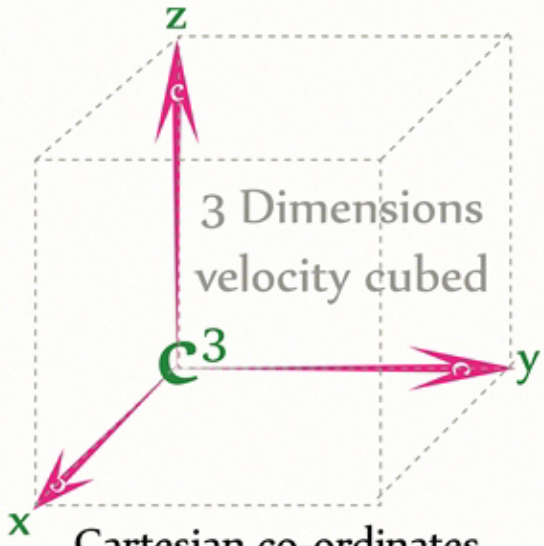
2 Dimensions

c^2

velocity squared

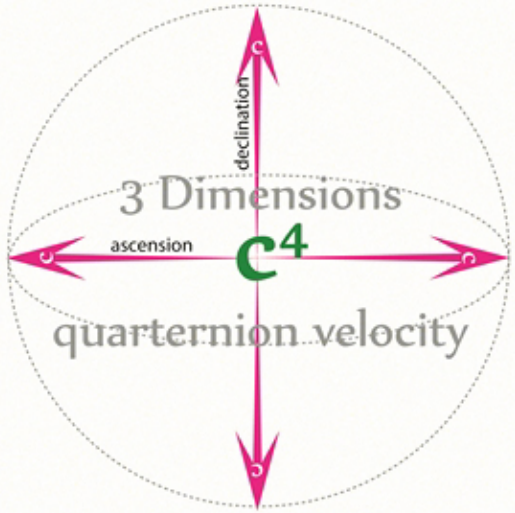
radial seconds

Cubic volumes



Cartesian co-ordinates

Spherical volumes



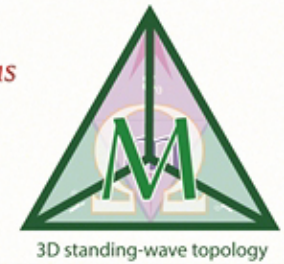
radial seconds²

Forces

2D planar radiant geometry

mass-energies

Energy has an equilateral geometry and forms Tetrahedral topologies within any spatial region



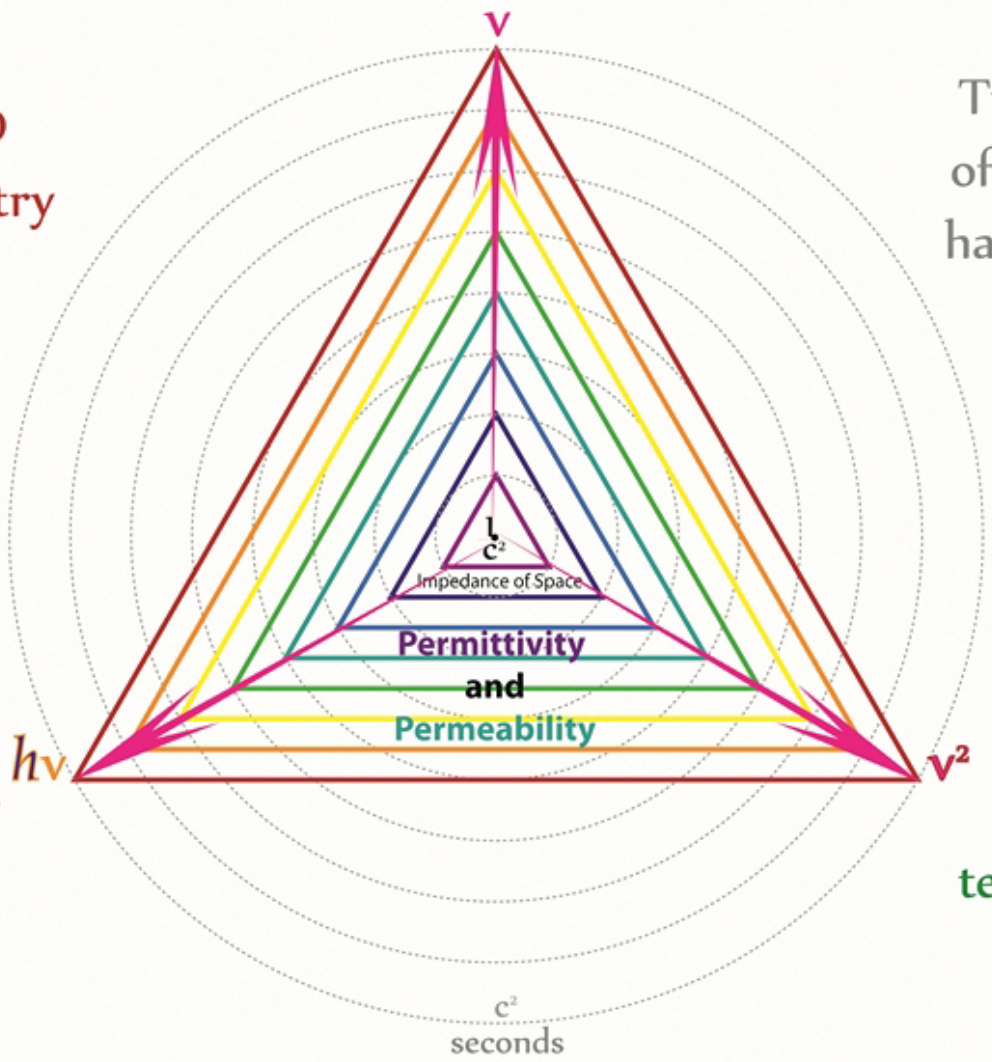
3D standing-wave topology

mass-Energy-Matter and all forces

c is the natural velocity of light

Energy has a 2D equilateral geometry [Euclidian]

Time - as a measure of divergent energies has a radial geometry



Equilateral geometry is the inverse of radial geometry

3D Matter has a tetrahedral mass-energy topology

The scalar spatial geometry of Energy

Velocity

Velocity is the measurement of the rate and direction of change in the position of an object.

It is a vector physical quantity; both magnitude and direction are required to define it.

The absolute scalar value (magnitude) of velocity is speed, a quantity that is measured in metres per second (m/s or ms−1) when using the SI (metric) system.

$$\frac{m}{s}$$

Speed is the scalar value of the
Distance traveled per unit of TIme

$$\bar{\mathbf{v}} = \frac{\Delta \mathbf{x}}{\Delta t}.$$

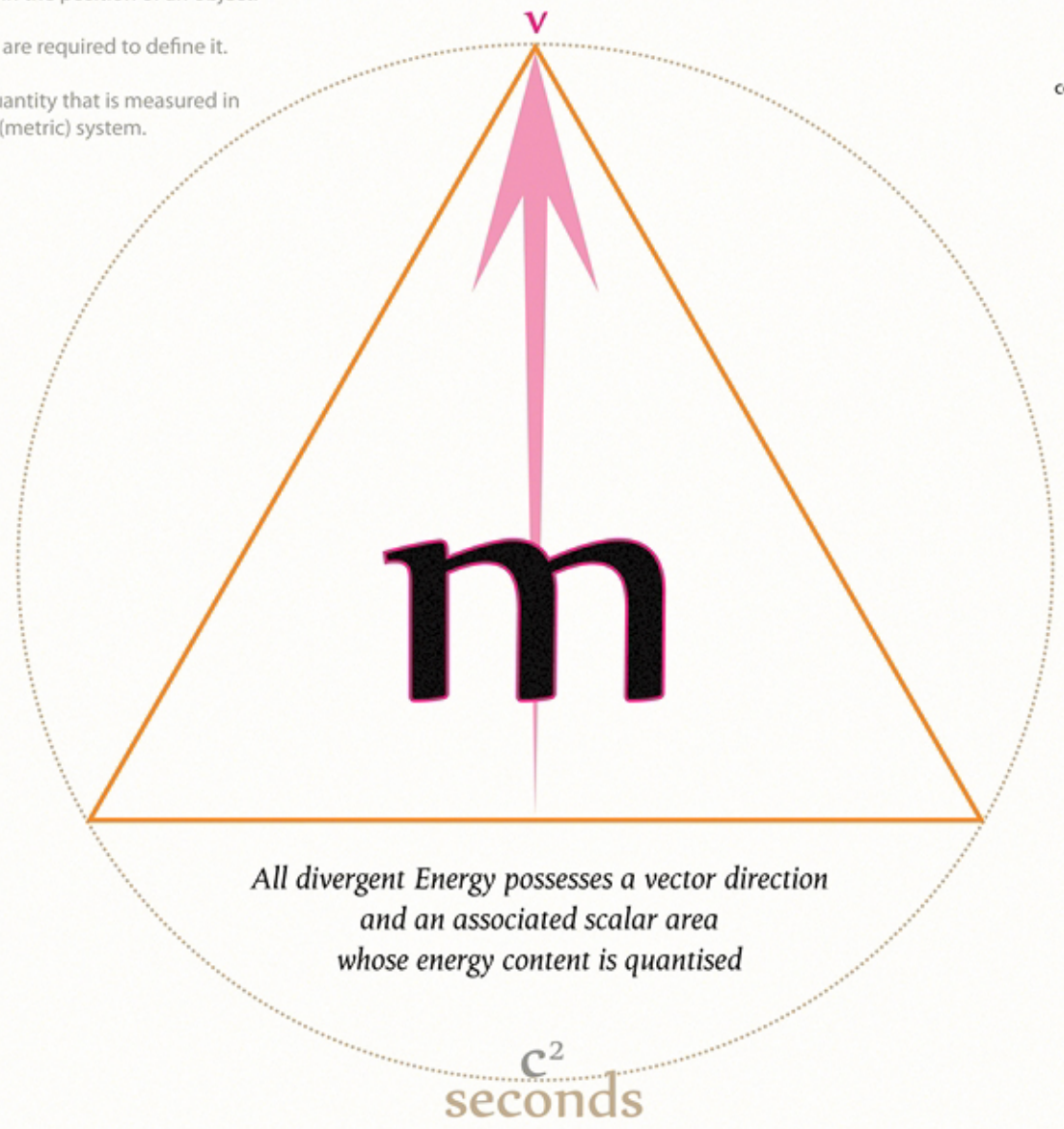
Velocity is the vector value of the
Distance traveled per unit of Time

$$\frac{\overrightarrow{m}}{s}$$

v Velocity $\frac{m}{s}$

$\frac{sec}{c^2}$

is a 2D RADIAL
SPACE-TIME
co-ordinate system



sec^2 / c^4

is a 3D SPHERICAL SPACE-TIME co-ordinate system

Acceleration

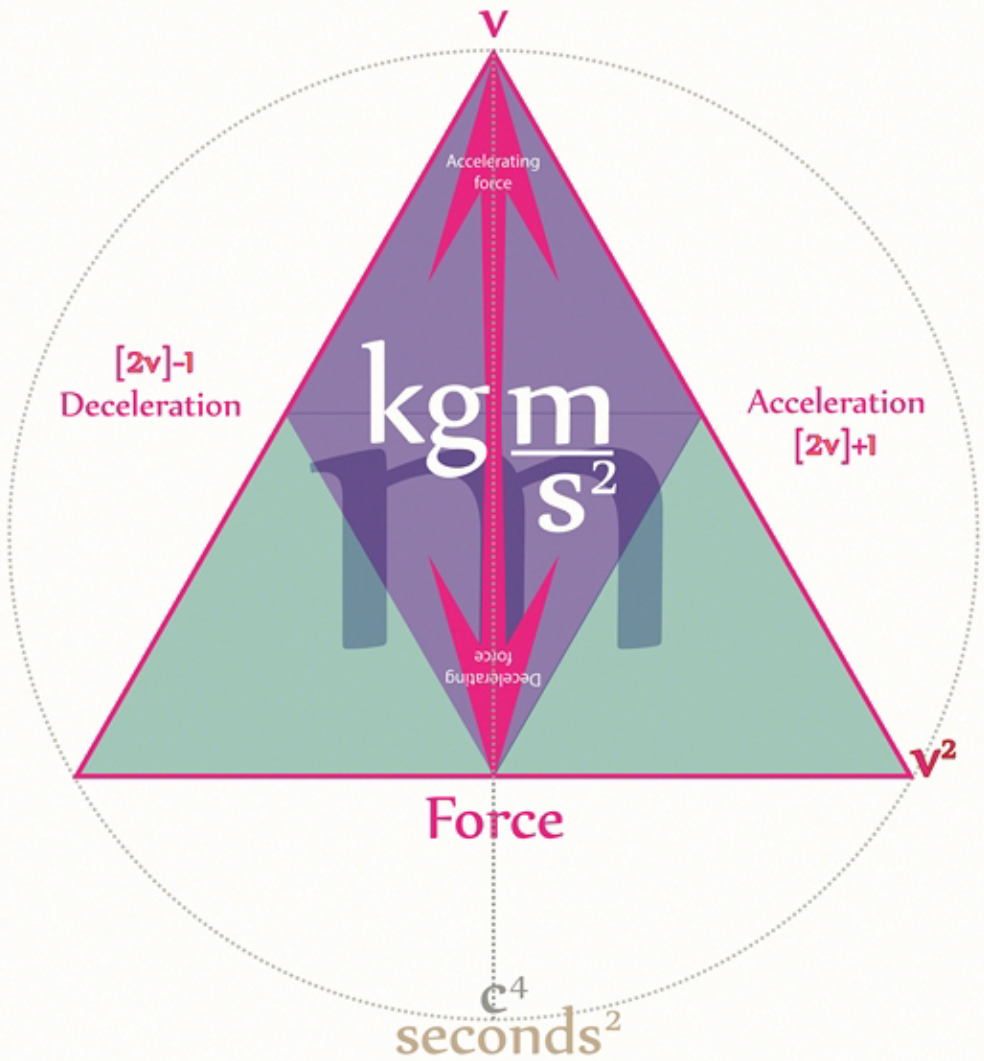
a acceleration $\frac{m}{s^2}$

In physics, acceleration is the rate of change of velocity [dv] over time [dt]

In one dimension, acceleration is the rate at which something speeds up or slows down.

However, since velocity is a vector, acceleration describes the rate of change of both the magnitude and the direction of velocity.

Acceleration has the dimensions [Length]/[Time Squared]
In SI units, acceleration is measured in meters per second squared (m/s^2).



$$a = \frac{\Delta y}{\Delta x} = \frac{\Delta v}{\Delta t}.$$

In classical mechanics, for a body with constant mass,
the acceleration of the body is proportional to the net force acting on it
(Newton's second law)

$F=ma \longrightarrow a=F/m$

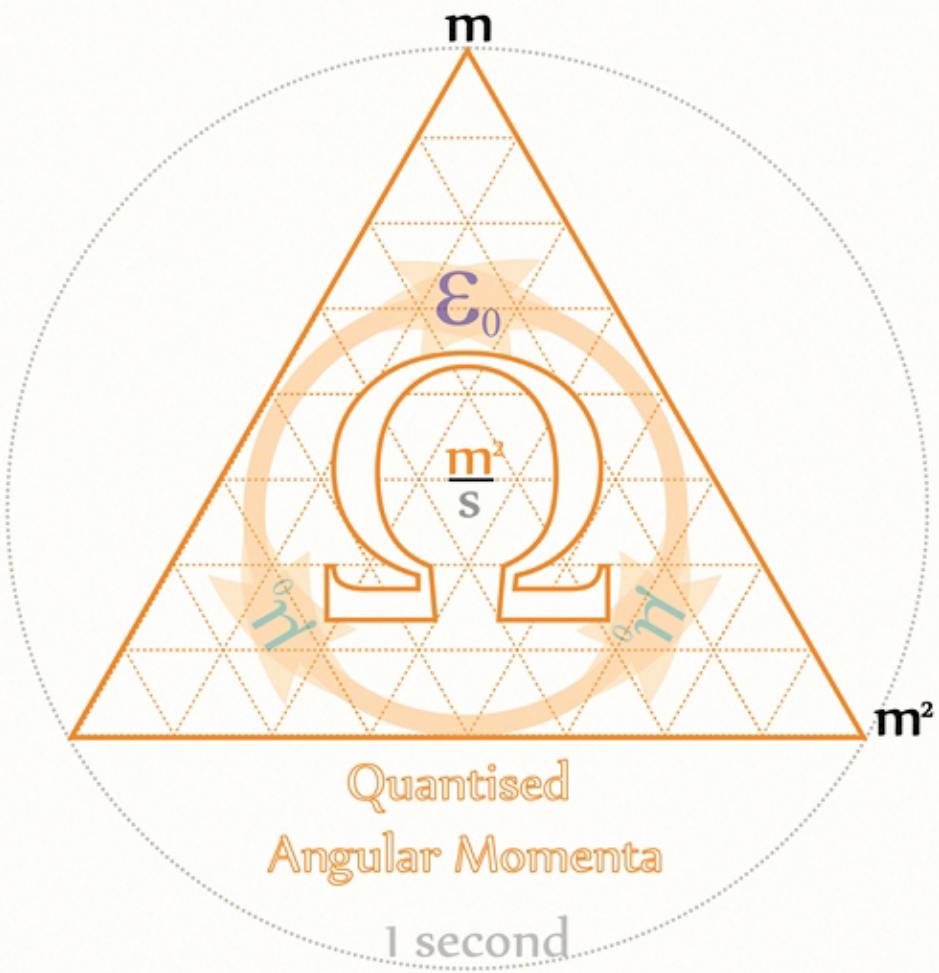
Force $\frac{kg\,m}{s^2}$

Additionally, for a mass with constant velocity,
(ie in an inertial frame)
the energy of motion is expressed as its momentum
(acceleration causes changes in Energy-momentum)

$p = \frac{kg\,m}{s}$

Quantised Angular momentum

As it is a physical [equilateral] geometry QAM is conservative in any system where there are no external Forces and serves as the foundational geometric source for all the conservation laws of physics



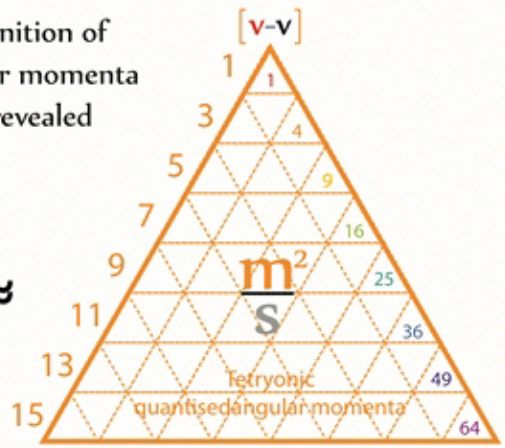
Conservation of Quantised Angular momenta

In QFT, angular momentum is is considered to be the rotational analog of linear momentum, in Tetryonics it is revealed to be the equilateral geometry of mass-energy within any defined spatial co-ordinate system

A major re-definition of quantised angular momenta in physics is revealed

classical rotational angular momenta

≈



Tetryonic quantum mechanics

In quantum mechanics, angular momenta is quantised – that is, it cannot vary continuously, but only in ODD number "quantum steps" between the allowed SQUARE nuclear Energy levels

In physics, angular momentum, moment of momentum, or rotational momentum is a conserved vector quantity that can be used to describe the overall state of a physical system.

When applied to specific mass-energy-Matter systems QAM reveals the true quantum geometry and nature of Energy in our universe

h

$kg\frac{m^2}{s}$

$m\Omega$

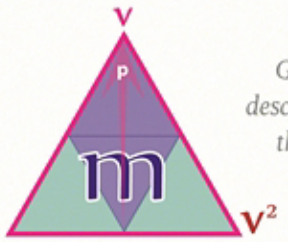
mass x QAM

Planck's Constant

Normally viewed as an expression of rotational momentum Quantised Angular Momentum [QAM] is in fact a result of the equilateral geometric quantization of mass-energy

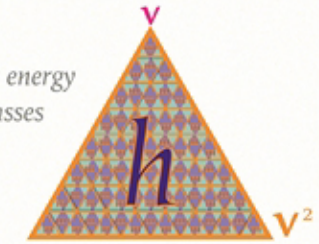
mass - Energy geometry

Newton developed his Laws using Force
$p = mv$
(linear momentum)

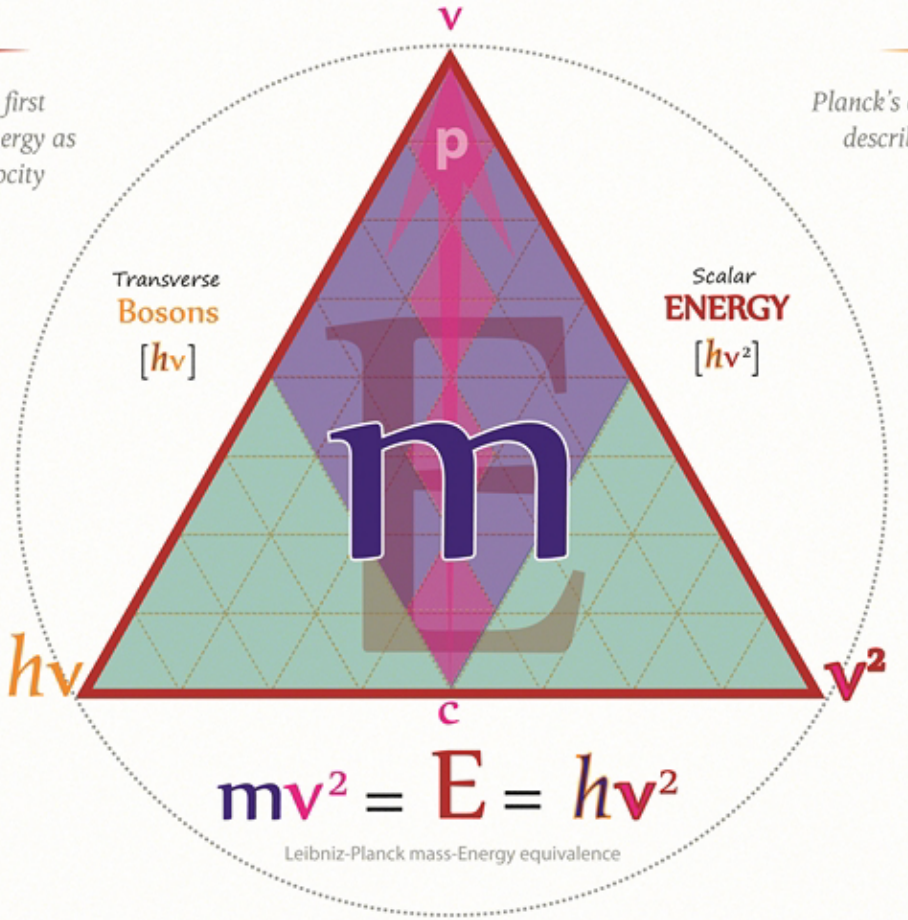


Gottfried Leibniz first described Scalar Energy as the square of velocity

Planck developed his Heat Law using quantised mass
$h = m\Omega$
(Planck Constant)



Planck's equation for heat energy describes transverse masses [Bosons]



$E = mv^2$
Leibnitz mass-energy equivalence

$E = nhv$
Planck mass-energy equivalence

mass velocity squared

$kg\,\frac{m^2}{s^2}$

quantised mass per second

Planck quanta per second
$\left[kg\,\frac{m^2}{s}\,\frac{1}{s}\right]$

$mv^2 = E = hv^2$
Leibniz-Planck mass-Energy equivalence

scalar energies can be related to velocity-momenta through mass geometries

scalar

mv^2 Leibniz-Newton mass-Energy equivalence $m\Omega v^2$

quantised

Tetryonic-Planck mass-Energy equivalence hv^2

mass-Energy Forms

Scalar/Linear forms

mass x velocity squared

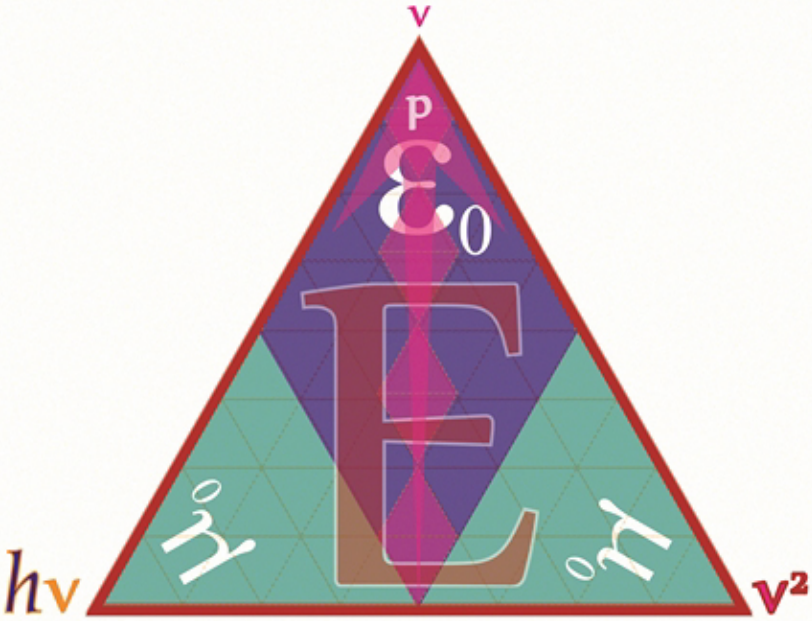
$$kg.\left[\frac{m}{s}\right]^2$$

Energy momentum

Leibniz [and Newton] showed that the Energy of a system can be viewed as a product of its mass x velocity squared or [equally as linear momentum squared], forever linking Energy to velocity through the scalar property of mass

$$mv^2 = E = p^2$$

Energy is the ability to do work in varying forms such as potential, kinetic, & mechanical energies, work, heat, and chemical or electrical energies.



$$mv^2 = E = hv^2$$

The total energy contained in an object is identified with its EM mass, and Energy (like mass), cannot be created or destroyed

Tetryonic reveals mass to be a scalar measurement of quantised [equilateral] energy per unit of Time

$$m[\Omega]v^2$$

Energy is subject to the law of conservation

Quantised form

Planck quanta per second

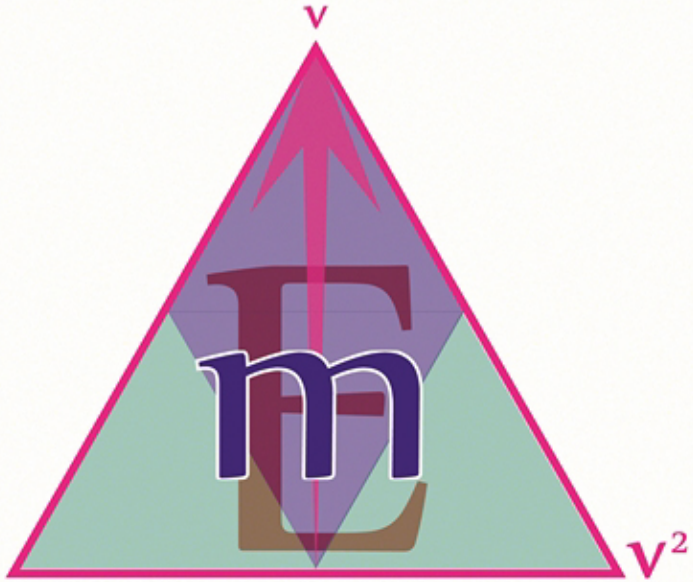
$$\left[kg.\frac{m^2}{s}\right].s^{-1}$$

mass-Energy quanta

Max Planck reveealed that energy was not continuous, it was quantized – only certain energies are allowed. Continuous energy is a scalar propertyo of mass-energy and its quantisation is the result of its equilateral geometry

$$E = hv^2$$

In quantum mechanics energy is defined in terms of the energy operator as a time derivative of the wave function



Energy is mass-velocity squared

$$E = mv^2$$

$$\left[\left[m\Omega v\right]^2\right]$$

Planck quanta mass velocity

linear momentum squared

Everything in our Universe results from the equilateral geometry of quantised mass-energies

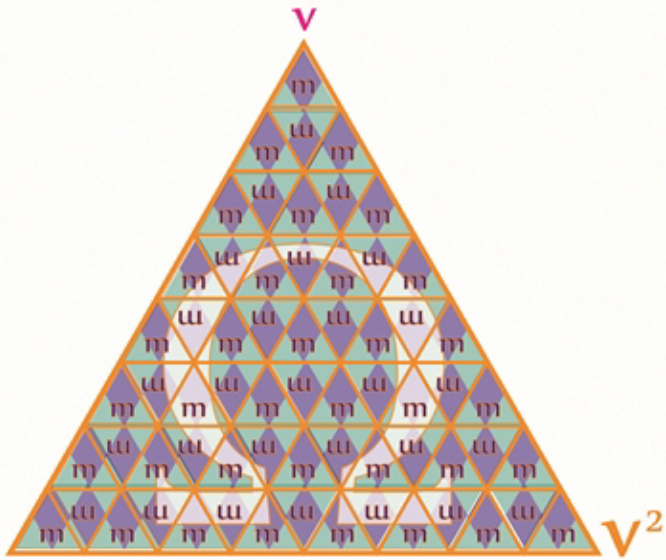
Quantised Energy

$$\left[\left[kg\ \frac{m^2}{s}\right]\frac{1}{s}\right]$$

Planck quanta per second

mass velocity squared

Scalar Energy



Energy is Planck-quanta squared

$$E = hv^2$$

scalar mass

kg

$$m = \frac{E}{v^2}$$

quantised mass

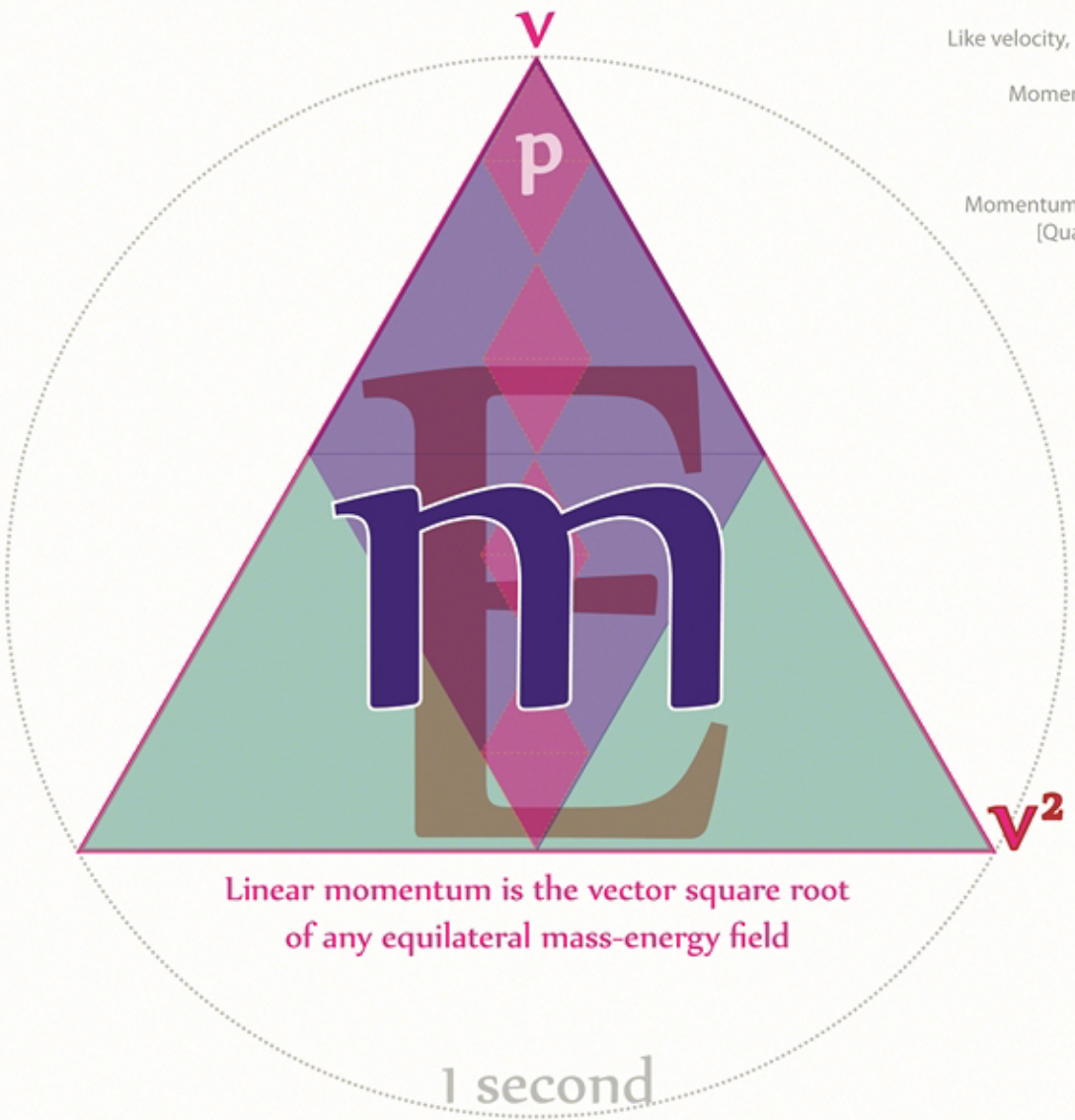
$$kg\ \frac{m^2}{s}$$

$$h = \frac{E}{v^2}$$

Note: There is a direct correspondence between Velocity and Planck quanta numbers (ie as velocity varies, the energy quanta varies as well by the square of the linear change)

Linear Momentum

p Momentum $kg\frac{m}{s}$



Linear momentum is the vector square root
of any equilateral mass-energy field

In classical mechanics, momentum (pl. momenta; SI unit kg·m/s, or, equivalently, N·s) is the product of the mass and velocity of an object (p).

Like velocity, momentum is a vector quantity, possessing a direction as well as a magnitude.

Momentum is a conserved quantity (law of conservation of linear momentum), meaning that if a closed system is not affected by external forces, its total momentum cannot change.

Momentum should be referred to in its specific forms to distinguish it in its various forms [Quantised Angular, Linear, Rotational and quantum/nuclear momentum]

$$p = \frac{hv^2}{v} = mv$$

Although originally expressed in Newton's Second Law, the conservation of momentum also holds in special relativity and, with appropriate definitions, a (generalized) momentum conservation law holds in electrodynamics, quantum mechanics, quantum field theory, and general relativity.

In relativistic mechanics, non-relativistic momentum is further multiplied by the Lorentz factor.

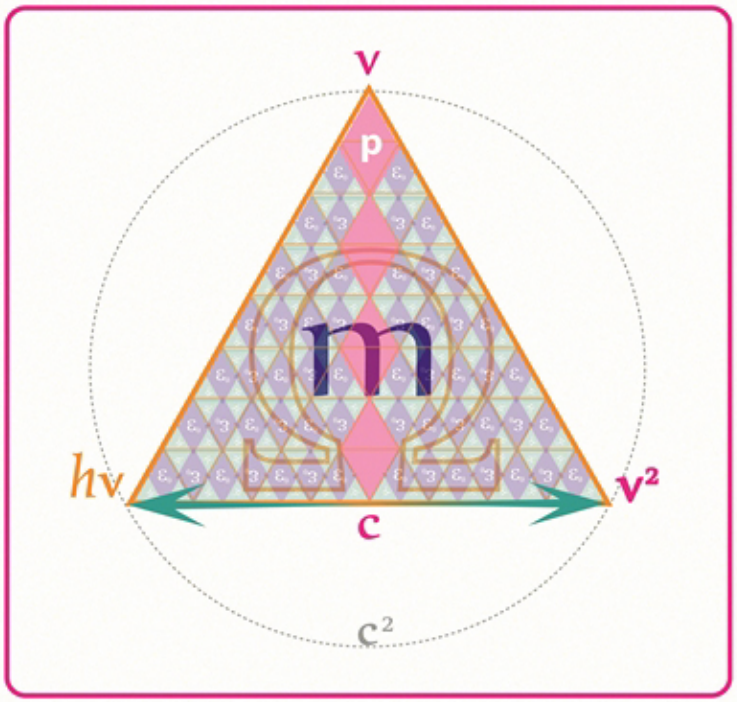
$$p^2 = E = mv^2$$

Energy can be expressed as
the square of linear momentum

$$kg\frac{m^2}{s^2}$$

Just as Tetyonic geometry distingushes between angular momenta and linear momentum
it also distingushes between linear momentum and the vector velocities it produces

Linear Momentum



SCALAR square root

Scalars are quantities that are fully described by only their magnitude

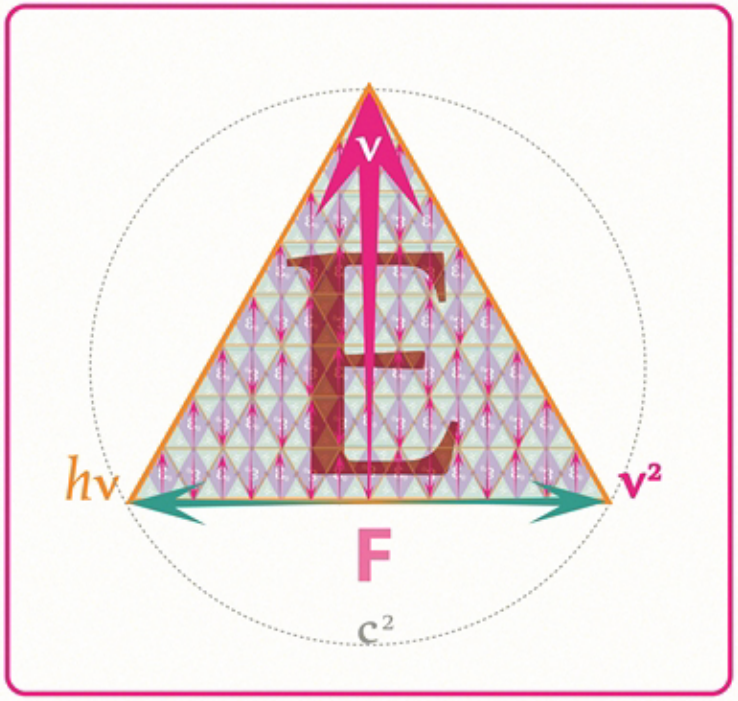
$p = mv$

$E = pv$

$E = p^2$

$E = mv^2$

Velocity



VECTOR square root

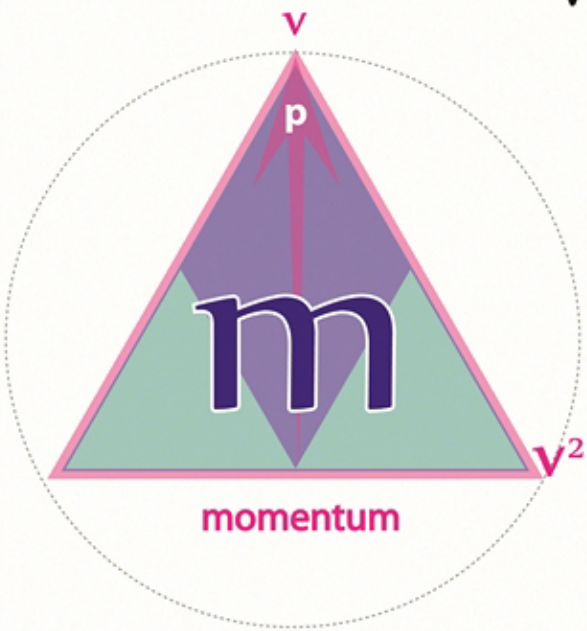
Vectors fully describe both the magnitude and direction.

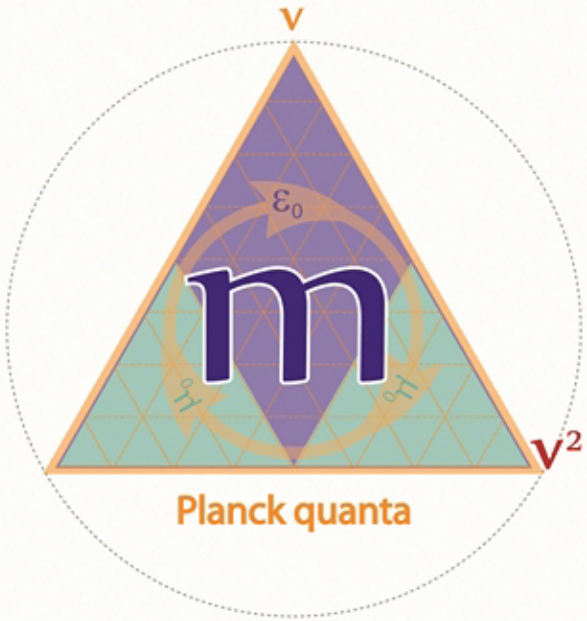
linear momentum is a scalar component of all equilateral mass-energies that produce vector velocities

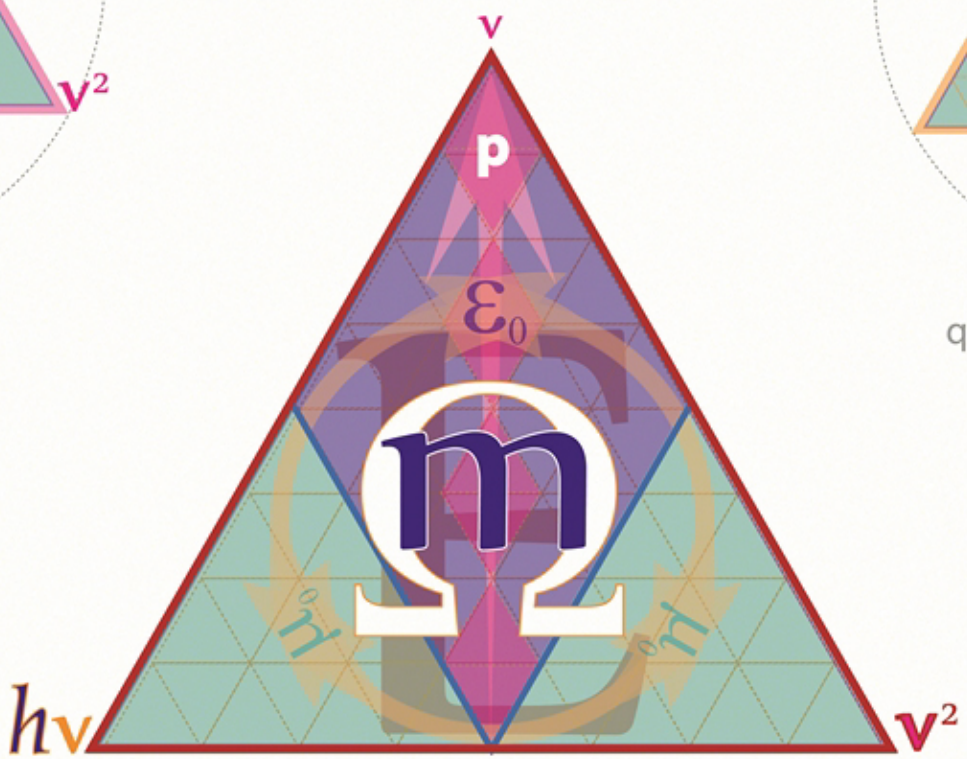
Velocity-Quanta equivalence

Classically, the Energy of massive bodies was determined using the Newtonian mass-velocity relationship

but most recently Quantum mechanics was developed utilising the Planck's quantised Energy relationship







classical vector force

$$mv^2$$

mass
linear velocity
squared

$$kg\left[\frac{m}{s}\right]^2$$

quantised energy momenta

$$hv^2$$

mass
angular momenta
per second

$$kg\left[\frac{m^2}{s}\frac{1}{s}\right]$$

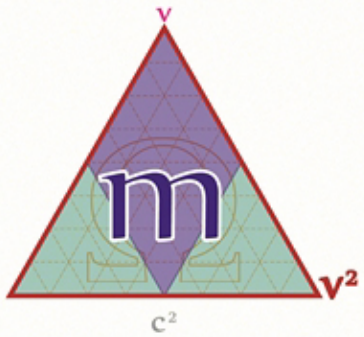
The EM mass-Energy relationship can be revealed either by linear or angular momentum analysis

Energy-momentum relationship

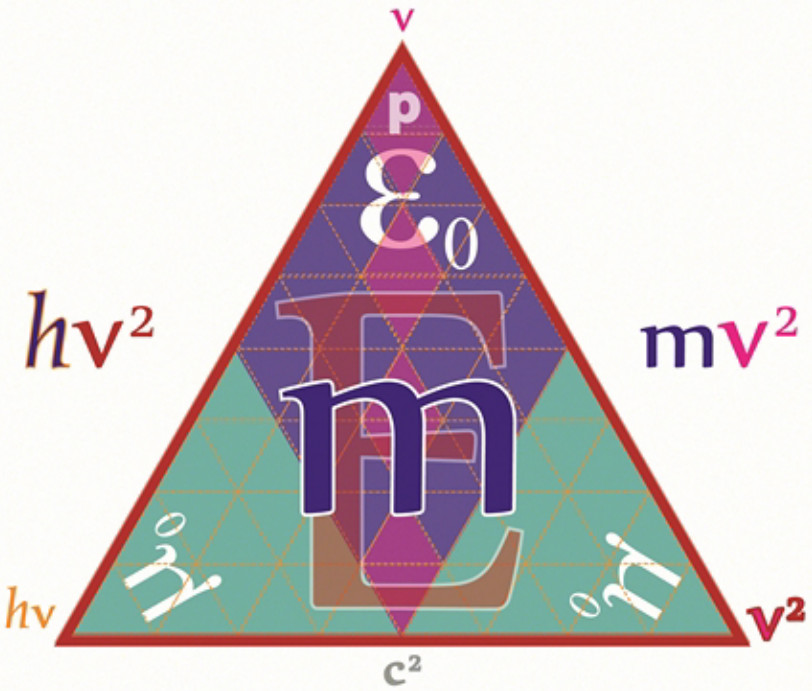
The total number of Planck quanta [mass-angular momenta] in any physical system
is directly related to the square of its linear momentum [mass-velocity]

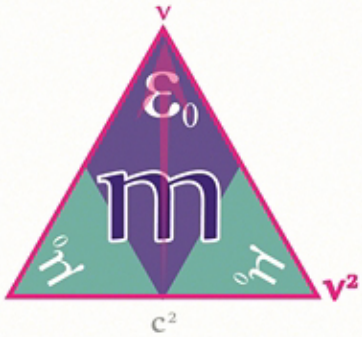
$$h = \frac{E}{v^2}$$

$$m = \frac{E}{v^2}$$



Quantised
Energy-momentum





Linear
Energy-momentum

mass-energy momenta

The omega geometry of Energy produces the direct relationships between Planck's constant-quanta and mass-Energy-momentum of any spatio-temporal co-ordinate system

$$E = m\Omega v^2$$

Quantised Angular Momenta
is an equilateral geometry

$$E = pc$$

Linear momentum
is a vector Force

$$m\Omega v^2 = E = mv^2$$

mass is a derived physical property relating Energy momenta to Velocity

CHARGE

Charge is a measure of mass.QAM/second
[the equilateral geometry of Energy]
that gives form to all physics

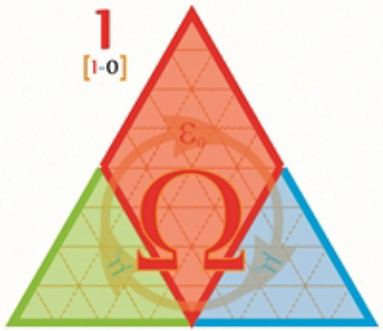
ElectroMagnetic Charge
is a quantum property
resulting from the equilateral
QAM geometry of mass-Energy

The two ElectroMagnetic charge
geometries possible can be modelled
by the flux of electrical energy
in ideal inductive loops

It is a measure of the arrangment of Planck quanta
geometries/topologies within any specific
space-time co-ordinate system

q

Clockwise inductive
energy flux



Positive charged
mass-energy momenta

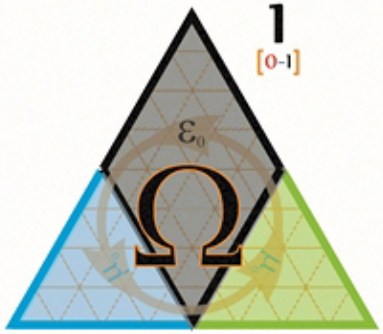
$$\frac{h\nu}{c^2}$$

$$kg\,\frac{m^2}{s}\,\frac{s^2}{m^2}$$

$$kg.s$$

1.33518 e-20 s

Counter clockwise
energy flux



Negative charged
mass-energy momenta

q

Measuring charge geometries

Charge comes in two types, called Negative and Positive,
which create the Law of Interaction (historically, the Law of Attraction)

q

quantised Charge

[v] [v]

Q

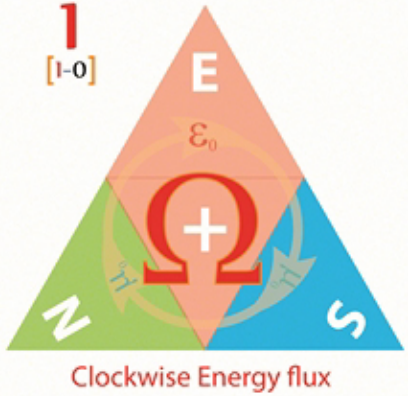
nett Charge

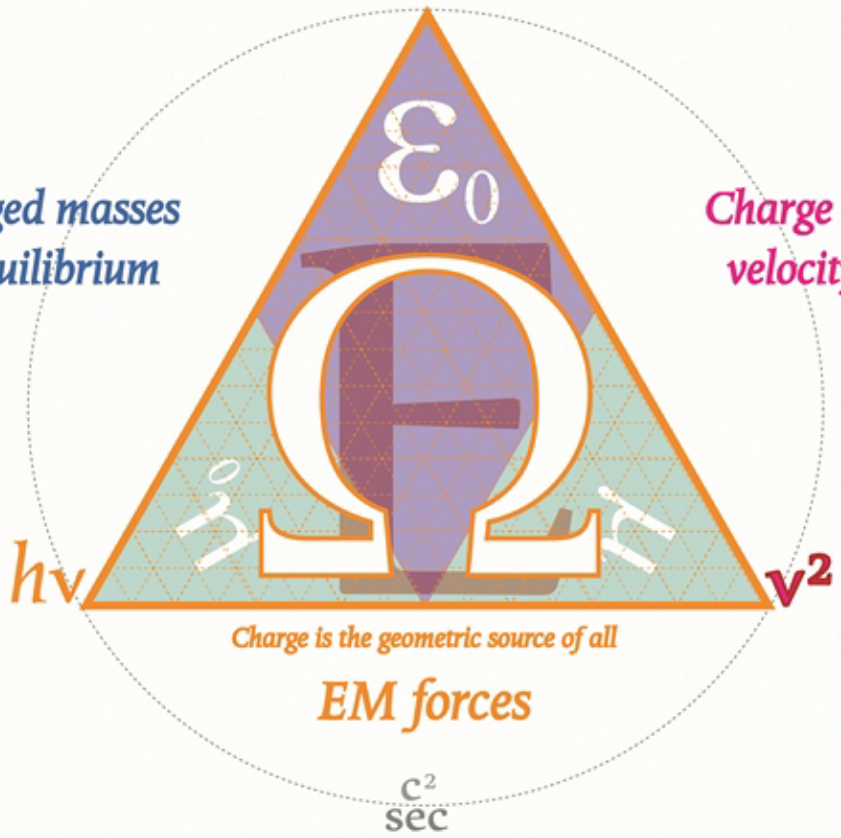
[v–v]

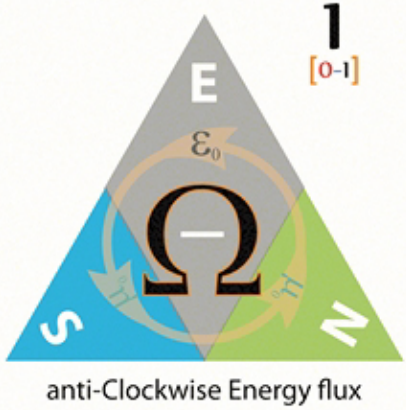
[v–v]

All charged masses seek equilibrium

Charge geometry is velocity invariant





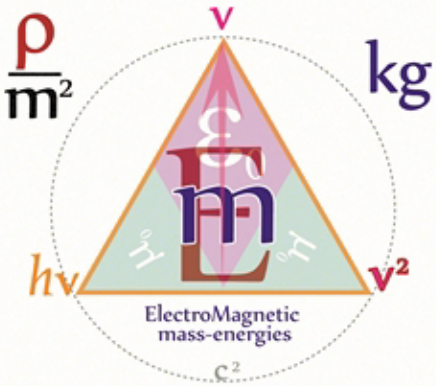


Historically defined as a physical property of mass-Matter that causes it to experience a force
charge is actually the result of the equilateral geometry of qantised mass angular momenta
which provides the physical mechanics of mass-ENERGY-Matter differentiation and interaction

The SI unit of quantity of charge is the Coulomb, $C \approx mass\ seconds \approx kg.s$ which can also be expressed as Amp-seconds

EM Field Geometry

mass-energies are 2D radiant EM field geometries

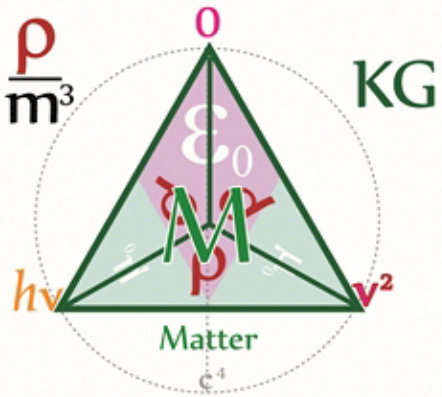


[299,792,458 m/s]

'c' forms a CONSTANT of proportionality for different spatio-temporal co-ordinate systems used to measure mass-ENERGY-Matter

All Matter are 3D EM standing wave topologies

EM fields create 'interaction-at-a-distance'



Electrostatic Matter has opposing 2D KEM fields

Energy quantisation

All mass-Energy-Matter can only have certain integer Energy-momenta,
[mass-Energy in all its forms is QUANTISED]

q

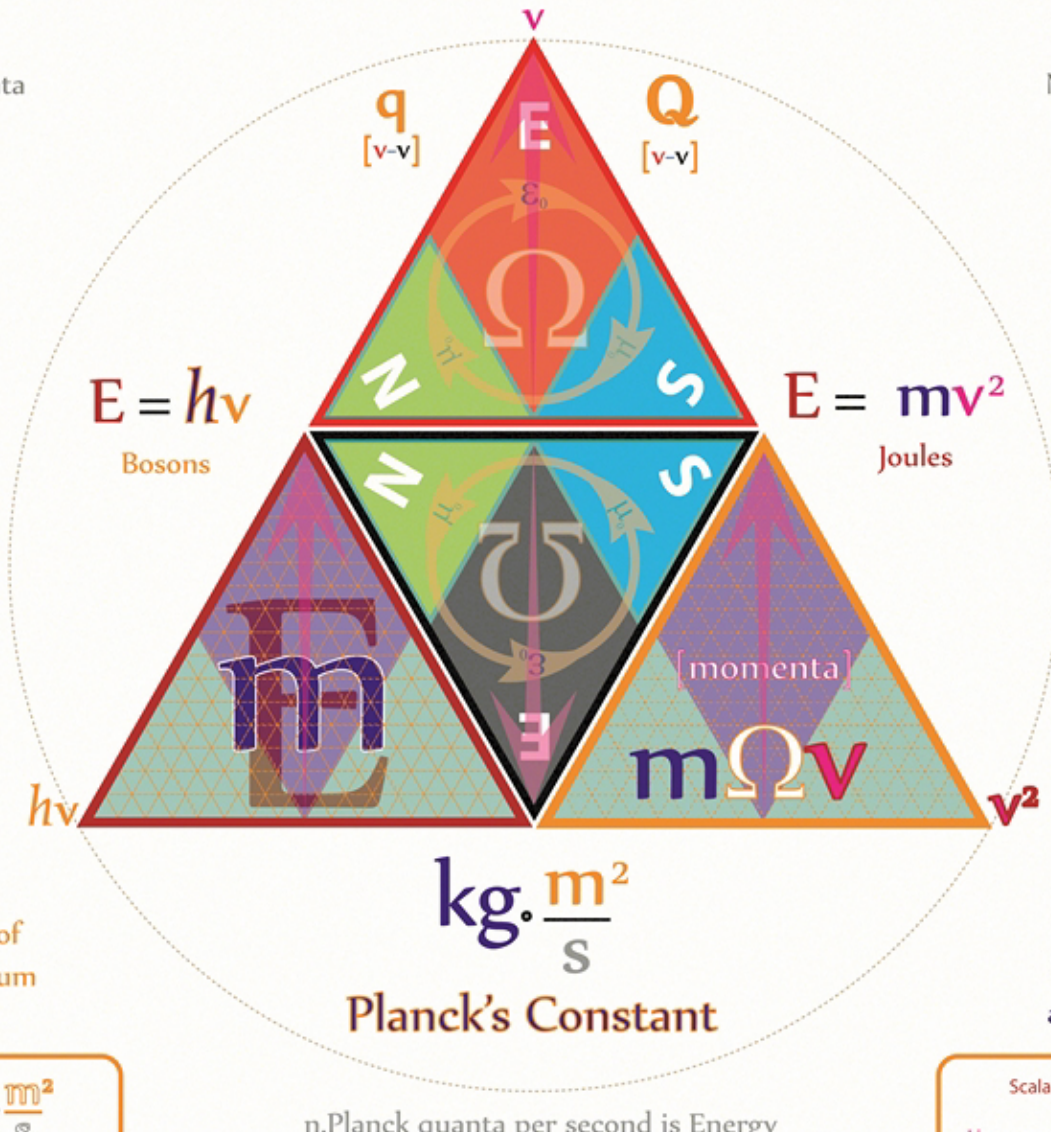
Net quanitised angular momenta
[inductive energy flux]
determines Charge

$m\left[\frac{\Omega}{c^2}\right]$

$kg\,\frac{m^2}{s}.\frac{s^2}{m^2}$

seconds

Transverse quanta
create Quantum Levels



$kg.\frac{m^2}{s}$

Planck's Constant

n.Planck quanta per second is Energy

The equilateral geometry of
quantised angular momentum
creates charged masses

Planck's Constant is in fact
mass x equilateral QAM $kg.\frac{m^2}{s}$

q

Net quanitised angular momenta
[inductive energy flux]
determines Charge

$m\left[\frac{\Omega}{c^2}\right]$

$kg\,\frac{m^2}{s}.\frac{s^2}{m^2}$

seconds

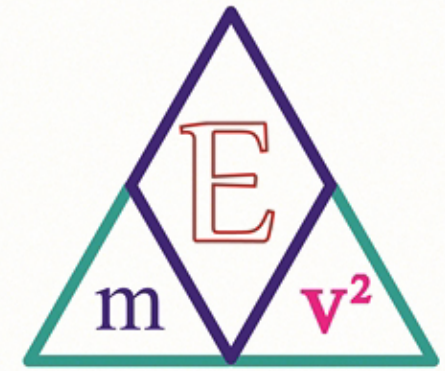
Scalar (nett) quanta
create Square Energies

Planck's Constant
can be described in
a number of differing ways

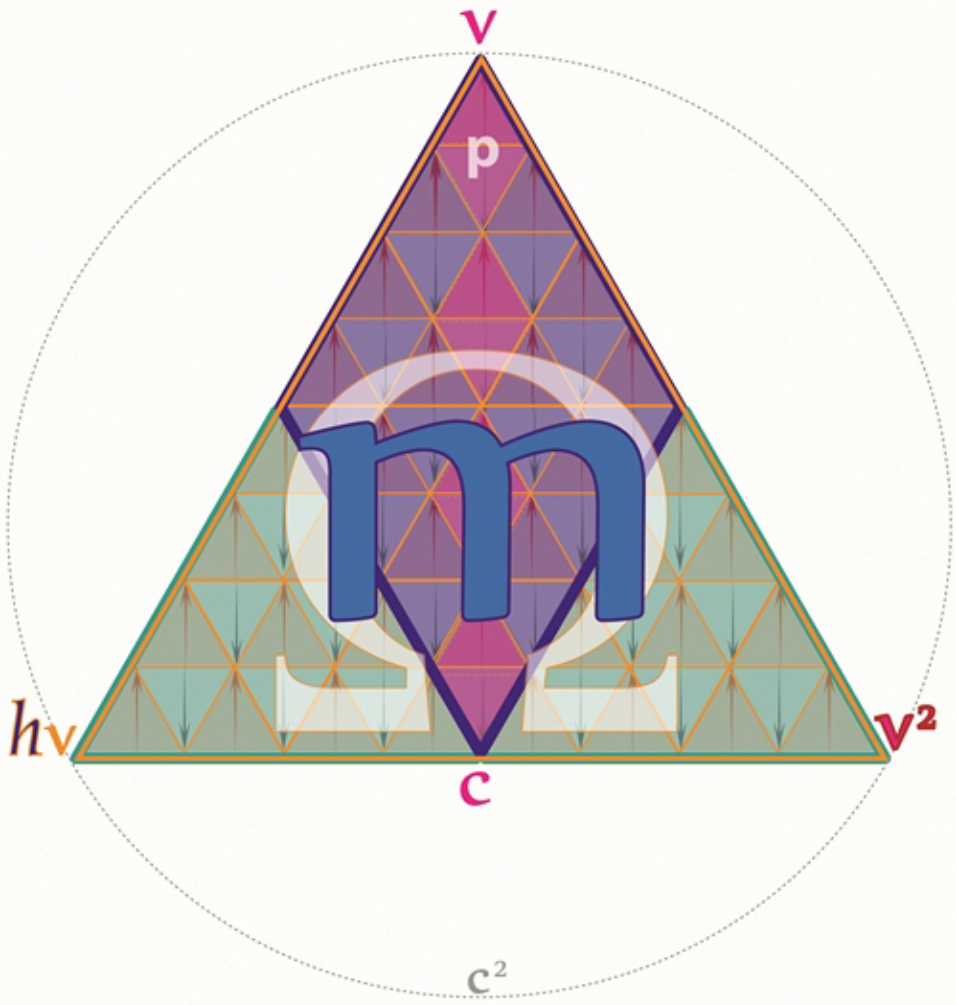
Scalar Energy x Time $kg.\frac{m^2}{s^2}.s$

Linear momentum x Distance $kg.\frac{m}{s}.m$

Tetryonic Mnemonics



Energy momentum

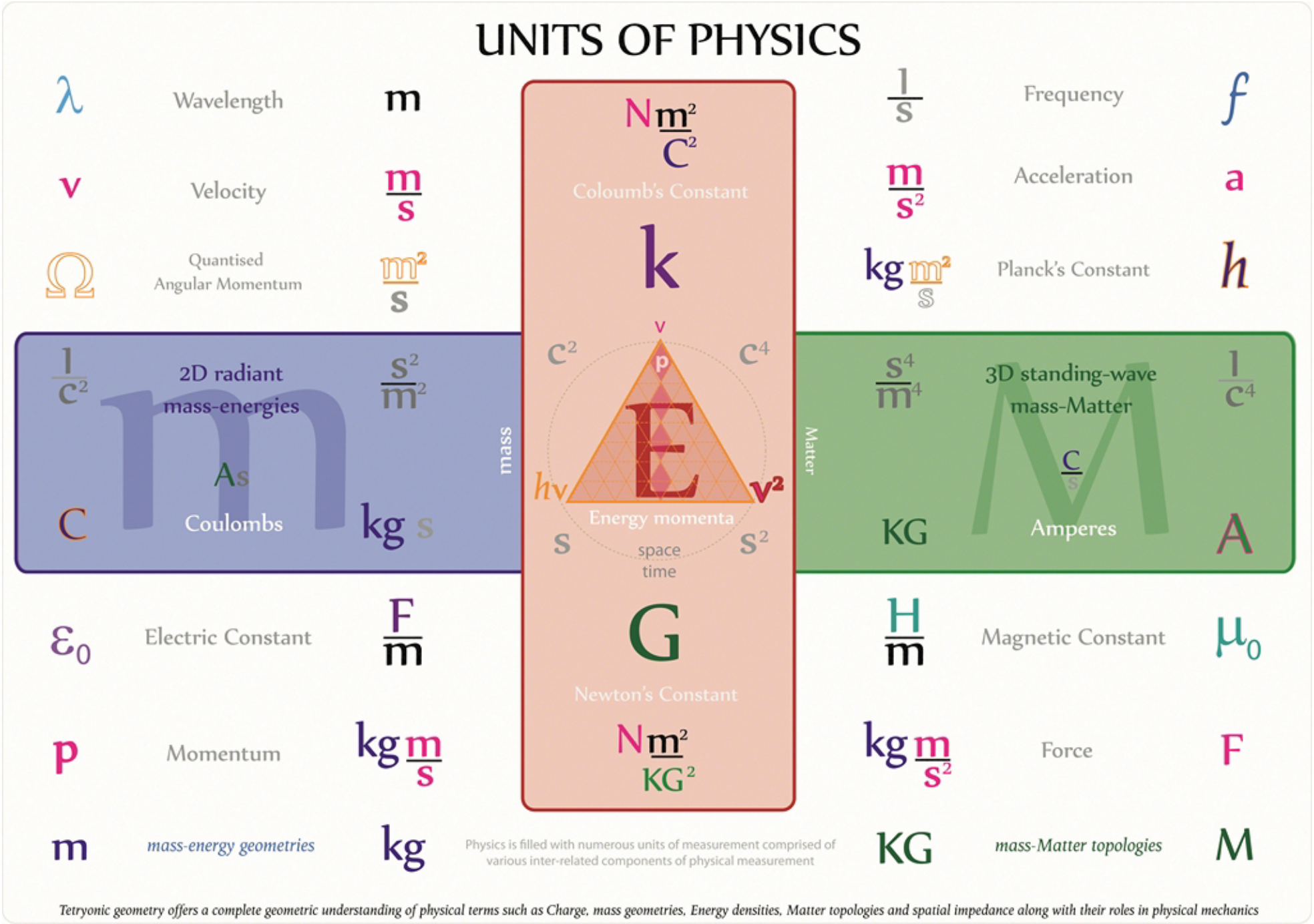


Electrical flow

velocity of propagation

Many physical relationships are can be represented with DELTA mnemonics

Inertial Force



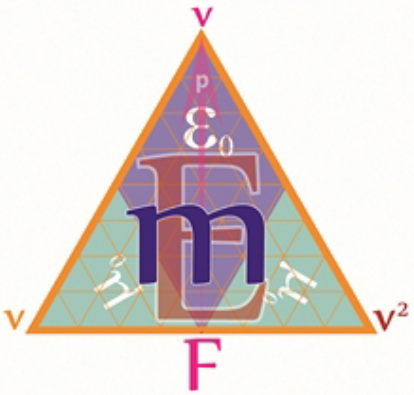
Scalar mass-energies

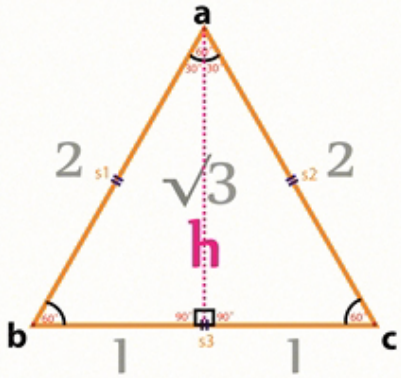
have an EQUILATERAL geometry
(60°- 60°- 60°)

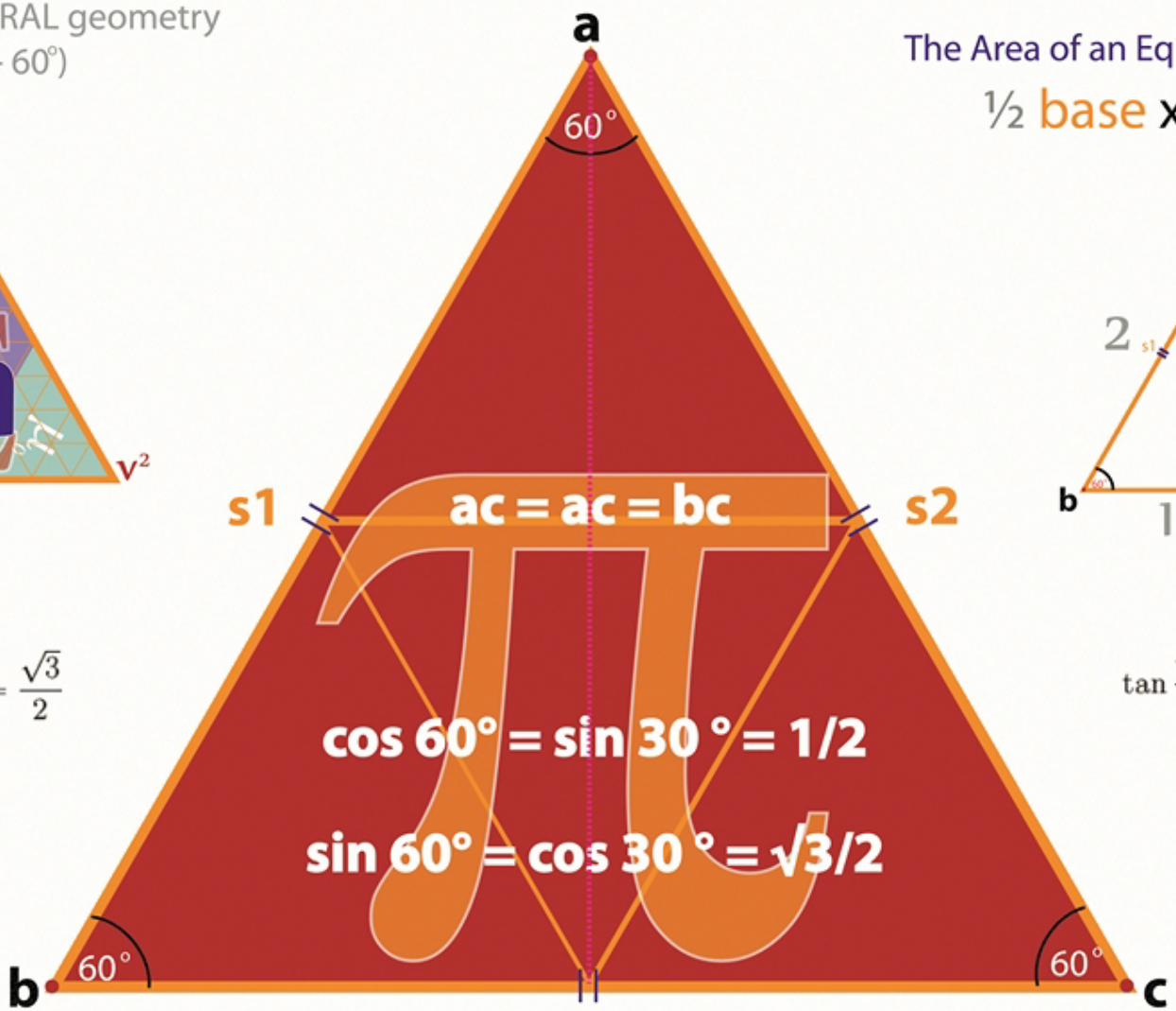
$\frac{\sqrt{3}}{2}$ **s**

The Area of an Equilateral triangle

½ base x height







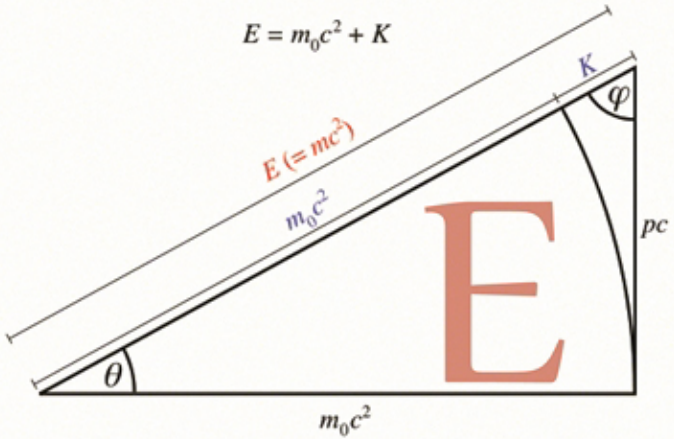
$$\sin\frac{\pi}{3} = \sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\tan\frac{\pi}{3} = \tan 60^\circ = \sqrt{3}$$

$$\cos\frac{\pi}{3} = \cos 60^\circ = \frac{1}{2}$$

Pythagorian geometry

Energy geometries within Physics including Special Relativity and Lorentz corrections have historically been incorrectly illustrated as having the geometry of right angled triangles



$$E^2 = p^2c^2 + m_0^2c^4$$

Generalizing, we see that the square of the total mass-energies is the sum of the components squared. [shown incrorectly formulated in this above equation]

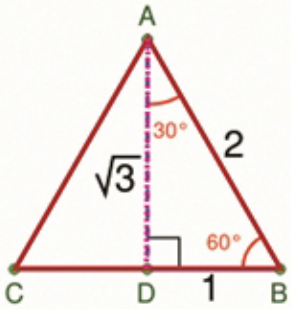
We can see an origin of distance in spacetime relating to velocity in pc in which Energy is subject to Lorentz corrections [v/c]

$$E = pc.$$

Additionally, EM mass can be directly related to the energy content of a body by the velocity of Energy

$$E = mc^2$$

Physics is geometry,
one cannot be separated from the other



$$mv^2 = E = hv^2$$

There are three ways to look at geometry – mathematically, verbally, and visually,

Of the three, Visually will be shown to be superior leading to intuitive understandings of Physics, Chemistry, Electrodynamics and Gravitation along with all their related physical attributes

6.629432672 e-34 J

Planck quanta

$[m\Omega v]^2$

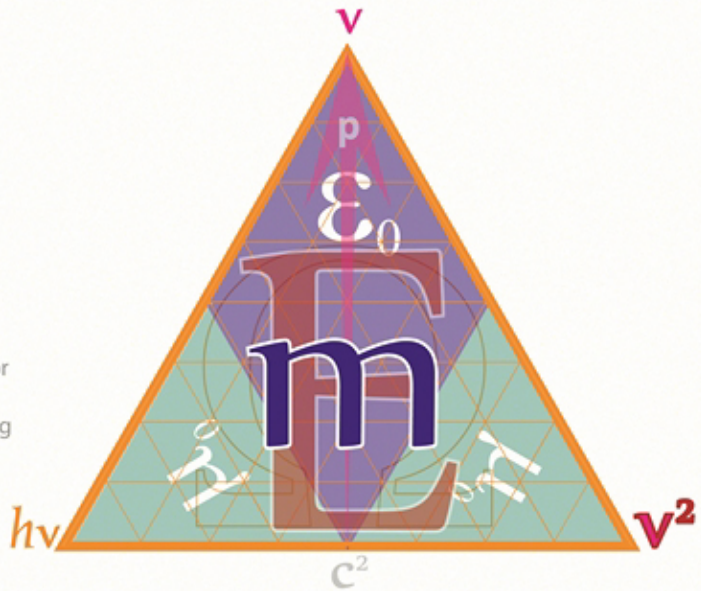
mass velocity

7.376238634 e-51 kg

$$mv = p$$

Tetryonic geometry

The source of all the physical relationships of mass-Energy momenta & their constants is the geometry of equilateral Planck Triangles (and all texts must be corrected)



F

$$\sum \mathbf{F} = \frac{d\mathbf{P}}{dt} = m\frac{d\mathbf{v}}{dt} = m\mathbf{a}$$

Newton's Second law of Motion is based on changes to linear momentum

$$\mathbf{F} = m\mathbf{a}\,.$$

Tetryonics and Pi radians

Although not historically considered a physical constant, π appears routinely in equations describing fundamental principles of the Universe, due in no small part to its relationship to the nature of the circle and, correspondingly, spherical coordinate systems.

The quantised equilateral geometry of mass-energy momenta is measured in π radians

Using units such as Planck units can sometimes eliminate π from formulae.

Heisenberg's uncertainty principle, which shows that the uncertainty in the measurement of a particle's position (Δx) and momentum (Δp) can not both be arbitrarily small at the same time:

$$\Delta x \, \Delta p \geq \frac{h}{4\pi} = \frac{\hbar}{2}$$

Einstein's field equation of general relativity:

$$R_{ik} - \frac{g_{ik}R}{2} + \Lambda g_{ik} = \frac{8\pi G}{c^4} T_{ik}$$

The cosmological constant Λ from Einstein's field equation is related to the intrinsic energy density of the vacuum ρvac via the gravitational constant G as follows:

$$\Lambda = 8\pi G \, \rho_{vac}$$

Coulomb's law for the electric force, describing the force between two electric charges (q1 and q2) separated by distance r:

$$F = \frac{|q_1 q_2|}{4\pi\varepsilon_0 r^2}$$

Magnetic permeability of free space relates the production of a magnetic field in a vacuum by an electric current in units of Newtons (N) and Amperes (A):

$$\mu_0 = 4\pi \cdot 10^{-7} \, \mathrm{N/A^2}$$

Kepler's third law constant, relating the orbital period (P) and the semimajor axis (a) to the masses (M and m) of two co-orbiting bodies:

$$(\frac{2\pi}{P})^2 a^3 = \omega^2 a^3 = G(M+m)$$

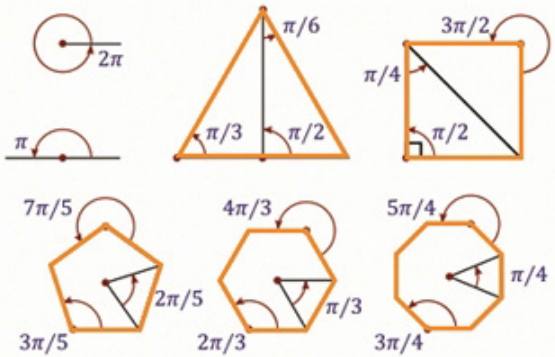
and the Gaussian formula for a Normal Distribution:

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-(x-\mu)^2/(2\sigma^2)}$$

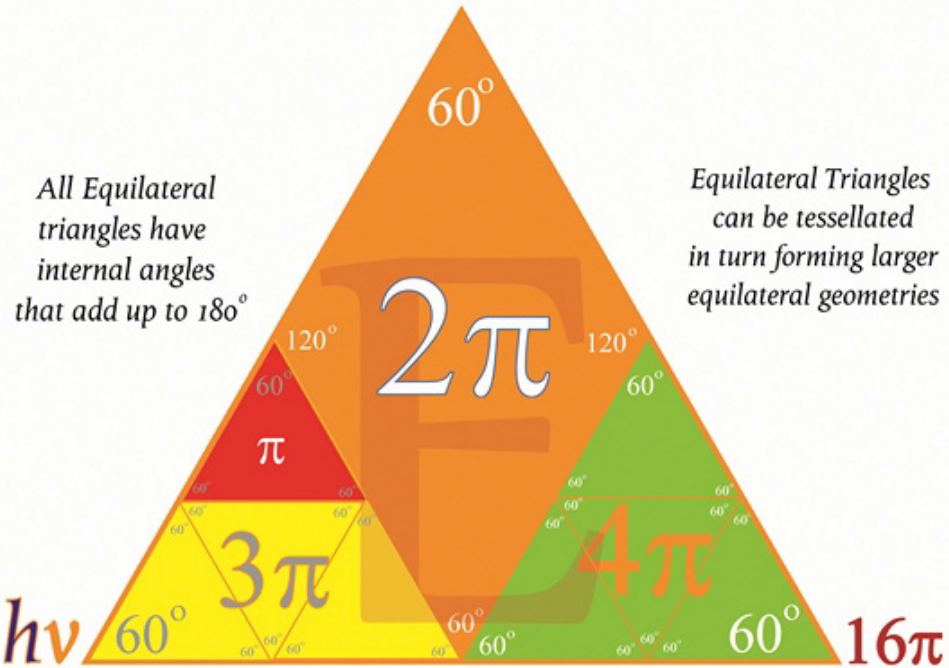
$$\pi = \frac{C}{d}.$$

n π radians

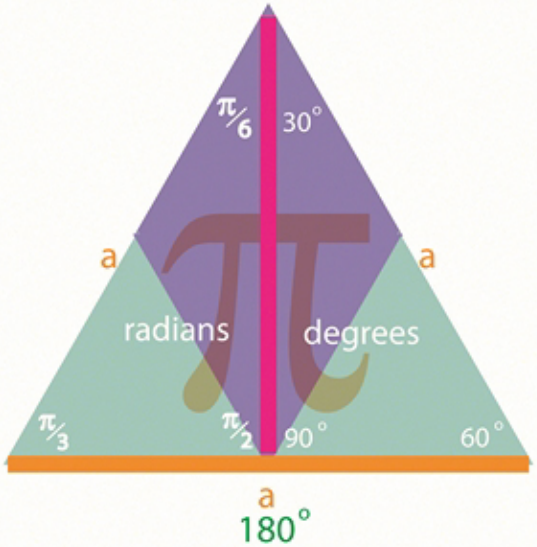
$$\pi = \frac{A}{r^2}.$$

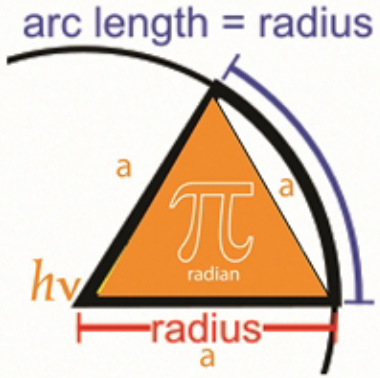


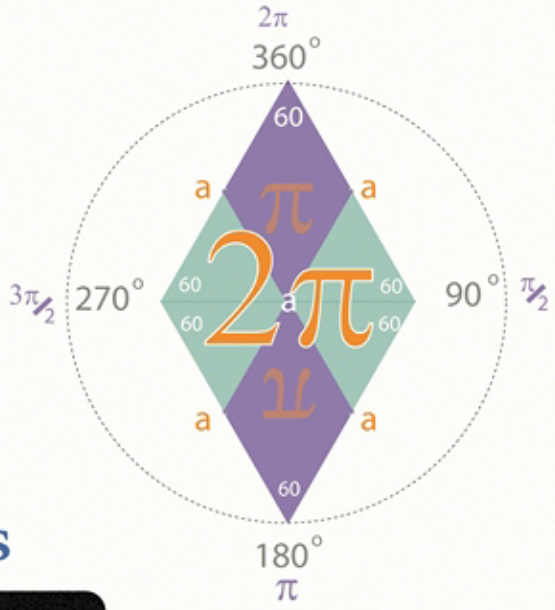
Pi radian mass-energy fascia geometries



SQUARED numbers in physics are EQUILATERAL geometries

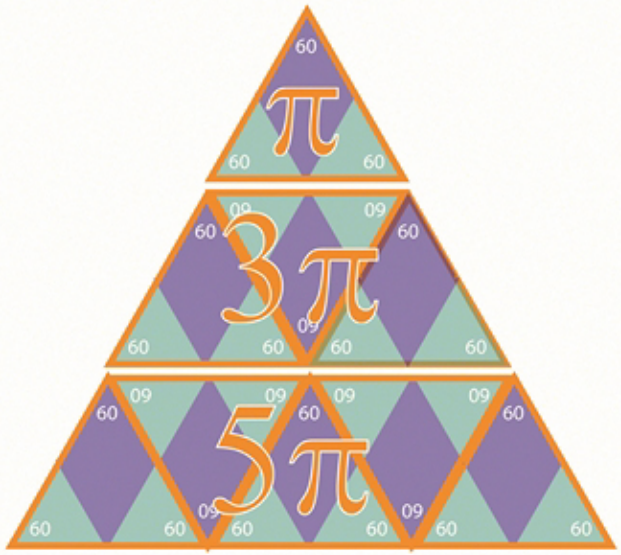


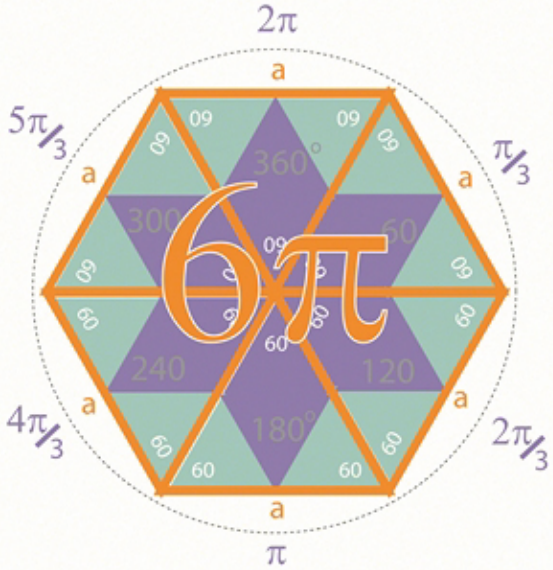




nπ mass-energy geometries

180° π An equilateral triangle of mass-energy momenta has a geometry of π radians 2π 360°





Tetryonic Cardinal Angles

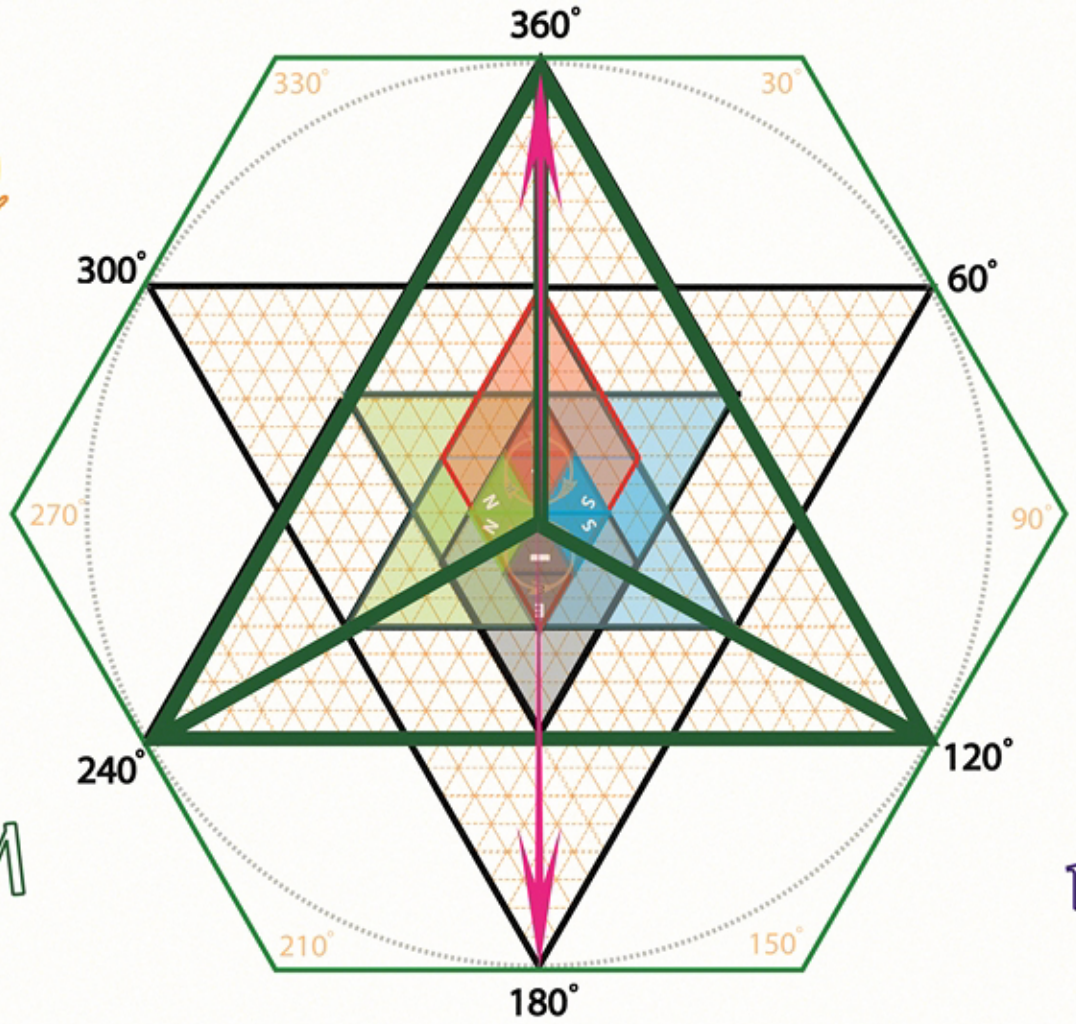
equilateral mass-energy geometries form tetrahedral mass-Matter topologies

EM Charge

Q

Equilateral energies

E



Space

Time

M

m

Matter topologies

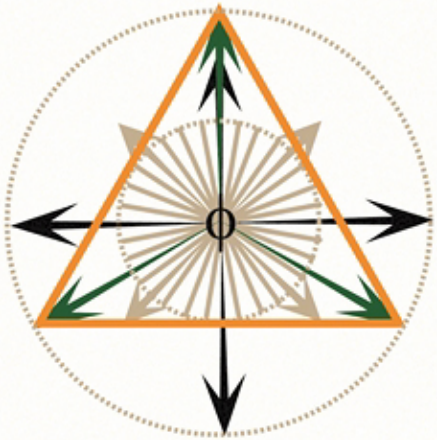
mass geometries

radiant light

in radial spatial co-ordinate systems defined by the speed of light

Charge
$ODD\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$
Bosons & quantum levels
EM Field: ElectroMagnetic
Planck quanta: mass, velocity

Kinetic Energies
$EVEN\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$
Photons & EM waves
EM Field: ElectroMagnetic
Planck quanta: mass, velocity

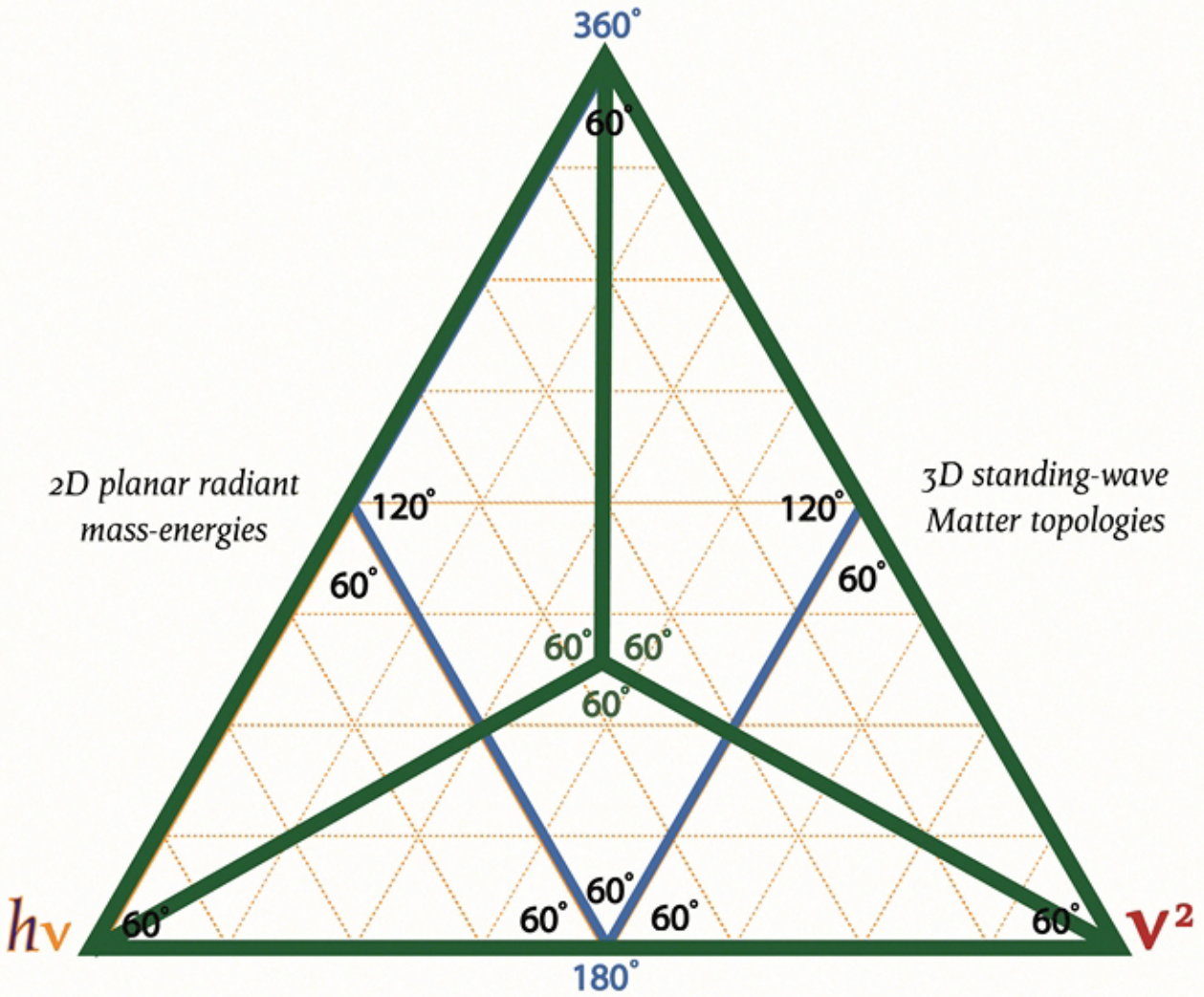


ALL Matter topologies stem from tessellated equilateral mass-energies

Matter
$4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$
Fermions
EM Field: ElectroMagnetic
Planck quanta: mass, velocity

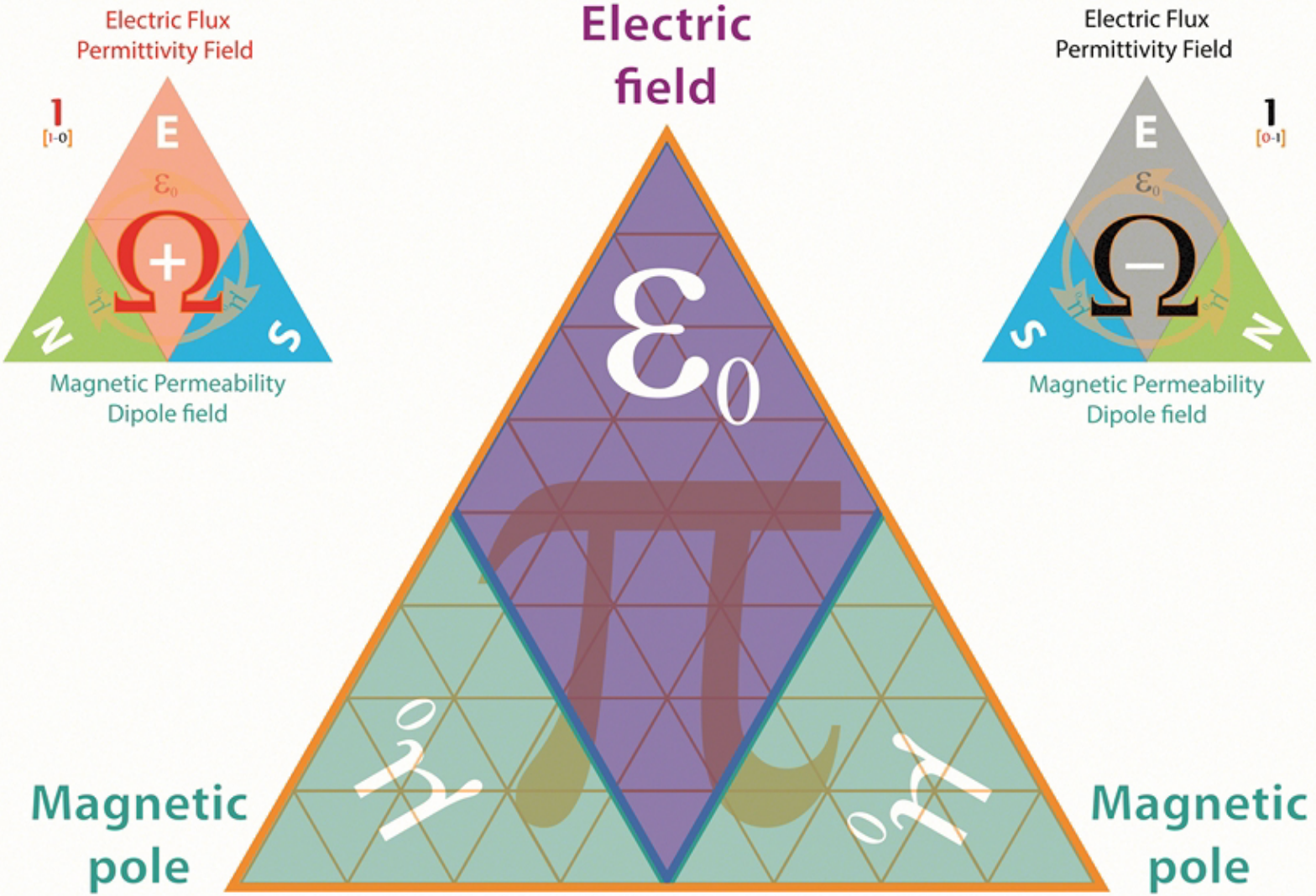
Matter's 4π mass-Energies
ares Lorentz invariant to accelerations

mass-energy geometries



Matter topologies

Tetryonic geometry



equilateral quantised angular momenta
is the foundational geometry of all mass-ENERGY-Matter

The Golden Triangle

Planck's formulation for Energy is imprecise for use in Tetryonics
and does not reflect the velocity-momenta relationship
inherent in the equilateral geometry of Energy

Planck quantum levels

Energy is gained or lost in
whole number multiples of the quantity hv

$$E = n[hv]$$

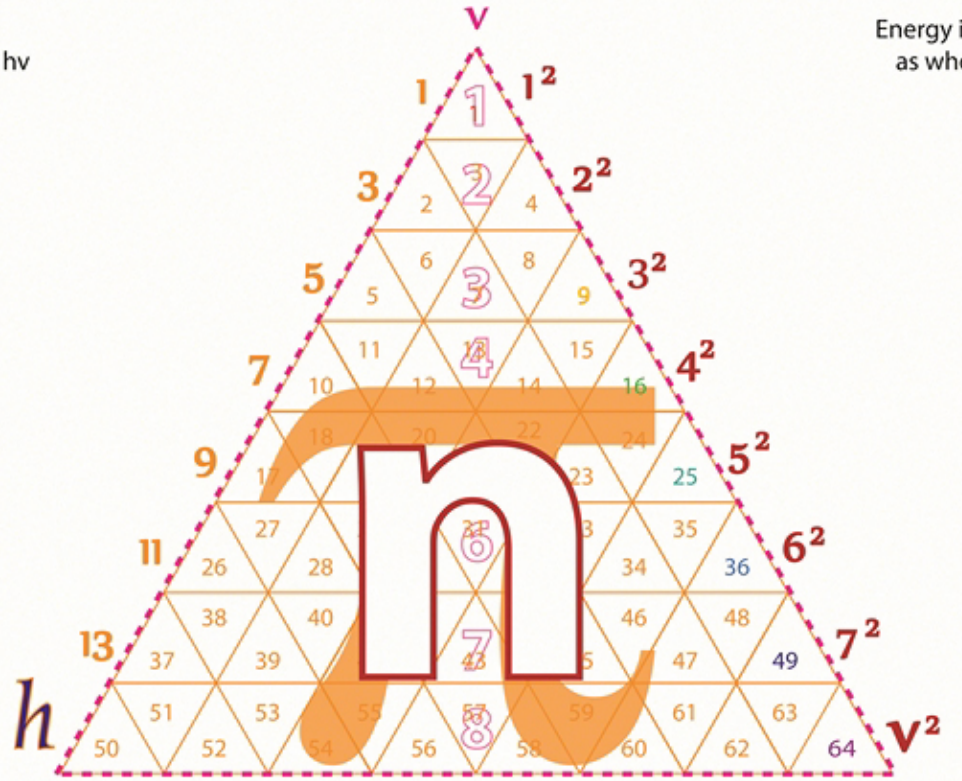
ODD

Charge ODDπ [EM Field [$\varepsilon_0\mu_0$] . Planck quanta [$m\Omega v^2$]]
Bosons & quantum levels — ElectroMagnetic — mass — velocity

$$3 = 3.[1]$$
$$9 = 9.[1]$$
$$25 = 25.[1]$$

$$hv$$

The generalise formulation of Plank's heat law
E = nhv is now changed to a specific formulation of
E = [ODD] hv for transverse quantum levels [Bosons]



mass-energy momenta are geometrically related to velocity

Tetryonic geometry [nπ] redefines Planck's quantum formulation for heat energies from a generalised equation for 2D energy momenta into a geometric formulation for all mass-energy momenta in Matter

[all equilateral [π] geometries contain square number quanta]

Scalar energy quanta

Energy is gained or lost in equilateral geometries
as whole number multiples of the quantity hv^2

$$E = n[hv]$$

SQUARED

Planck quanta
$$E = n\pi [[m\Omega v^2]]$$
mass — velocity

$$3 = 3.[1^2]$$
$$9 = 1.[3^2]$$
$$25 = 1.[5^2]$$

$$hv^2$$

The general formulation of Plank's heat law
is also changed to a specific formulation of
$E = hv^2$ for scalar EM waveforms [ENERGY]

Scalar field geometries

All scalar fields are comprised of Transverse and Longitudinal mass-energy momenta all of which are formed from equilateral quantum geometries

Charge is a conserved force

Energy is a conserved quantity

Bosons are transverse
ODD planck geometries

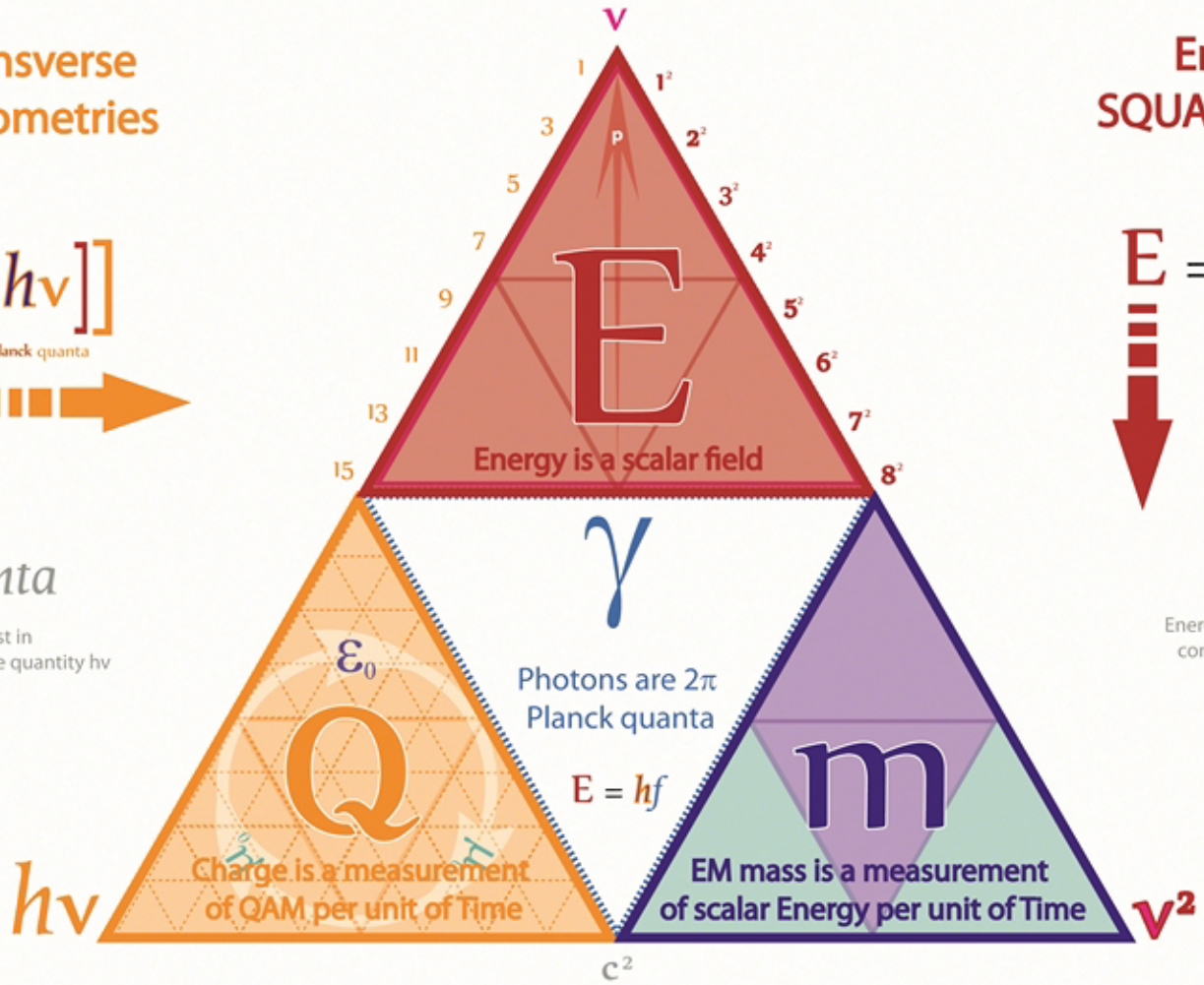
$$E = n\pi[[h\nu]]$$

Planck quanta

Energy is scalar
SQUARE planck quanta

$$E = n\pi[[h\nu^2]]$$

Planck quanta squared



Planck quanta

Energy is gained or lost in
whole number multiples of the quantity hν

Scalar energies

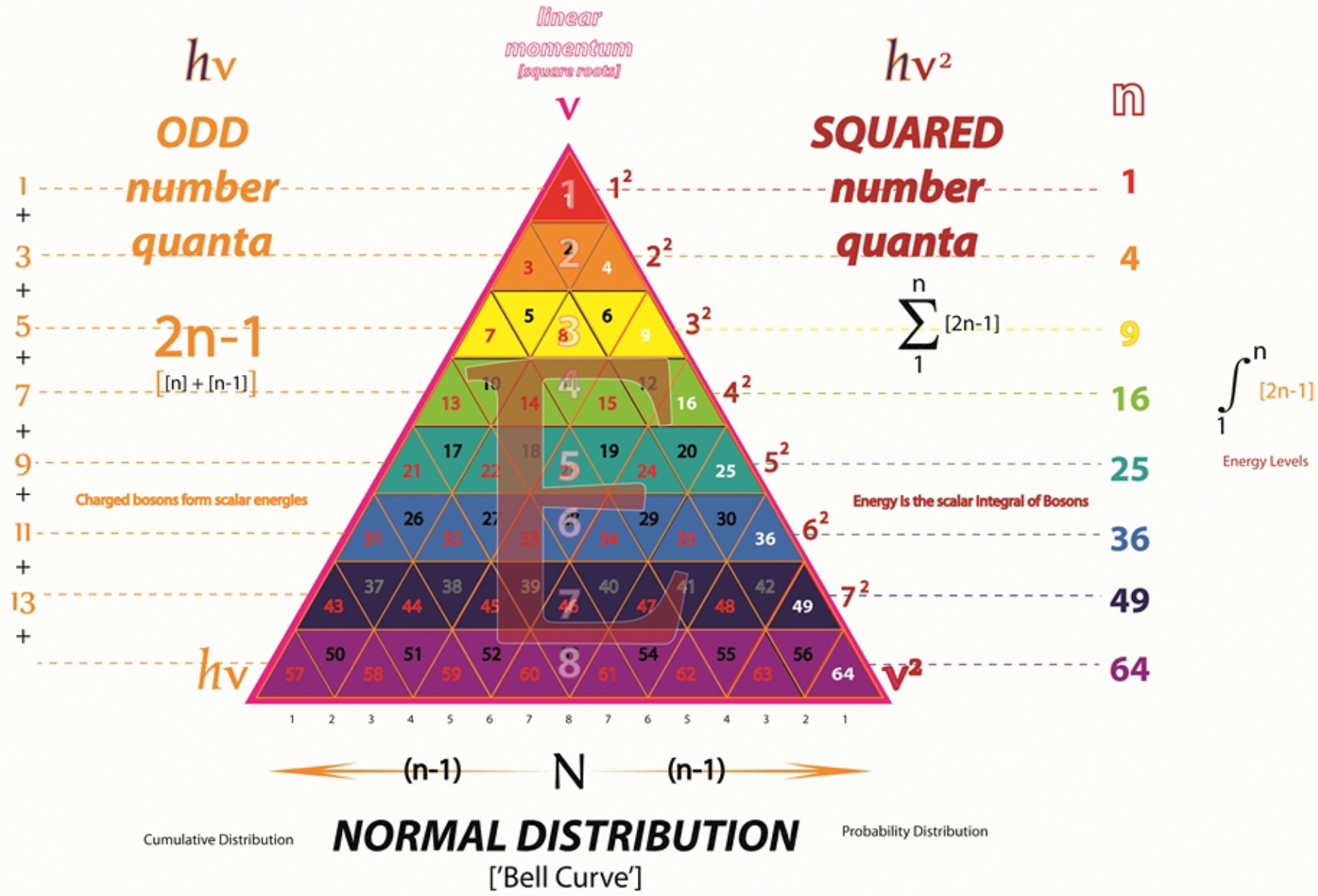
Energy is gained or lost in equilateral quanta
containing whole number multiples of hν²

All energy is comprised of
EM fields

All squared energy geometries
have component quantum levels

Squared energy levels in quantum physics

are in fact equilateral Planck mass-energy geometries



Energy quanta defined

Quantum levels

Charge is gained or lost in
odd number multiples of the quantity hν

$$E = n\pi[[h\nu]]$$

Planck quanta

transverse

ODD quanta

Scalar Energies

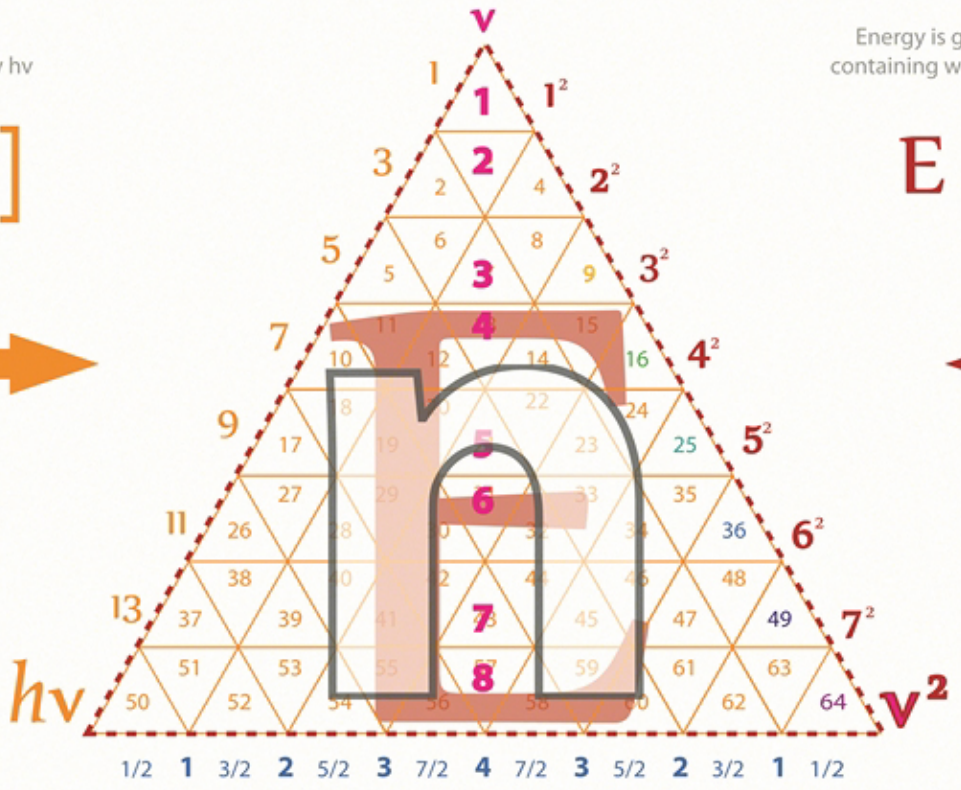
Energy is gained or lost in equilateral geometries
containing whole number multiples of the quantity $h\nu^2$

$$E = n\pi[[h\nu^2]]$$

Planck quanta squared

scalar

SQUARE quanta



Quantum

The **number** of Planck quanta
in any physical system

$$\nu = f/2$$

Transverse

Quantum Levels

The number of
repeating waveform **cycles**
in a system

$$2\nu = f$$

Frequency

EVEN quanta

Tetryonic field equation

E

$E = n\pi\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass; velocity)

electromagnetic energy is a scalar

m

$n\pi_{mass}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]_{ElectroMagnetic}$ (EM Field; Planck quanta; mass; velocity)

mass is an inertial constant
that relates Force to acceleration

[v-v]
Q

$\text{Charge } ODD\pi_{\text{Bosons \& quantum levels}}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]_{ElectroMagnetic}$ (EM Field; Planck quanta; mass; velocity)

equilateral charge geometry
is Lorentz invariant

KE

$\text{Kinetic Energies } EVEN\pi_{\text{Photons \& EM waves}}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]_{ElectroMagnetic}$ (EM Field; Planck quanta; mass; velocity)

KEM fields mass-energy geometries
are Lorentz variant to accelerations

M

$\text{Matter } 4n\pi_{\text{Fermions}}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]_{ElectroMagnetic}$ (EM Field; Planck quanta; mass; velocity)

Matter's 4π mass-energy topologies
are Lorentz invariant to accelerations

E

$\frac{E}{c^2}$

$\frac{\Omega}{c^2}$

$\frac{1}{2}m\left[\frac{v^2}{c^2}\right]$

$4n\pi\left[\frac{E}{c^4}\right]$

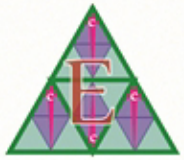
Energy momenta geometry

Energy is the total Planck quanta per second

EM mass is scalar energy per unit of Time

Charge is the nett Angular momentum per spatial co-ordinate system

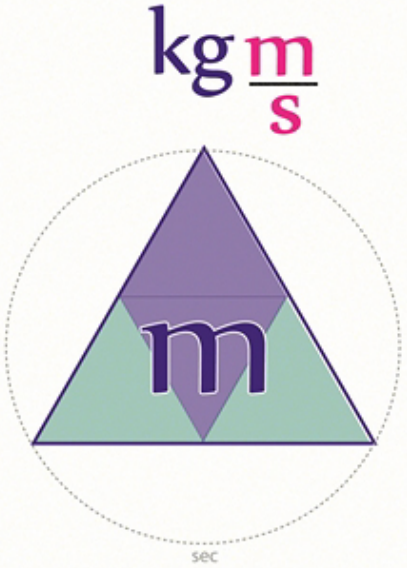
Kinetic Energy is the Electric field
mass-energy of Matter moving at v

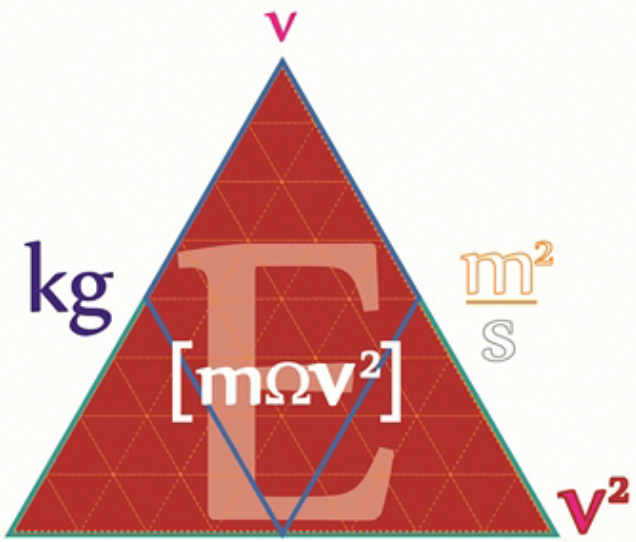


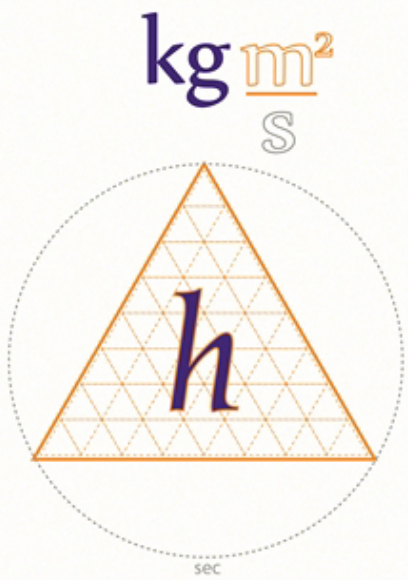
mass-energy geometry

Matter topology

mass-Energy equivalence







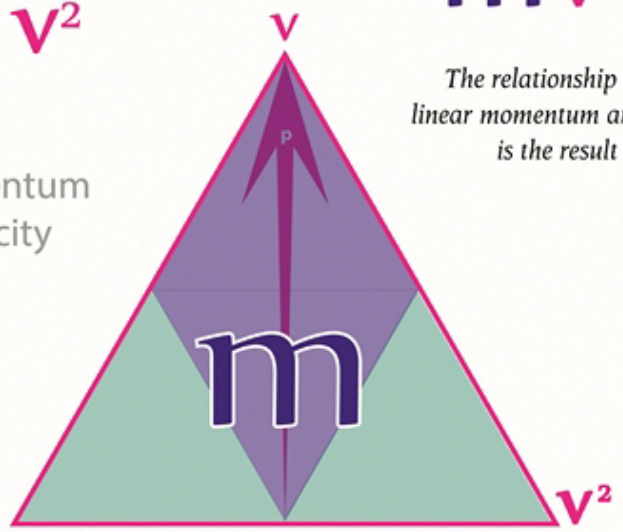
$$m = \frac{E}{v^2}$$

$$mv^2 = hv^2$$

$$h = \frac{E}{v^2}$$

The relationship between scalar mass-energy, linear momentum and quantised angular momenta is the result of equilateral geometry

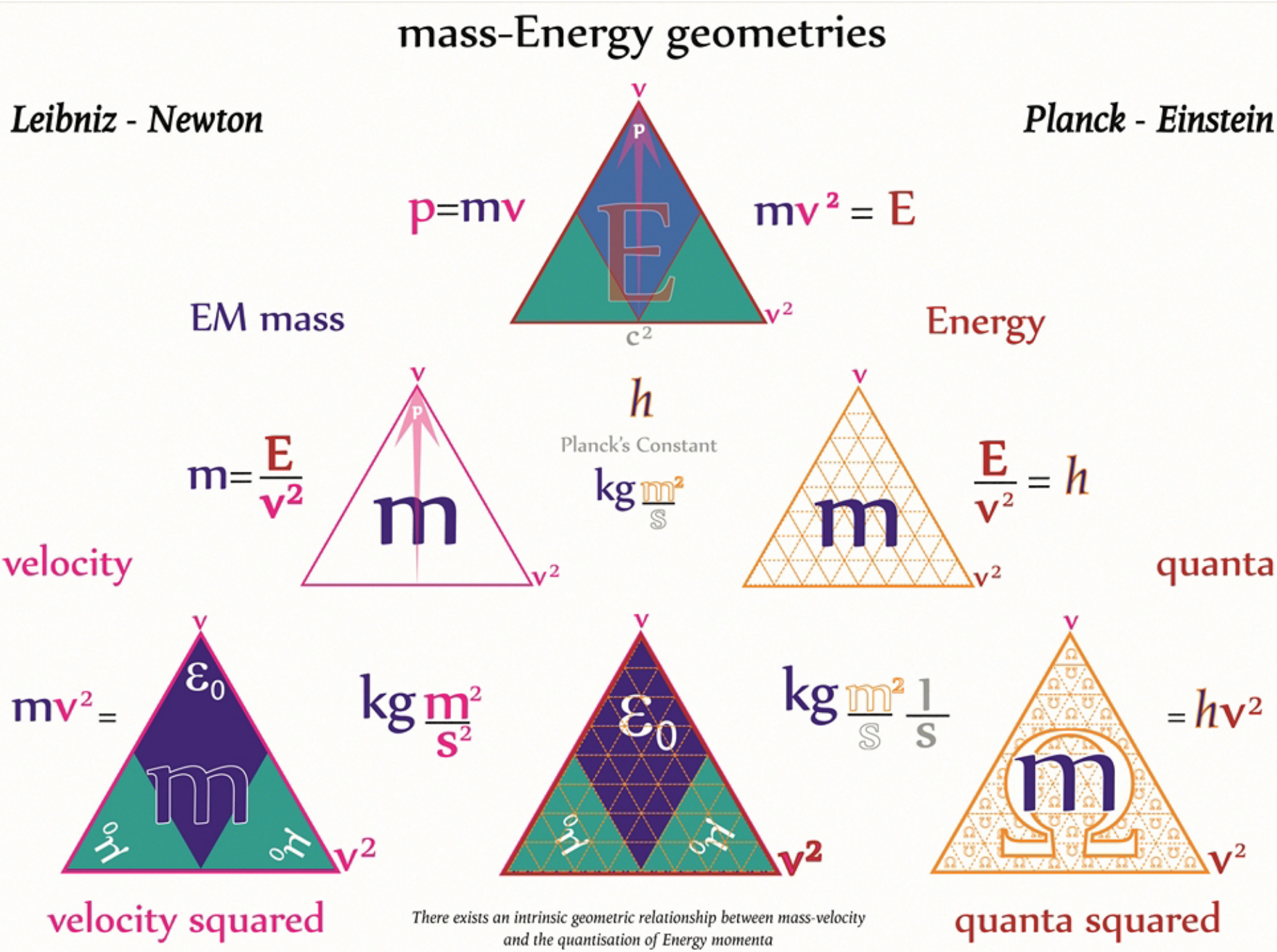
linear momentum
mass velocity



kg

quantised
angular momenta

mass-Energy geometries



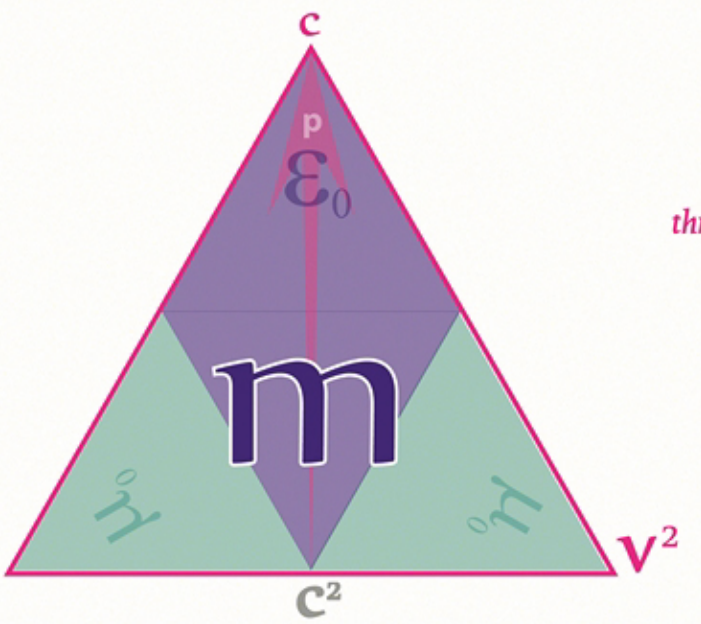
EM mass-energy

$$E = mc^2$$

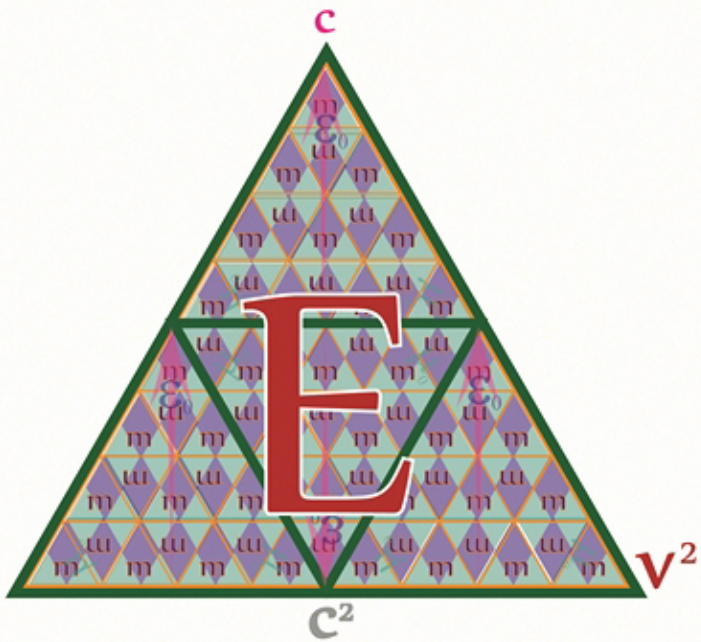
EM mass is related to Matter throught the square of the velocity of light of 8.987551787 e16 m²/s² [c²]

EM mass-Matter

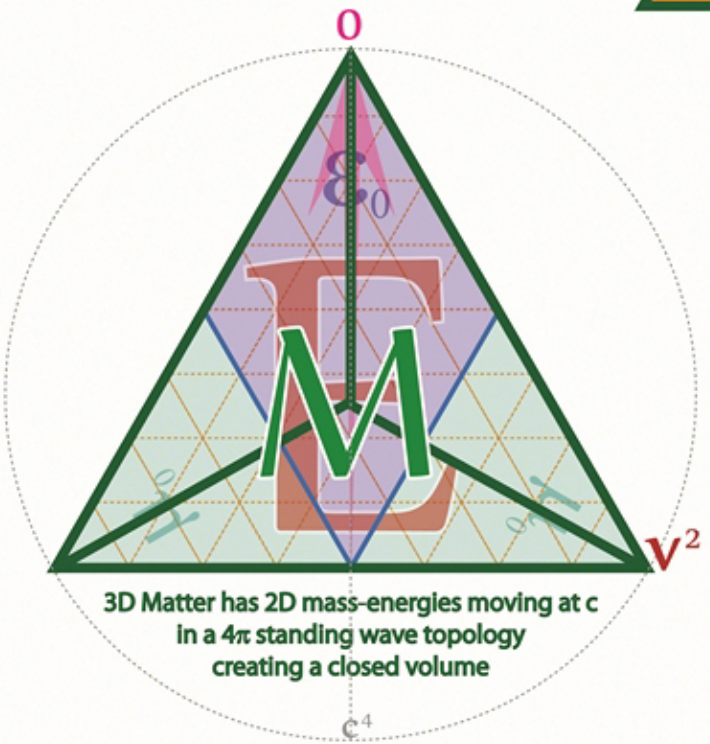
$$E = Mc^4$$



Electro-Magnetic mass



Matter's energy quanta



3D Matter has 2D mass-energies moving at c in a 4π standing wave topology creating a closed volume

scalar EM mass

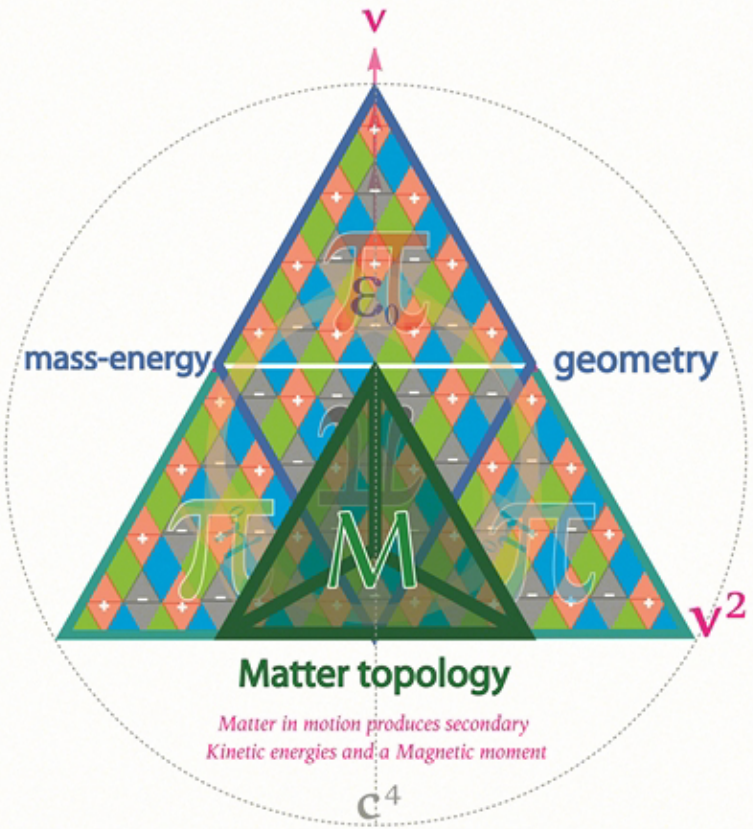
$$M = \frac{E}{c^4}$$

quantised mass

$$h = \frac{E}{v^2}$$

Kinetic Electro-Magnetic fields

[The energies of Motion]

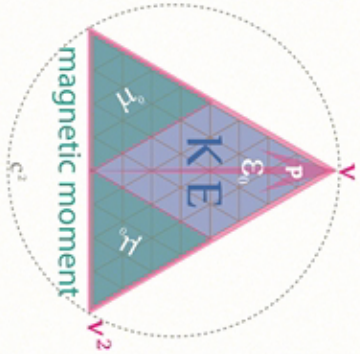


$$p^2 = E = Mv^2$$

The Electric field energy in any EM field is equal and orthogonal to the Magnetic field energy

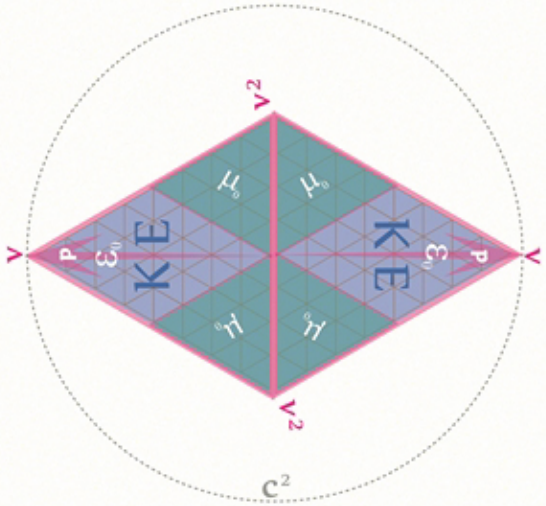
$$p^2 = KEM = Mv^2$$

$$\mu_B = \frac{1}{2}Mv^2$$



$$KE = \frac{1}{2}Mv^2$$

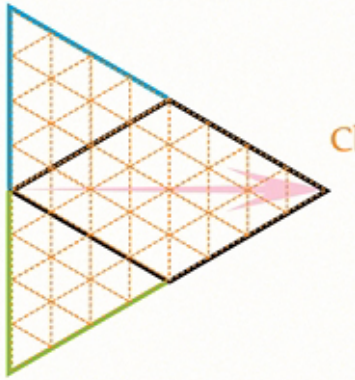
All Matter in motion possess momenta and kinetic mass-energies in extrinsic KEM fields



$$E_\gamma = \frac{2mv^2}{c^2}$$

These 2D planar fields are subject to Lorentz factor corrections that apply to the KEM field mass-energies of Matter in motion

Charge & Kinetic EM fields

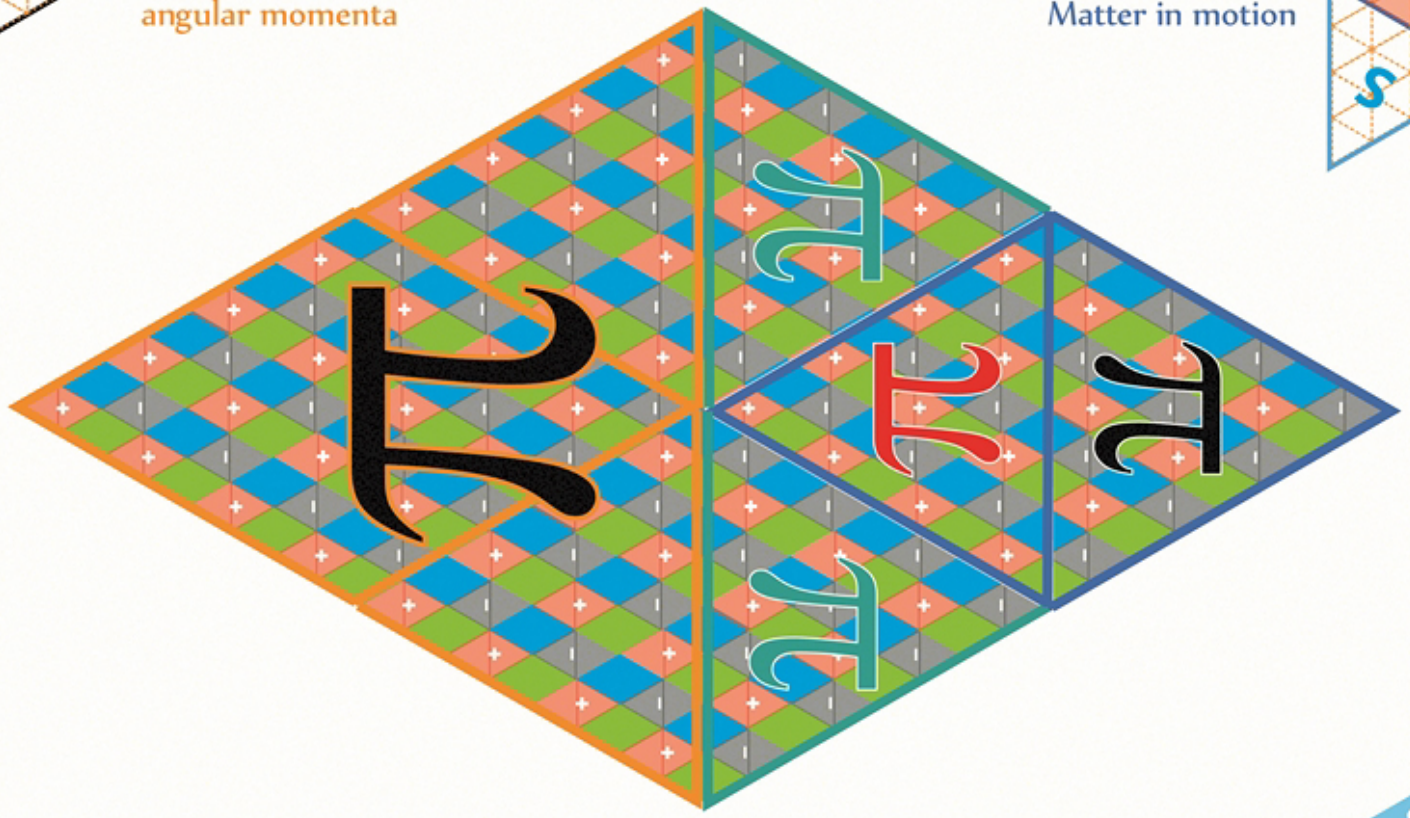


Charges are the result of quantised angular momenta

Kinetic Energies result from Matter in motion

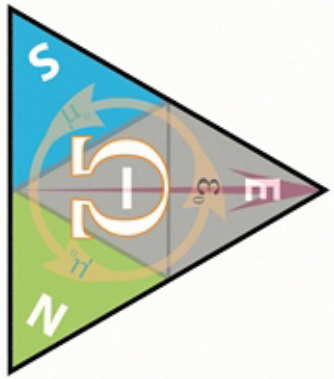
$mv^2 = E = h\nu^2$

$p^2 = E = m\Omega v^2$



$KEM = Mv^2$

$KE = \frac{1}{2}Mv^2$

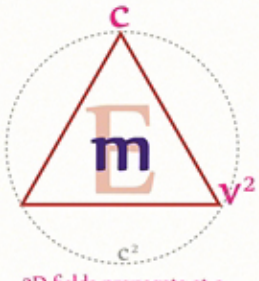


EM field energies externalised on the fascia of 3D Matter geometries form the physical property known as elementary Charge

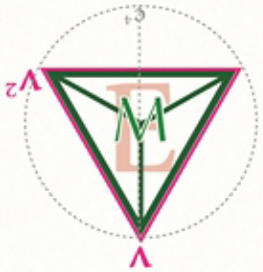
[k]EM energies in amy region of free space are viewed as either a Kinetic energy field with an associated Magnetic moment or a neutral charge Photon of ElectroMagnetic mass-energy

$$m_0 = \frac{E}{c^2}$$

Rest mass is equivalent to the total quantity of Energy in a body or system (divided by c^2)

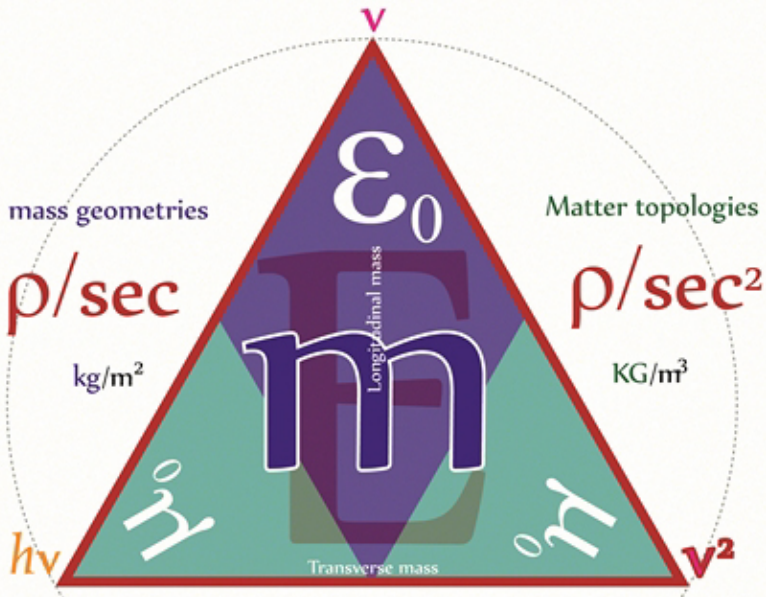


2D fields propagate at c
3D Matter moves at v



inertial mass

$$m = \frac{F}{a}$$



Inscribed equialteral triangles are the inverse of any radial-circular spatial geometry circumscribing them

mass must be distinguished from Matter in physics, because Matter is a poorly-defined concept in modern science, and although all types of agreed-upon Matter exhibit properties of mass, it is also the case that there many types of Energy that posses NO Matter topology, such as potential energy, kinetic energies and electromagnetic radiation (photons)

$$n\pi_{\text{mass}} \left[\left[\varepsilon_0 \mu_0 \right]_{\text{ElectroMagnetic}} . \left[m\Omega v^2 \right]_{\text{mass velocity}} \right]$$

EM Field — Planck quanta

The term 'massless' must be re-termed 'Matterless' to reflect true physical attributes of mass-energy-momenta

EM mass is a planar measurement of 2D energy per unit of time

Thus, all 3D Matter topologies have charged fascia comprised of 2D scalar of mass-energies, but closed volume 3D topology is not a property of 2D EM mass-energy geometries

mass

$$\rho$$

EM mass is a measure of planar energy density per second

$$\frac{mv^2}{c^2} \quad \boxed{\frac{m\Omega v^2}{c^2}} \quad \frac{hv^2}{c^2}$$

per unit of time

EM mass geometries are subject to Lorentz corrections

velocity — QAM quanta

$$\frac{mv^2}{c^2} = \frac{m\Omega v^2}{c^2}$$

per unit of time

Gravitational Matter

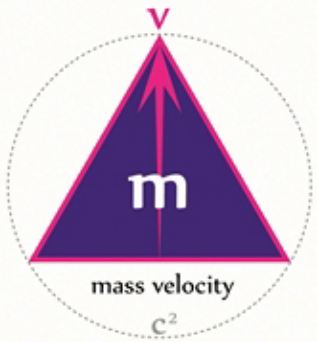
$$g = G\frac{M}{r^2}$$

Electromagnetic mass-energy

In physics, EM mass–energy equivalence is the concept that the EM mass of a body is a measure of its energy content

Using this concept, EM mass is a property of all Energy, and Energy is a property of all EM mass, and the two properties are connected by a constant.

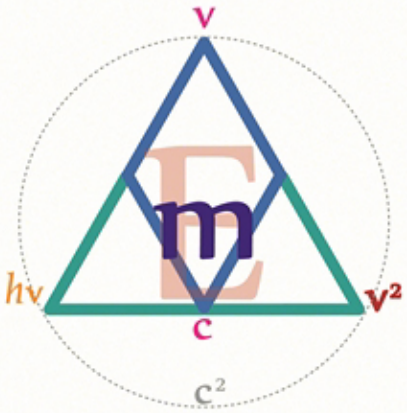
Using Tetryonic geometry it can be shown that the constant is the equilateral geometry of QAM thus unifying Classical mechanics and Relativisic mechanics



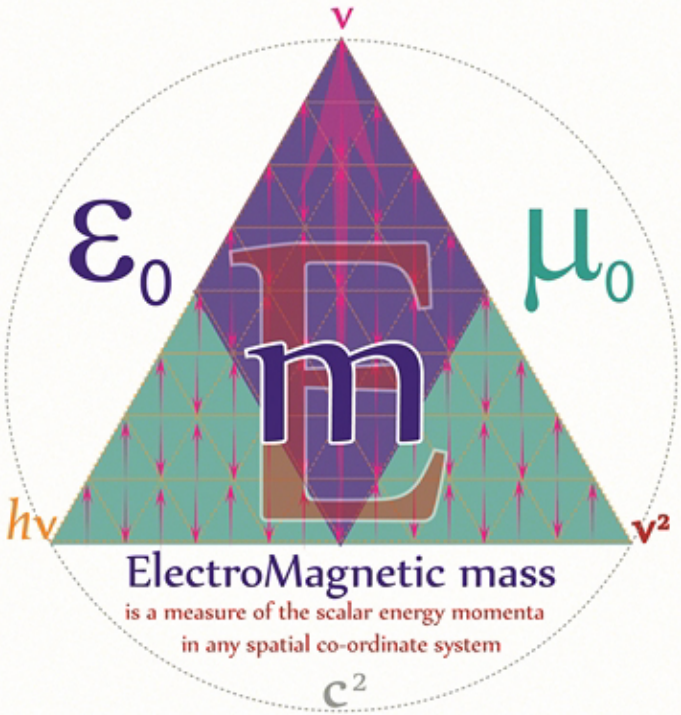
2D mass-ENERGY geometry is NOT 3D Matter topology

$$m = \frac{E}{v^2}$$

Classical mass



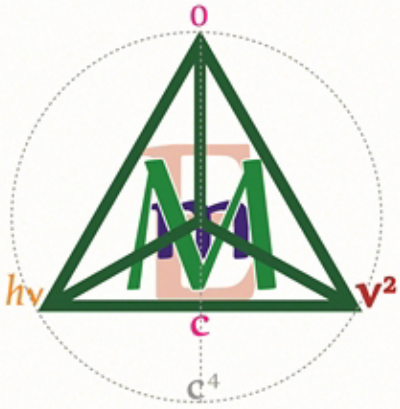
radiant 2D mass-energies are planar equilateral energy geometries



Relativity shows that rest mass and rest energy are essentially equivalent, via the well-known relationship ($E=mc^2$)

$$m = \frac{E}{c^2}$$

Relativistic mass



standing-wave 3d mass-Matter are tetrahedral energy momenta topologies

EM mass-Energy-Matter

$$\left[\frac{\Omega}{c^2}\right]$$

Charge is a measure of the quantised angular momentum of any physical system

Tetryonic Matter — planar spatial Impedance — Planck quanta

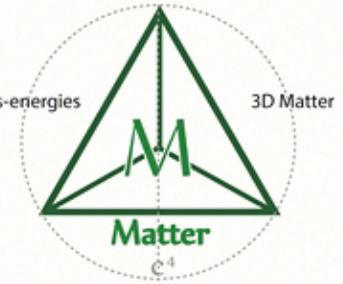
$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

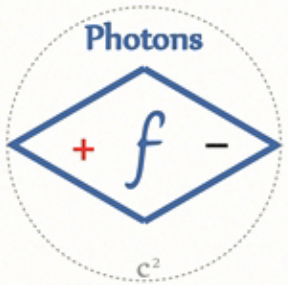
3D topology — ElectroMagnetic — 2D mass — velocity

Planck quanta

$$\left[m\Omega v\right]^2$$

mass — velocity





$$1\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

ODD quanta

$$4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

TETRYONS

$$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EVEN quanta

EM mass-Energy momenta

Energy

$$\left[\frac{m\Omega v^2}{s}\right]$$

$$E$$

6.629432672 e-34 J

mass-Energy

7.376238634 e-51 kg

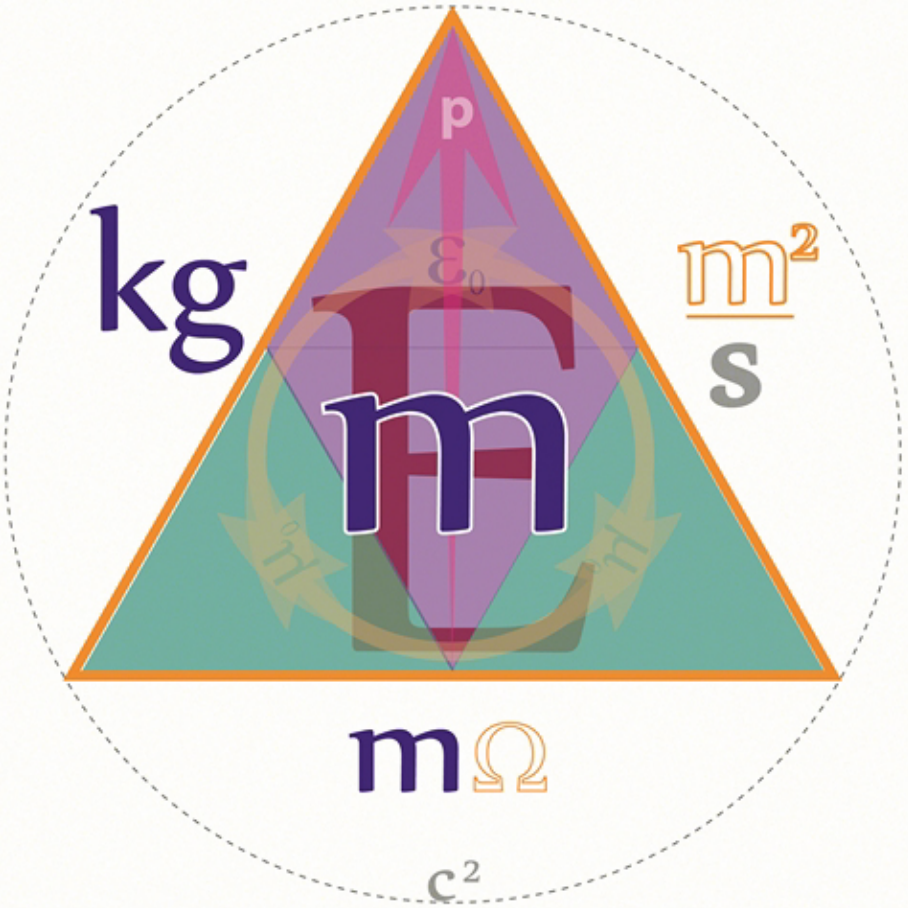
$$m$$

$$\left[\frac{E}{c^2}\right]$$

mass

Planck's Constant

is the 'quantum of Action'



$$6.629432672 \times 10^{-34}\ \text{J.s}$$

mass momenta

quantised angular momenta

$$\left[\frac{m^2}{s}\right]$$

$$\Omega$$

0.0012 m2/s

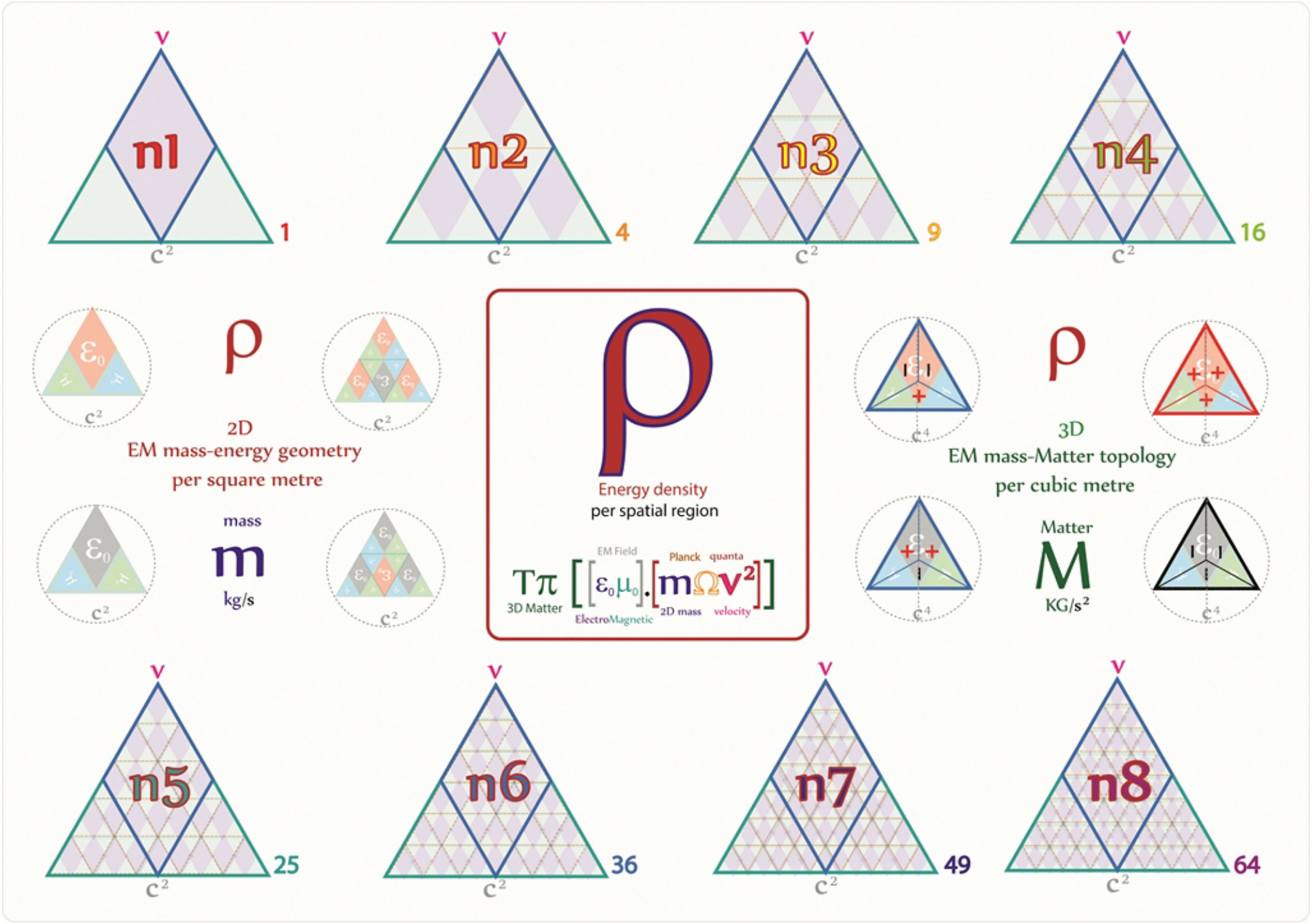
Charge-momenta

1.33518 e-20 s

$$s$$

$$\left[\frac{\Omega}{c^2}\right]$$

charge



Zero Point Fields [ZPFs]

ZPFs are quantum inductive tank circuits
(Short-circuited 'IDEAL' inductors with energy)
ZPFs charge energies do NOT oscillate
[The magnetic dipole vector determines charge]

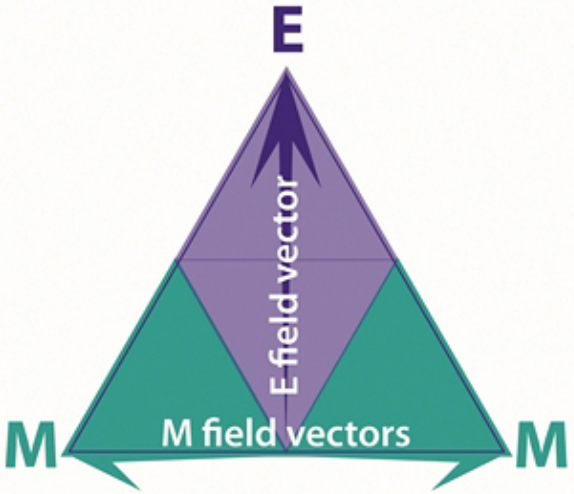
IDEAL QUANTUM INDUCTORS
(equilateral triangle Energy geometry)

The EM FIELD

Electric flux fields can propagate in any direction
Magnetic fields are always at 90 degrees to Electric fields

Magnetic dipole fields propagate in 2 directions at
180 degrees to each other (bi-directionally)
forming North and South poles

**Electric flux field energy is directly proportional to
the resultant Magnetic dipole field energy
and vice versa**



The linear Electric field strength is directly
proportional to its associated transverse
Magnetic field which propagates bi-directionally
from & into the bloch wall of the Zero point field

h
Positive Charge ZPF
Nett positive Planck quanta
with North-South m-dipole vector

Zero Point Fields consist of
Electric and Magnetic (EM) fields
propagating at 90 degrees
to each other

Magnetic MONOPLES do NOT exist
Energy quanta always form charged Electric fields and dipole Magnetic fields

As localised energy quanta increases
(number of ZPFs per time unit)
the charge geometry remains the same

h
Negative Charge ZPF
Nett negative Planck quanta
with South-North m-dipole vector

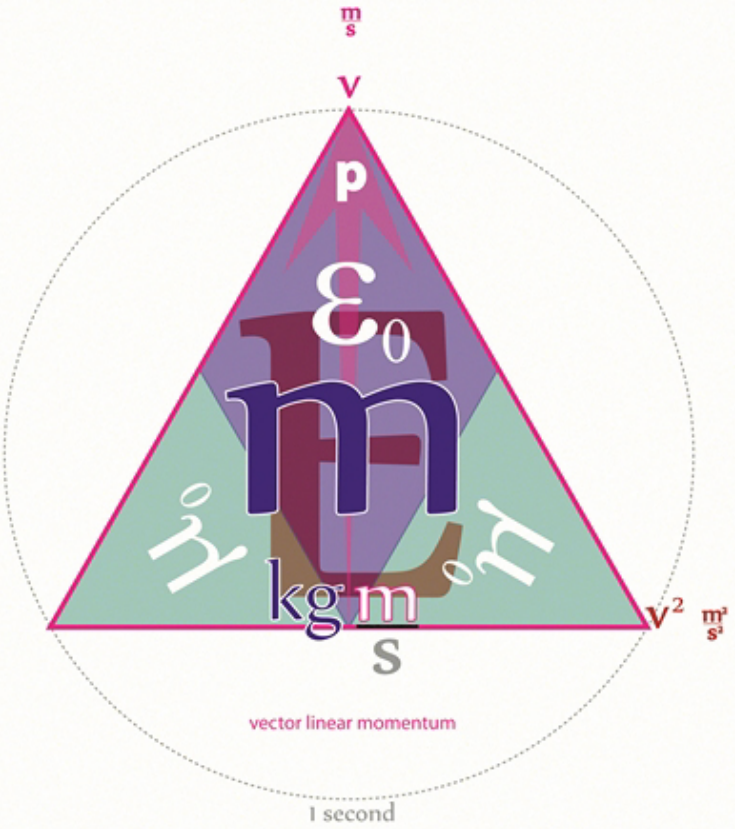
Quantised Angular Momentum

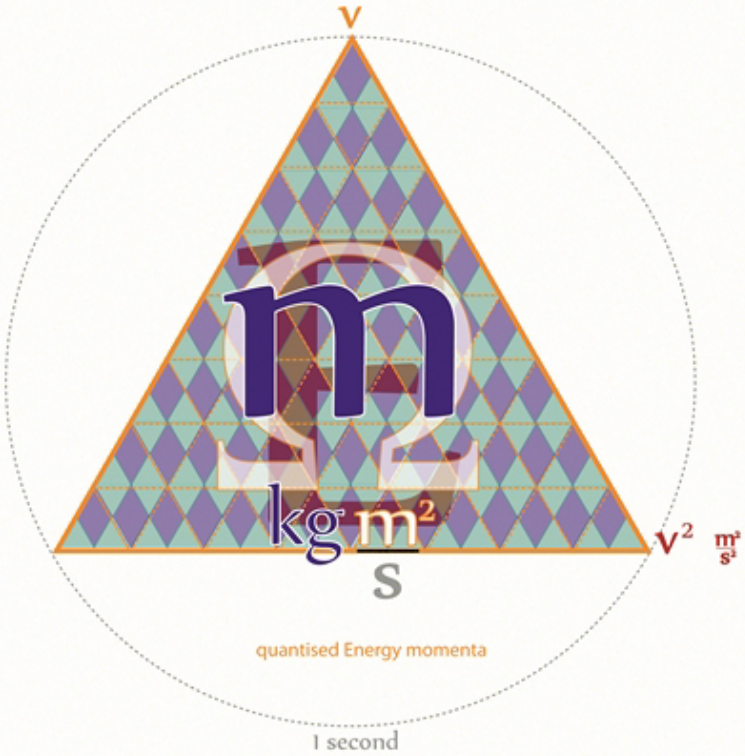
is the equilateral geometry of scalar energy momenta per unit of time

$mv^2 = E$

$E = hv^2$

$\frac{m^2}{s}$





$m\Omega$

mass-QAM

6.629432672 e-34 J.s

$[m\Omega v]^2$

Planck quanta

mass velocity

7.376238634 e-51 kg

mass

m

ε_0

Normally percieved as vector rotation about a point quantised angular momentum is actually an equilateral gaussian flux geometry

(there is no physical vector rotation component)

p

linear momentum

$\frac{kg\,m^2}{s}$

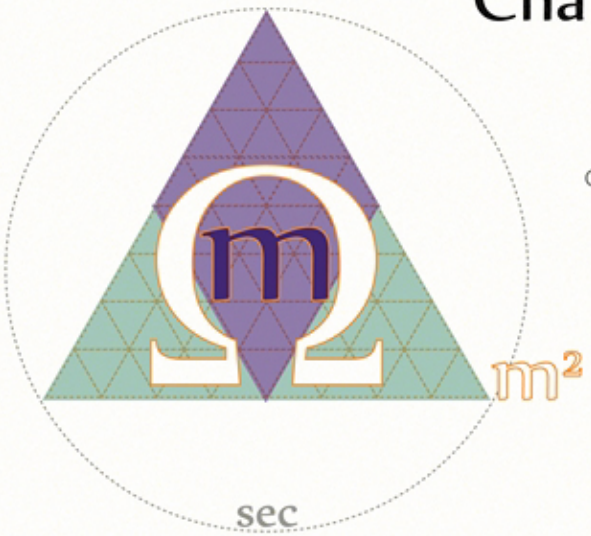
h

Planck's Constant

$\frac{kg\,m^2}{s}$

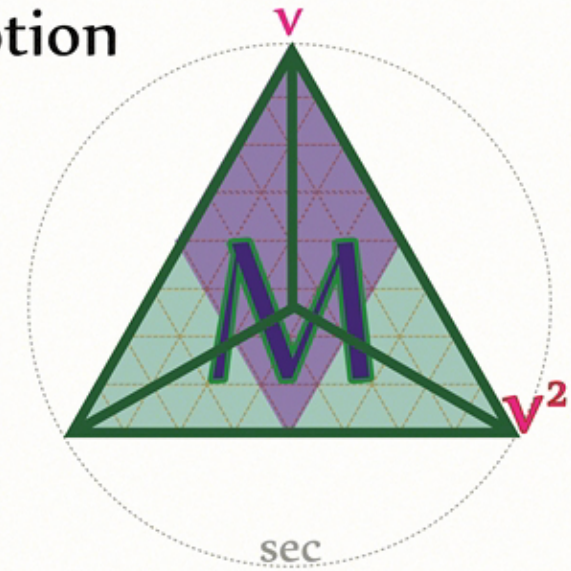
Charged mass & Matter in motion

produce differing but related measurments of EM force



Charged masses per second $\frac{C}{s} \approx kg \approx A$ Charged Matter in motion

Amperes



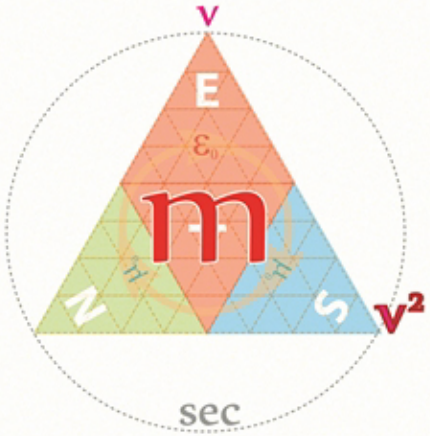
By definition in Tetryonics the quantised angular momentum of mass in any defined spatial co-ordinate system provides the quantum basis for

$$kg\,\frac{m^2}{s}$$

charged mass-energies

Quantised angular momenta creates CHARGE

Vector linear momentum creates CURRENT

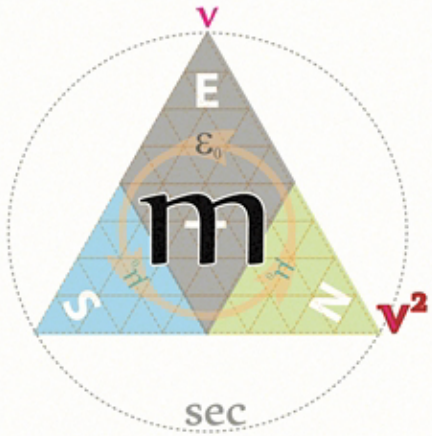


charged mass

$C \approx kg.s \approx As$

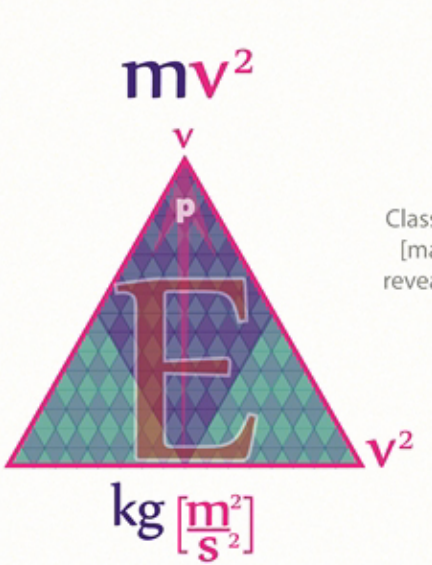
Coulombs Amp.sec

Charge, through its energy interactions, creates the geometric scaffolding for ALL 3D EM mass-Energy-Matter geometries

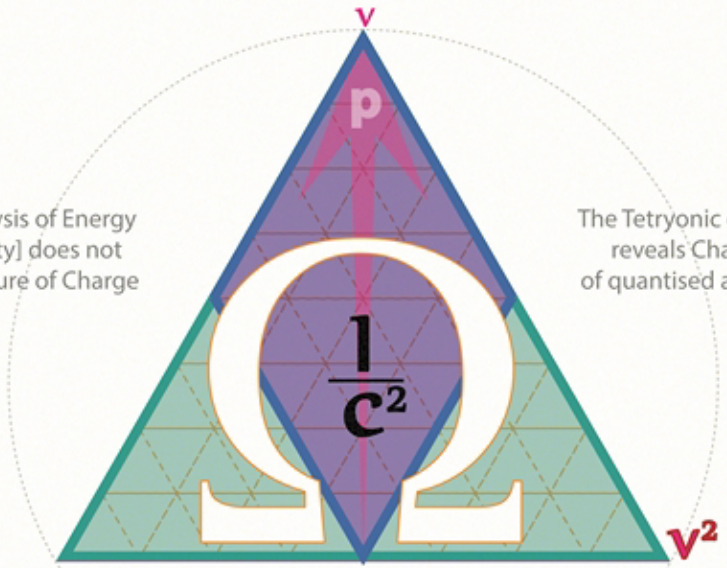


Charged mass geometry

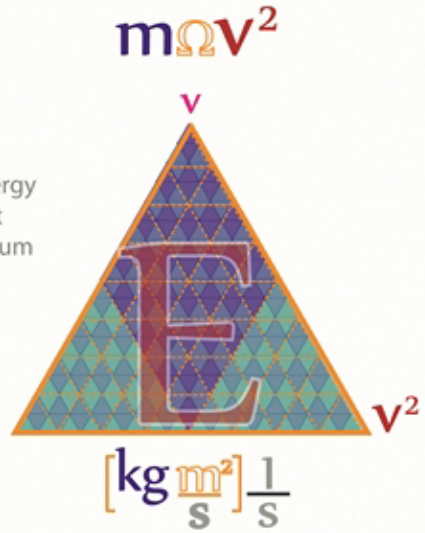
The symmetry of Charge geometries provides a geometric foundation
for all mass-Energy-Matter particles and physical forces



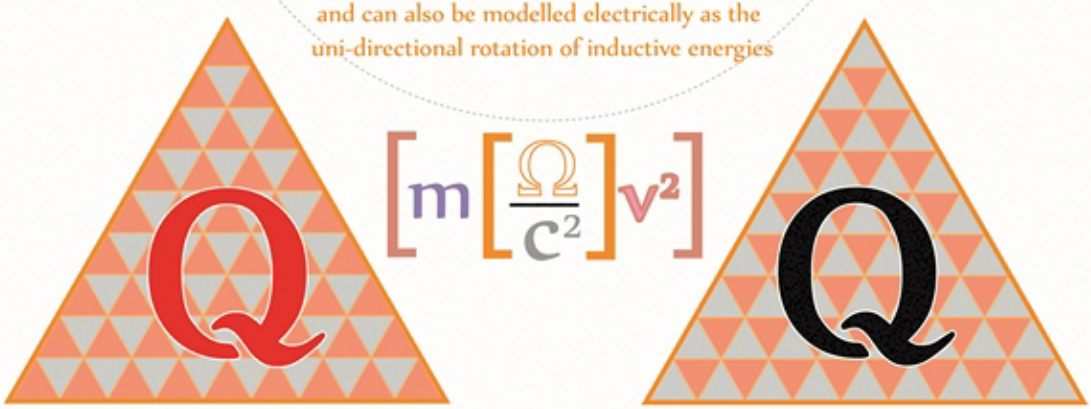
Classical analysis of Energy
[mass velocity] does not
reveal the nature of Charge

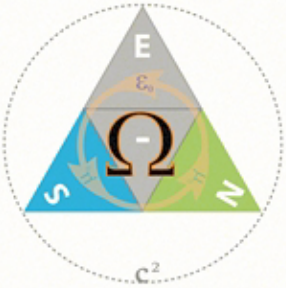


The Tetryonic geometry of Energy
reveals Charge as a product
of quantised angular momentum

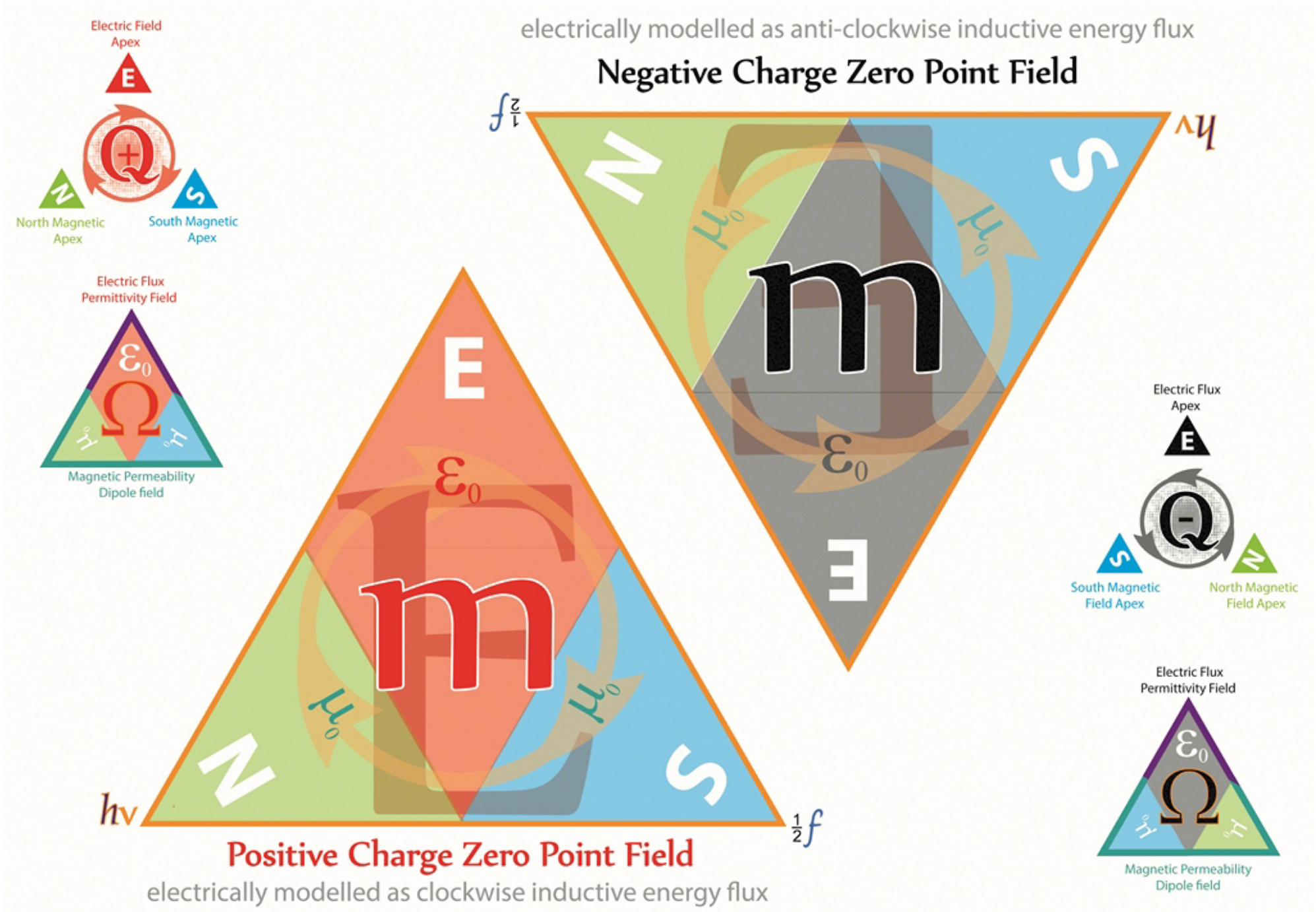


Charge is the result of quantised angular momentum
and can also be modelled electrically as the
uni-directional rotation of inductive energies





**'a un-balanced (broken) energy symmetry resulting from
the nett geometry of equilateral EM mass-energy quanta'**



Elementary and quantum Charges

" All known Fermions have charge topologies that are integer 1/3 multiples of the elementary charge "

It can be shown that the "quantum of charge"
Is the Intrinsic angular momentum of a Planck mass

It then follows that Quasi-particles
[Tetryons and Quarks]
have charge topologies with nett charges of 0, 4 and 8

Further, It can be shown that the "elementary charge"
applied to Leptons and Baryons (12 times quantum charge)
Is reflective of their nett charged Matter topologies

$$T\pi[\pm q]$$

topology — charge — geometry

All Charged particles and their respective KEM fields can be modelled with ZPF field geometries reflective of their nett Charge topologies

Opposites attract
Similars repel

Quarks

up	anti-down	down	anti-up
+2/3	+1/3	-1/3	-2/3
Charmed Top	Strange Bottom	Strange Bottom	Charmed Top

Leptons

Positron	neutrino	Muon
Tau anti-electron	Tau neutrino	Tau

Baryons

+1	0	-1
Proton	**Neutron**	**Negatron**

quantised Charges
(EM energy flux rotation within a ZPF geometry)

q
quantum charges

[v] [v]

The elementary charge, usually denoted as e, is the electric charge carried by a single proton, or equivalently, the absolute value of the electric charge carried by a single electron

[v-v]

Q
Elementary charges

Elementary Charges are the nett charge created by mass-energy-Matter topologies

Tetryons

4	0	4
[4-0]	[2-2]	[0-4]

Quarks

up	down	down	up
8	4	4	8
[10-2]	[8-4]	[4-8]	[2-10]

Leptons

12	0	0	12
[12-0]	[6-6]	[6-6]	[0-12]
e	νe	νe	e

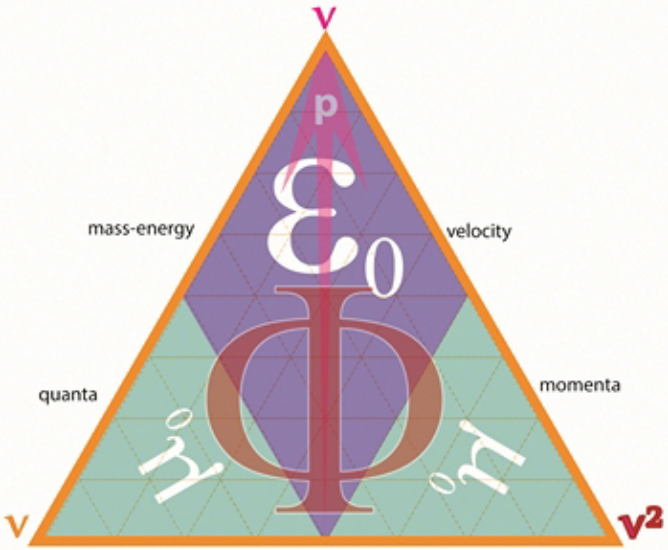
Baryons

Proton	Neutron	Negatron
12	0	12
[24-12]	[18-18]	[12-24]

All Charges seek Equilibrium

Sir Issac Newton

(25 December 1642 – 20 March 1727)



Any changes to velocity
result in changes to Energy-momenta
within a charged geometry

$$\sum \mathbf{F} = 0 \Rightarrow \frac{d\mathbf{v}}{dt} = 0$$

Newton's first law of motion says:
"A body maintains the current state of motion unless acted upon by an external force."

$$F = ma$$

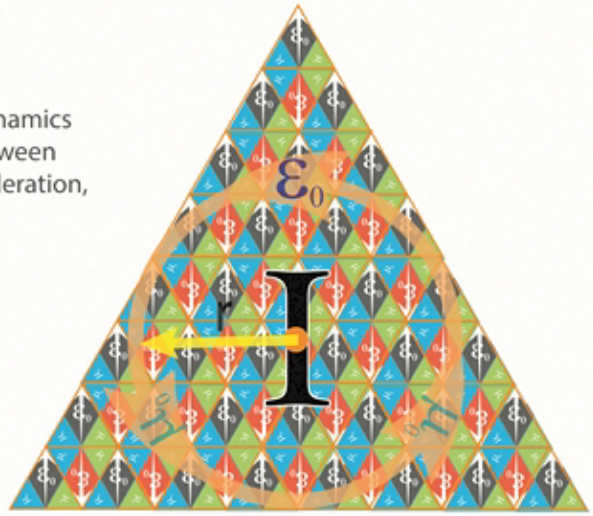
Inertia is the resistance of any physical object to a change in its state of motion or rest, or the tendency of an object to resist any change in its motion.

It is proportional to an object's mass.

Ideal Inductive loops (ZPF quanta) will oppose ANY changes to their energy levels and consequently, Inertia can be viewed as an outcome of quantum ZPF self-Inductance

$\uparrow [v\text{–}v] \downarrow$ +

$\downarrow [v\text{–}v] \uparrow$ –



Inertia

The moment of inertia plays much the same role in rotational dynamics as mass does in linear dynamics, describing the relationship between angular momentum and angular velocity, torque and angular acceleration, and several other quantities

The difference between the impeding (inertial) linear momenta and the co-linear (supportive) momenta is a result of the nett Planck mass-energy momenta within the charged geometries of Matter & its KEM fields

Planck Quanta

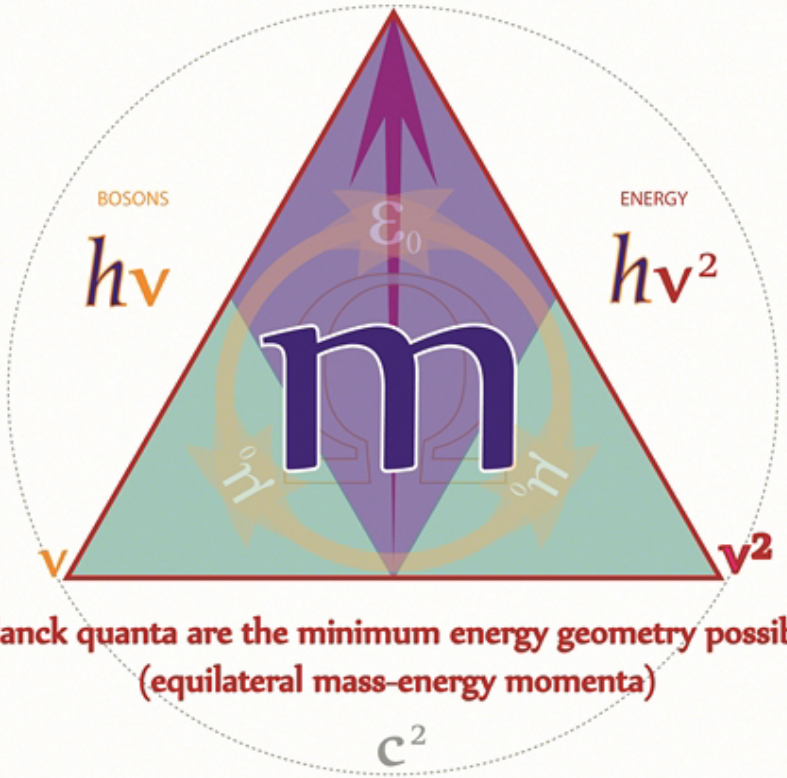
are often defined as the "quantum of action"

h

Planck's Constant

$kg\,\frac{m^2}{s}$

The Planck constant (denoted h), is a geometric constant resulting from QAM in quantum mechanics



Planck quanta are the minimum energy geometry possible (equilateral mass-energy momenta)

c^2

$h\nu$

$m\Omega v^2$

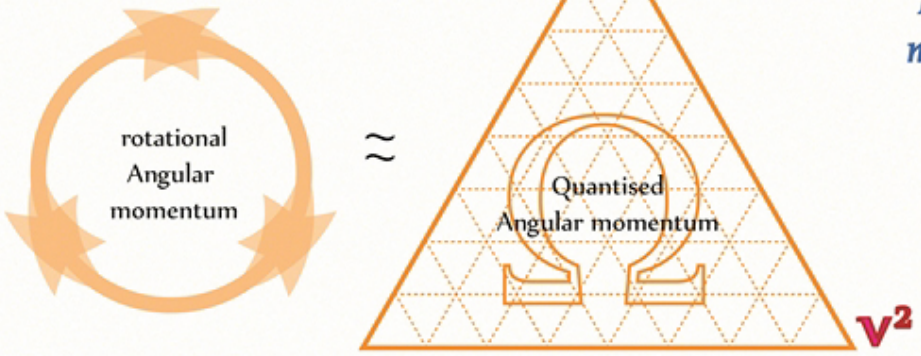
Planck quanta per second

$kg.\left[\frac{m^2}{s}\right].s^{-1}$

Planck's constant relates the energy in one quantum (photon) of electromagnetic radiation to the frequency of that radiation

Charge is a result of QAM geometry

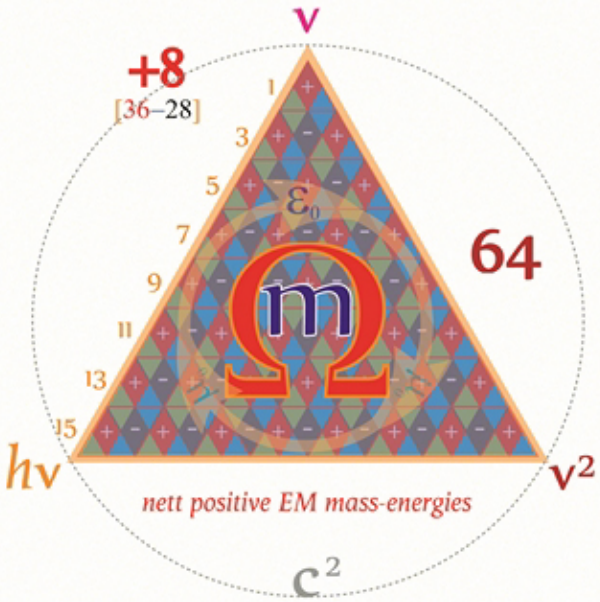
quantised angular momentum is the result of equilateral geometry



Photons have neutral quanta geometry

$E = n.h\nu$

Planck Number

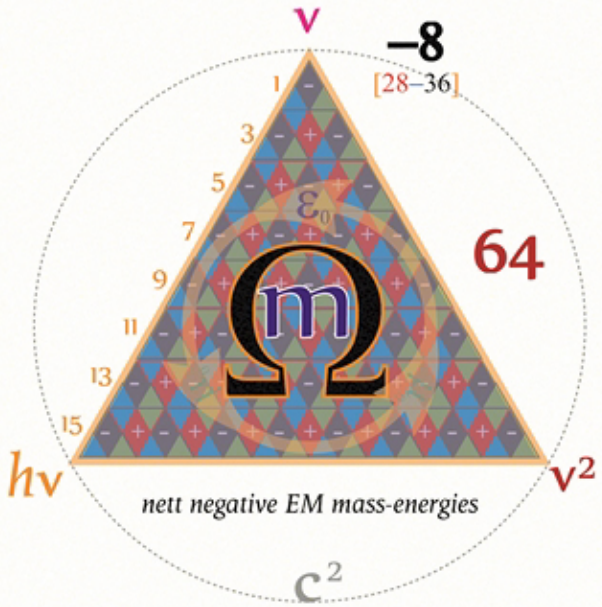


$h\nu$
tranverse
Bosons

Max Planck

(April 23, 1858 – October 4, 1947)

hf
longitudinal
Photons



$1e19\nu = \Omega = 5e18f$
quantum number

BOSONS
are the quanta of Charge

$1\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega\nu^2\right]\right]$
Boson (EM Field: ElectroMagnetic; Planck quanta: mass, velocity)

$h\nu \neq hf$

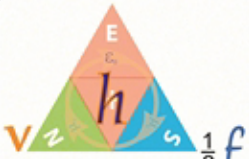
Equating number of quanta
is the source of a number

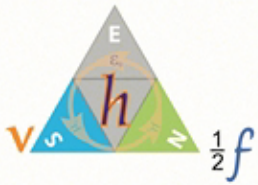
Planck Einstein

to photon frequency
of quantum misconceptions

$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega\nu^2\right]\right]$
Photon (EM Field: ElectroMagnetic; Planck quanta: mass, velocity)

PHOTONS
are the neutral quanta of EM waves





The Planck constant was first described as the proportionality constant between the energy (E) of a photon and the frequency (ν) of its associated electromagnetic wave.
[it in fact describes the energy of bosons]

The zero-point energy for a simple harmonic oscillator of frequency f is ½ hf

The relation between the energy and frequency is called the Planck–Einstein relationship.

Quantum Inductors

An "ideal inductor" has inductance,
but no resistance or capacitance, and will not dissipate energy
(until it interacts with other ZPFs or Matter) and forms the basis for
all Charge-Parity-Time [CPT] interactions

A ZPF is fixed in either a + or - state
[Quantum Inductor circuit]

Its energy flux direction as modelled electrically] is relative
to the observer's view or the direction of measurement

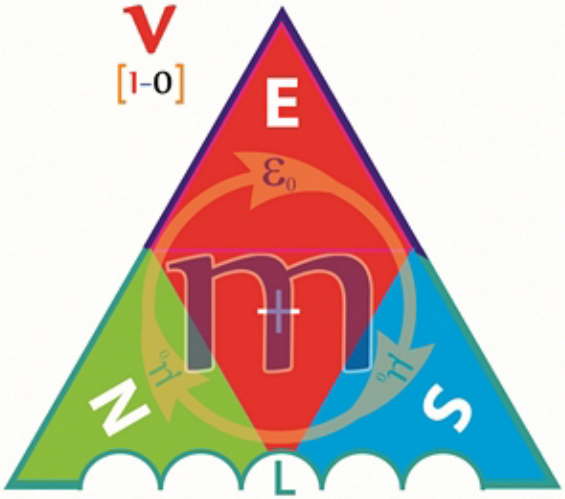
Charge polarity is opposed on opposite faces
of the same quoin [quantum coin]

The direction of inherent energy flux
from the presective of the observer
determines ZPF charge polarity

+ ZPF

A positive ZPF can
be viewed as a quantun quoin
or an quantum 'ideal' inductor
with an internalised energy flux
that is the opposite of
a negative ZPF

Clockwise
current flow



POSITIVE
Quantum L circuit
[quantum inductive circuit]

The Quantum Inductor (L) circuit stores
energy as EM mass in π geometries,
it does not oscillate

Energy received is stored indefinitely
until its release via weak interaction

[Inductive Magnetic coupling]

The quantum Inductive circuit
is a SINGLE charge tri-field inductive energy loop

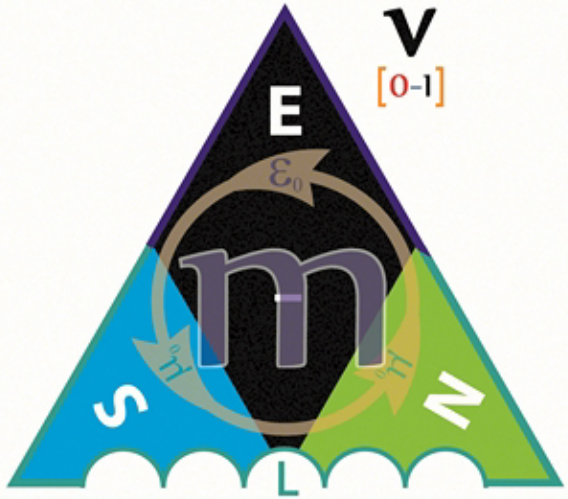
It does not oscillate energy between two opposing charges
its differing energy fields are the reuslt of its equilateral QAM geometry
storing Electric energy in its E field, and Magnetic energy in its M field

The direction of the QAM flux that models inertia is relative
to the observer

- ZPF

A negative ZPF can
be viewed as a quantum quoin
or an quantum 'ideal' inductor
with an internalised energy flux
that is the opposite of
a positive ZPF

Counter-Clockwise
Current Flow



NEGATIVE
Quantum L circuit
[quantum inductive circuit]

Quantum Inductors and EM energy Levels

coupled ODD# mass-energies
form SQUARE energy geometries

quantum Inductors

Scalar Energies

[ZPFs]

[Bosons]

1

3

5

[1]
Single Quantum Inductor

1^2

[1+2]
Coupled
Quantum Oscillator

[1+2]
A Coupled Inductance
in Parallel with
Two Series Inductors
[3+4]

E

2^2

[1+2] [3+5] [4+6]
Three coupled Inductances
in Parallel with
Three Series Inductors
[7+8+9]

3^2

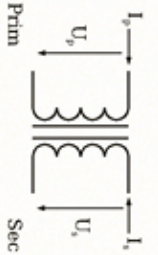
Coupled Inductance
Coupled Inductance
Coupled Inductance

Series Inductance
Series Inductance
Series Inductance

All quantum levels form inductive magnetic dipole bases
[Weak Force]

Quantum energy levels can be viewed as various combinations of:

Coupled Inductances

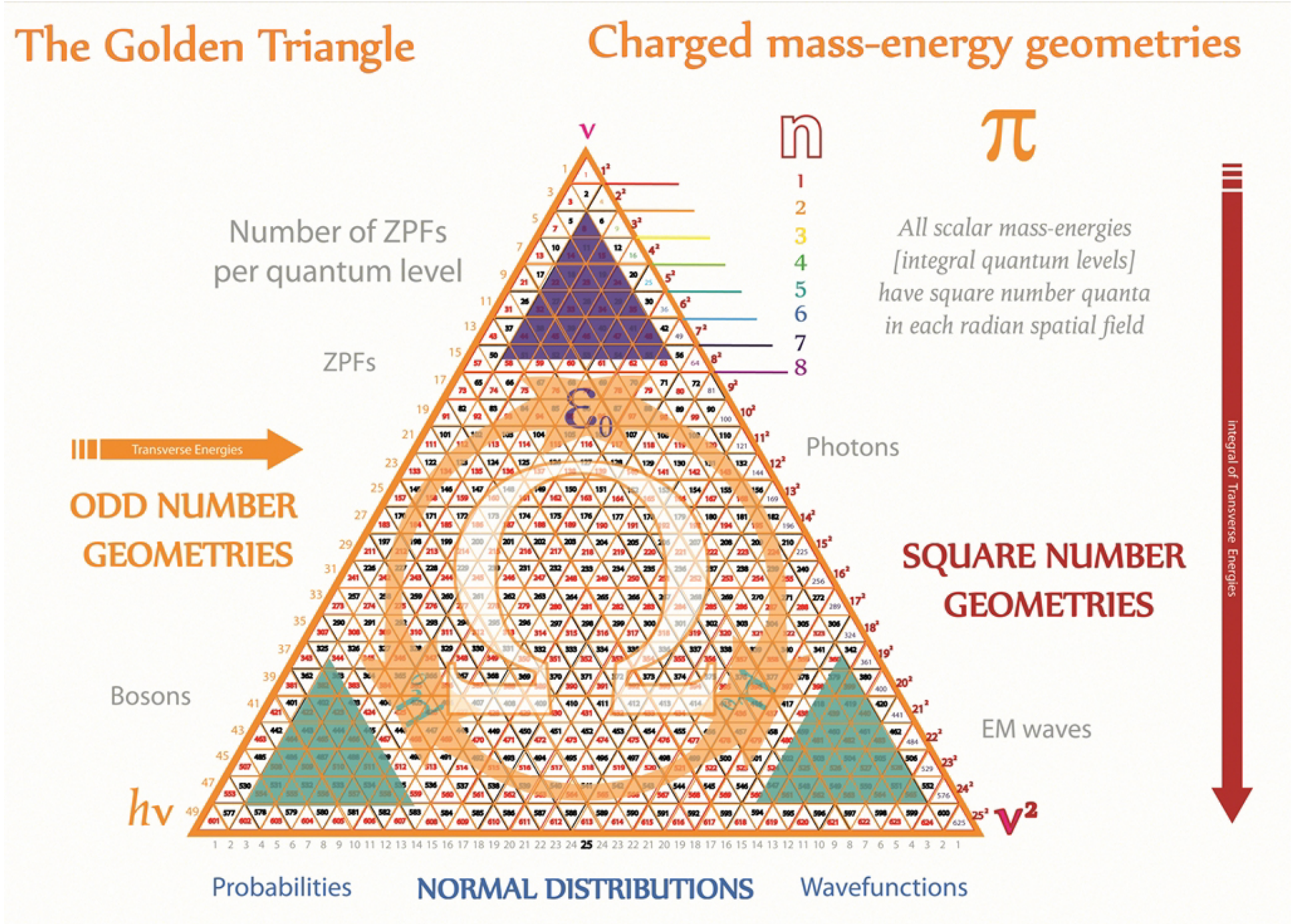


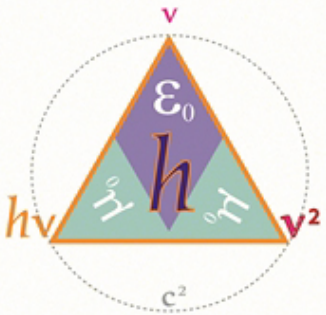
Parallel Inductances

$$L_{total} = \frac{1}{\frac{1}{L_1} + \frac{1}{L_2} + \ldots \frac{1}{L_n}}$$

Series Inductances

$$L_{total} = L_1 + L_2 + \ldots L_n$$

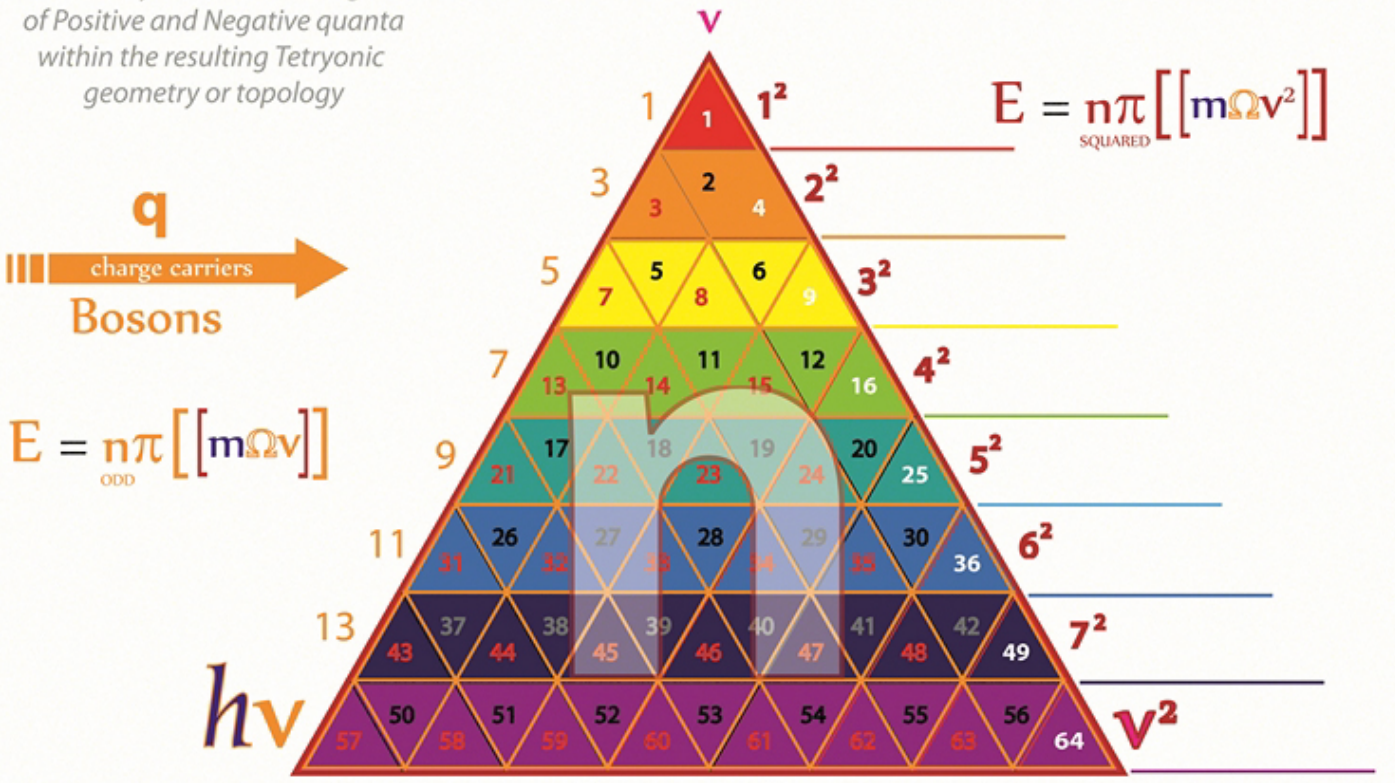




Quantum Energy Levels

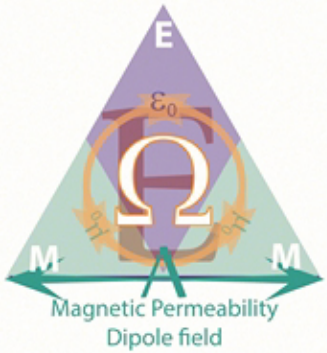
Within any spatial co-ordinate system the energy density of a region can increase or decrease geometrically creating the familiar squared quantum energy levels of quantum physics

Individual equilateral Planck quanta combine to form larger EM mass-energy geometries with the nett Charge being determined by the scalar arrangement of Positive and Negative quanta within the resulting Tetryonic geometry or topology



Magnetic Vectors

Intrinsic Magnetic vectors are transverse to E fields



External Magnetic fields are termed B fields

Magnetic vectors can be modelled geometrically or electrically through energy field fluxes [quantised angular momenta]

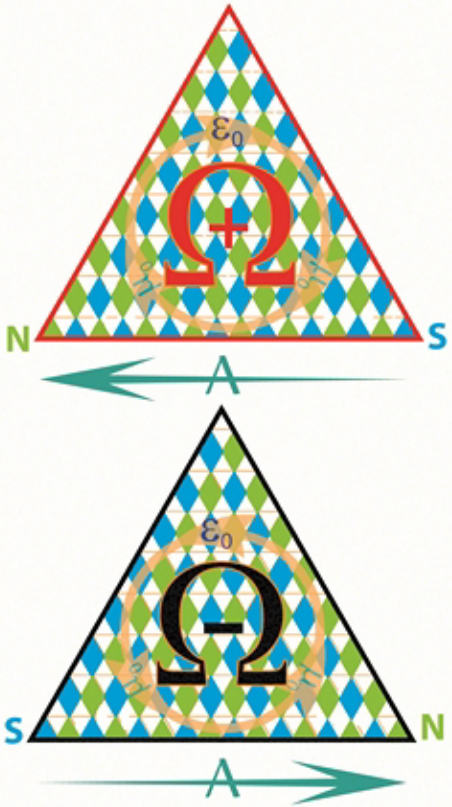
Opposite charges moving in opposing directions produce co-directional Magnetic vectors

Within a Magnetic dipole

Magnetic Vector A

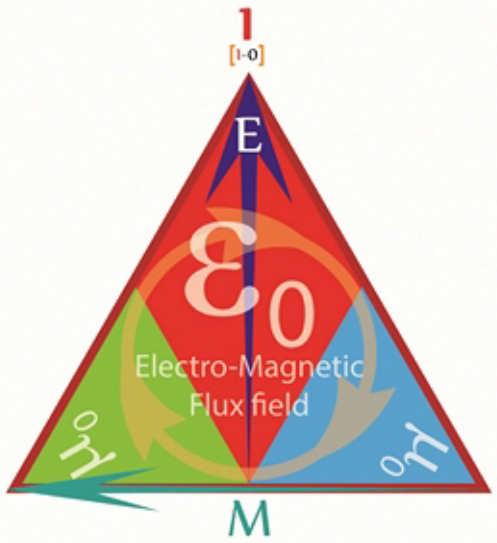
energy 'flows' South to North

External to a Magnetic dipole
energy 'flows' North to South



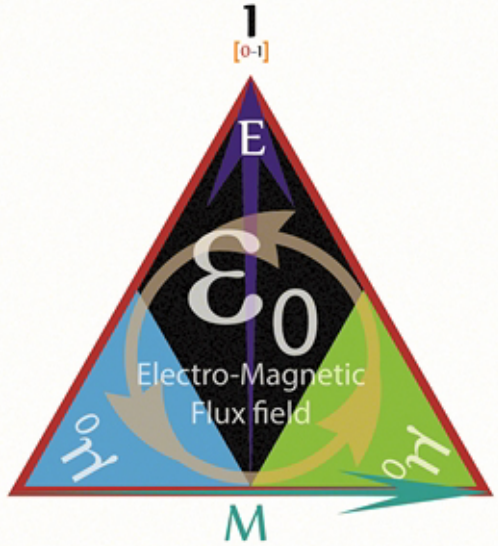
Opposite charges moving in the same direction produce Magnetic vectors in opposition

Charge Fields



EM energy fluxes in a Positive ZPF flows
are electrically modelled as Clockwise
(from North to South)

The EM flux directions of Charges
can be modelled vectorially with
Electric and Magnetic vectors



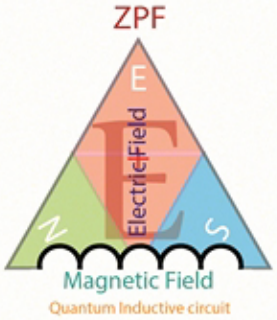
EM energy fluxes in a Negative ZPF
are electrically modelled as counter-Clockwise
(from North to South)

All rotational planck energy fluxes
can serve as models for the nett
quantised angular momenta of
any mass-energy geometry

Polarised
Electric and Magnetic fluxes
in ElectroMagnetic fields arise from
intrinsic quantised angular momentum

EM fields

are the combined Electric & Magnetic fields resulting from the quantised angular momentum of mass-energy in any region of free space



$$\varepsilon_0\mu_0 = \frac{1}{c^2}$$

EM Permittivity-Permeability is a measure of how much resistance is encountered when the quantised angular momenta of EM energies form an electro-magnetic field in a vacuum

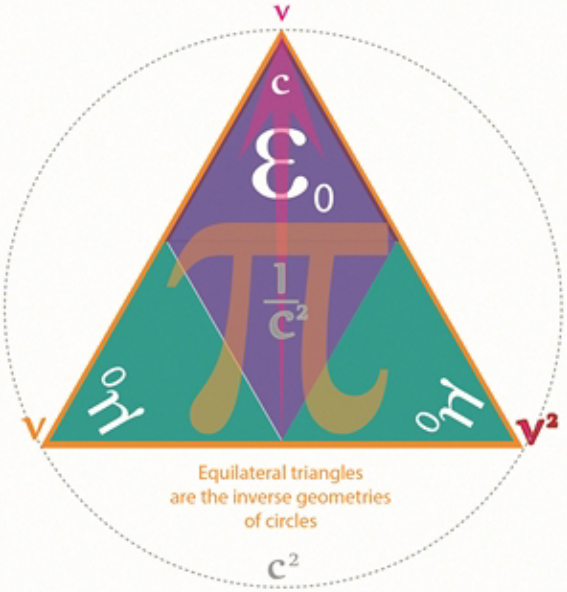
Celeritas = 299,792,458 $\frac{m}{s}$

$$c_0 = \frac{1}{\sqrt{\mu_0\varepsilon_0}}.$$

EM field Permittivity-Permeability

$$\varepsilon_0\mu_0 = 1.112650056\text{e-}17 \ \frac{s^2}{m^2}$$

$$\left[\frac{A^2\ s^4}{kg\ m^3} \cdot \frac{kg\ m}{A^2\ s^2}\right]$$



$$m = n\pi\ [\varepsilon_0\mu_0]\ [m\Omega v^2]$$

mass = charged Spatial geometry Energy density

Electric Constant

$$\varepsilon_0 = \frac{1}{\mu_0 c^2}$$

$= 8.85418785\text{ e-}12 \ \frac{F}{m} \quad \frac{A^2\ s^4}{kg\ m^3}$

The permittivity of empty space, equal to 1 in centimeter-gram-second electrostatic units and numerically, to 8.854 × 10-12 farad per meter in International System units, where c is the speed of light in meters per second. Symbolized ε0.

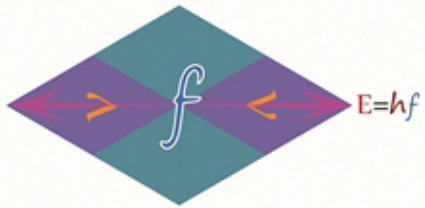
Magnetic Constant

$$k_0 = \frac{1}{4\pi\varepsilon_0}$$

$= 1.25663706\text{ e-}6 \ \frac{H}{m} \quad \frac{kg\ m}{A^2\ s^2}$

A measure of the degree to which molecules of some material polarize (align) under the influence of an electric field; symbol k0, units F/m (farads per metre).

$E = 2h\nu$



$\vec{S} = \mathbf{E} \times \mathbf{H},$

The Energy-momenta of ZPFs form natural Poynting vectors

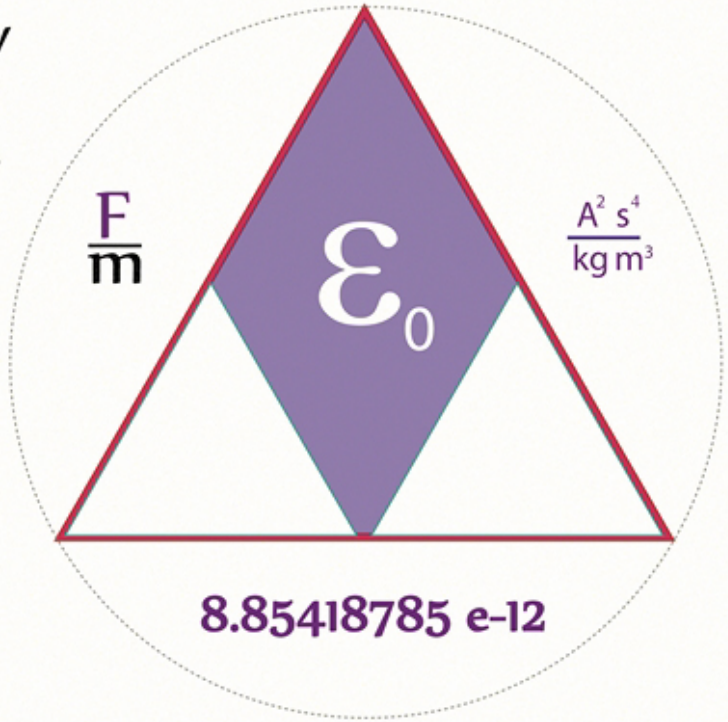
EM field Permittivity

The Electric constant, commonly called the vacuum permittivity, or permittivity of free space, relates the units for electric charge to mechanical quantities such as length and force.

The name Vacuum Permittivty is a misnomer and should be replaced with the correct term EM field Permittivity

The strength of Electric fields is determined by the Electrical Permittivity Constant

$$E = \frac{1}{4\pi\varepsilon_0}\frac{Q}{r^2}$$

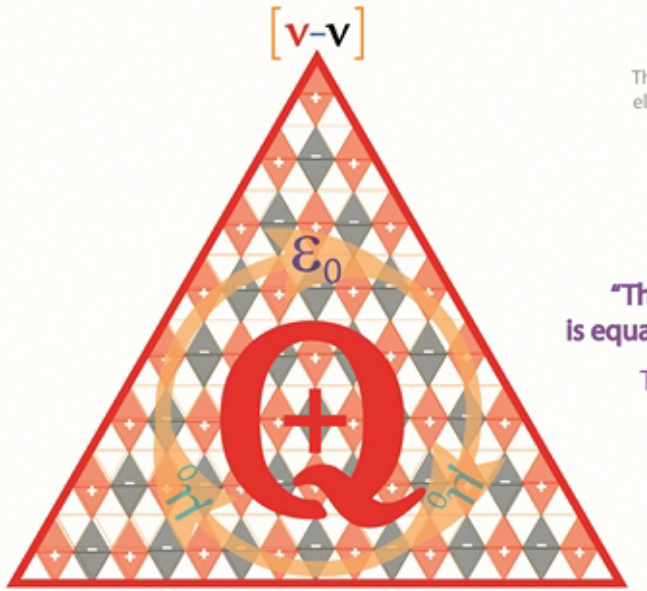


$$\varepsilon_0 = \frac{1}{\mu_0 c^2}$$

"Ampere's Law states that for any closed loop path, the sum of the quantities (B.ds) for all path elements into which the complete loop has been divided is equal to the product of μ0 and the total current enclosed by the loop."

$$k = \frac{1}{4\pi\varepsilon_0}$$

The permittivity of empty space, equal to 1 in centimeter-gram-second electrostatic units and to 107/4πc2 farads per meter or, numerically, to 8.854 × 10-12 farad per meter in International System units, where c is the speed of light in meters per second.



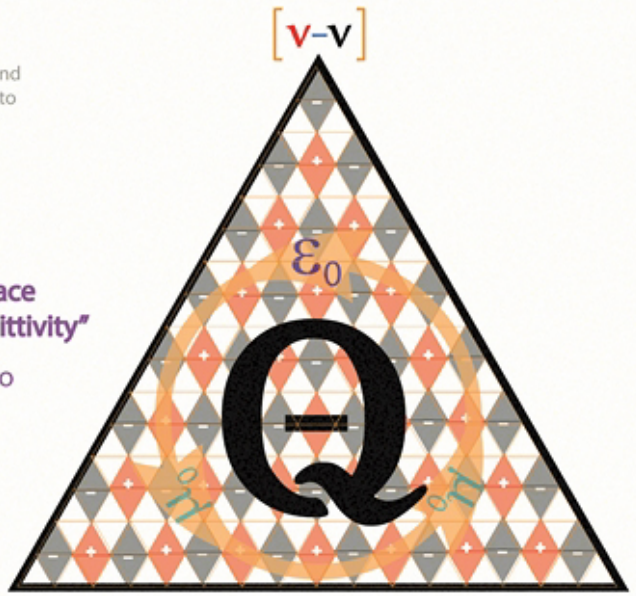
Positive Charge Electric Field

Gauss' Law:

"The total of the electric flux out of a closed surface is equal to the charge enclosed divided by the permittivity"

This applies equally to any geometry chosen to tessellate a surface area

Superpostioned E fields gives rise to Coulomb Forces



Negative Charge Electric Field

Electric permittivity Fields

Negative externalised Planck quanta
(Counter-clockwise energy fluxs)

Coupled same charge ZPFs
have neutralised Magnetic fields

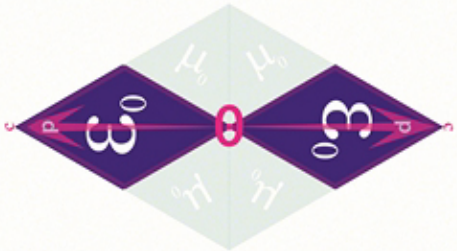
In Electro-statics superpositioned E fields with interactive energy momenta are the interactive mechanism for Coulombic forces

Electrostatic Particles
in motion have Kinetic energies
resulting in Magnetic moments

Positive externalised Planck quanta
(Clockwise energy fluxs)

Polar view

Negative E-fields



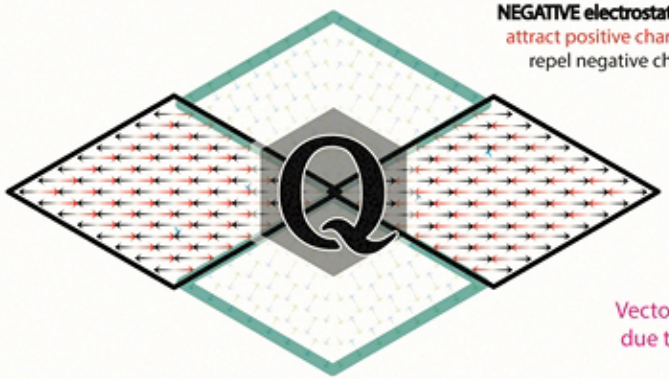
Polar view

Positive E-fields

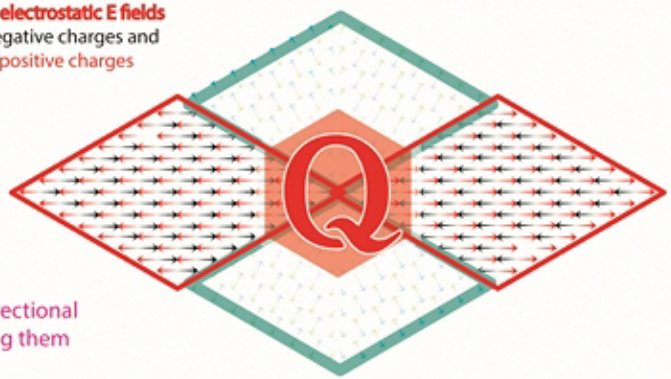
NEGATIVE electrostatic E fields
attract positive charges and
repel negative charges

ε_0

POSITIVE electrostatic E fields
attract negative charges and
repel positive charges



Opposites Attract
Similars Repel



Vectorial momenta forces in EM fields are bi-directional
due to the energy-momenta quanta comprising them

The currently stated 'standard' premise of Electrical Energy flowing from Positive to Negative is misleading (as Energy also flows from Negative to Positive at the same time)

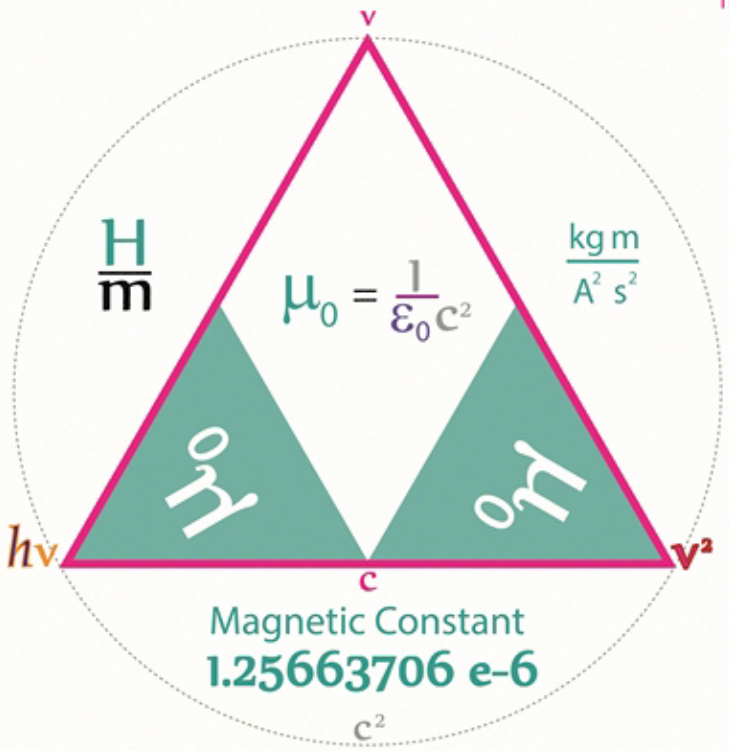
EM field Permeability

The permeability of free space,
also called absolute permeability.

The name Vacuum Permeability is a misnomer and should be replaced with the correct term EM field Permeability

The magnetic constant has the value of
$4\pi \times 10\text{-}7$ henry per meter.

The strength of Magnetic fields is determined by the Magnetic Permeability Constant



F

The magnetic field is most commonly defined in terms of the Lorentz force it exerts on moving electric charges.

The magnetic field generated by a steady current (a constant flow of electric charges in which charge is neither accumulating nor depleting at any point) is described by the Biot–Savart law

μ_0

$B = \mu_0 H$

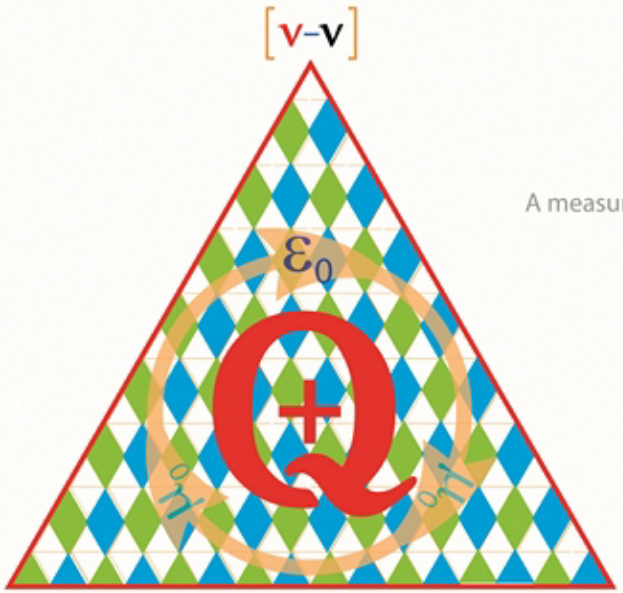
A measure of the degree to which molecules of some material polarize (align) under the influence of an electric field.

Measured in units of units H/m (Henries per metre).

There are

NO magnetic monopoles

[not under any condition]



Positive Magnetic Moment

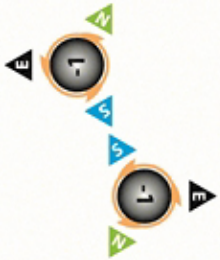
Negative Magnetic Moment

Magnetic permeability Fields

Coupled opposite charge ZPFs
produce neutralised Electric fields

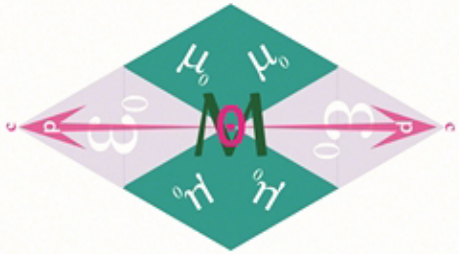
In Magneto-statics superpositioned M fields
with interactive energy momenta
are the interactive mechanism
for Lorentz forces

Magneto-static Particles
have enhanced Magnetic moments



Amperes law

Current flowing through a wire
will create a magnetic field

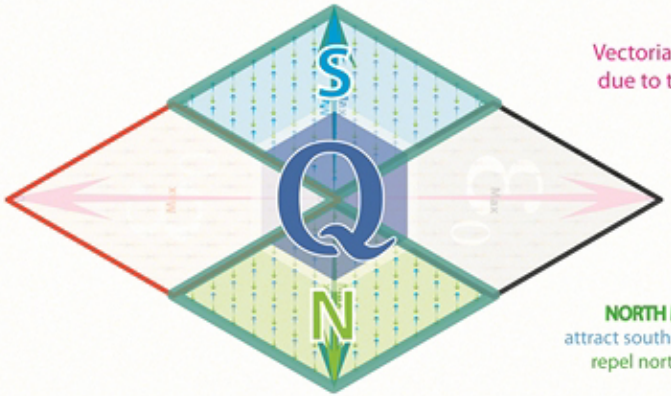


Lorentz forces

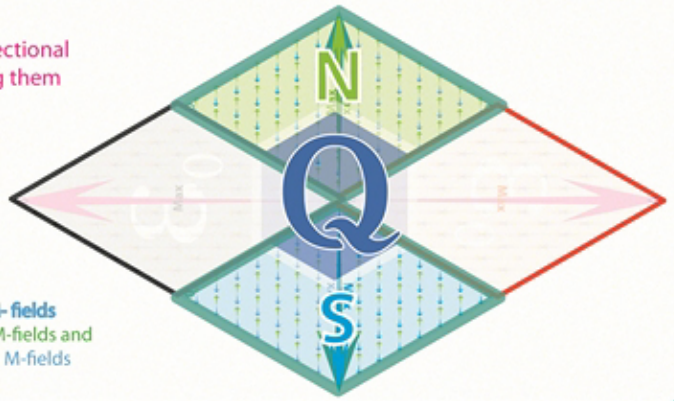
charged particles in motion are subject
to forces due to external EM fields

magnetic field forces are
orthagonal to electric Coulomb forces

Vectorial momenta forces in EM fields are bi-directional
due to the energy-momenta quanta comprising them



Opposites Attract
Similars Repel



NORTH M- fields
attract south M-fields and
repel north M-fields

μ_0

SOUTH M- fields
attract north M-fields and
repel south M-fields

Magentic fields can only exist in conjuction with Electric fields & Electric fields can only exist in conjunction with Magnetic fields

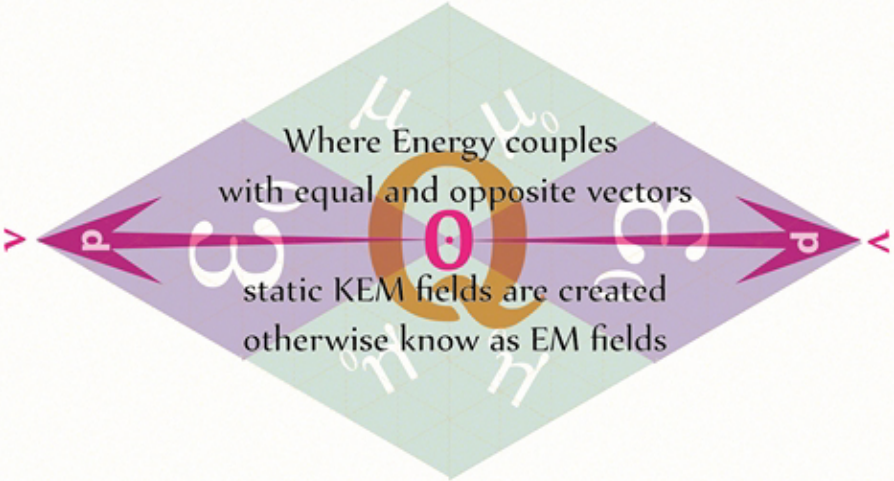
Electro-static fields

Similar charge electric dipole pairings
create 'neutralised' Magnetic dipoles

There are no such things as purely
Electric or Magnetic fields

Fields of Force

v=0



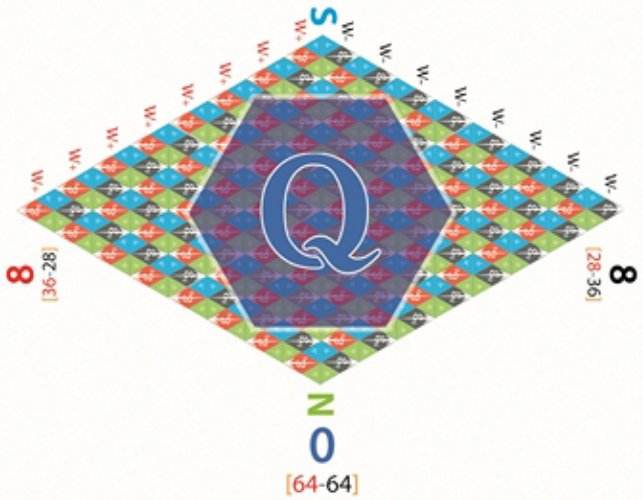
All energy fields are Electro-Magnetic in nature
a direct product of their equilateral geometry

'Neutralised' electric dipole pairings
create Magnetic dipole fields

Magneto-static fields

Charged EM field geometries

Opposite charge fields
can produce neutral E-fields
(with magnetic moments)



Electrostatic charged matter generate
charged energy fields around them

Moving charged particles generate
Kinetic energy & Magnetic moments

Charged electrostatic fields

accelerate charged particles
vectorally dependent on their quantum
charge mass-energy momenta field geometries

16
[72-56]

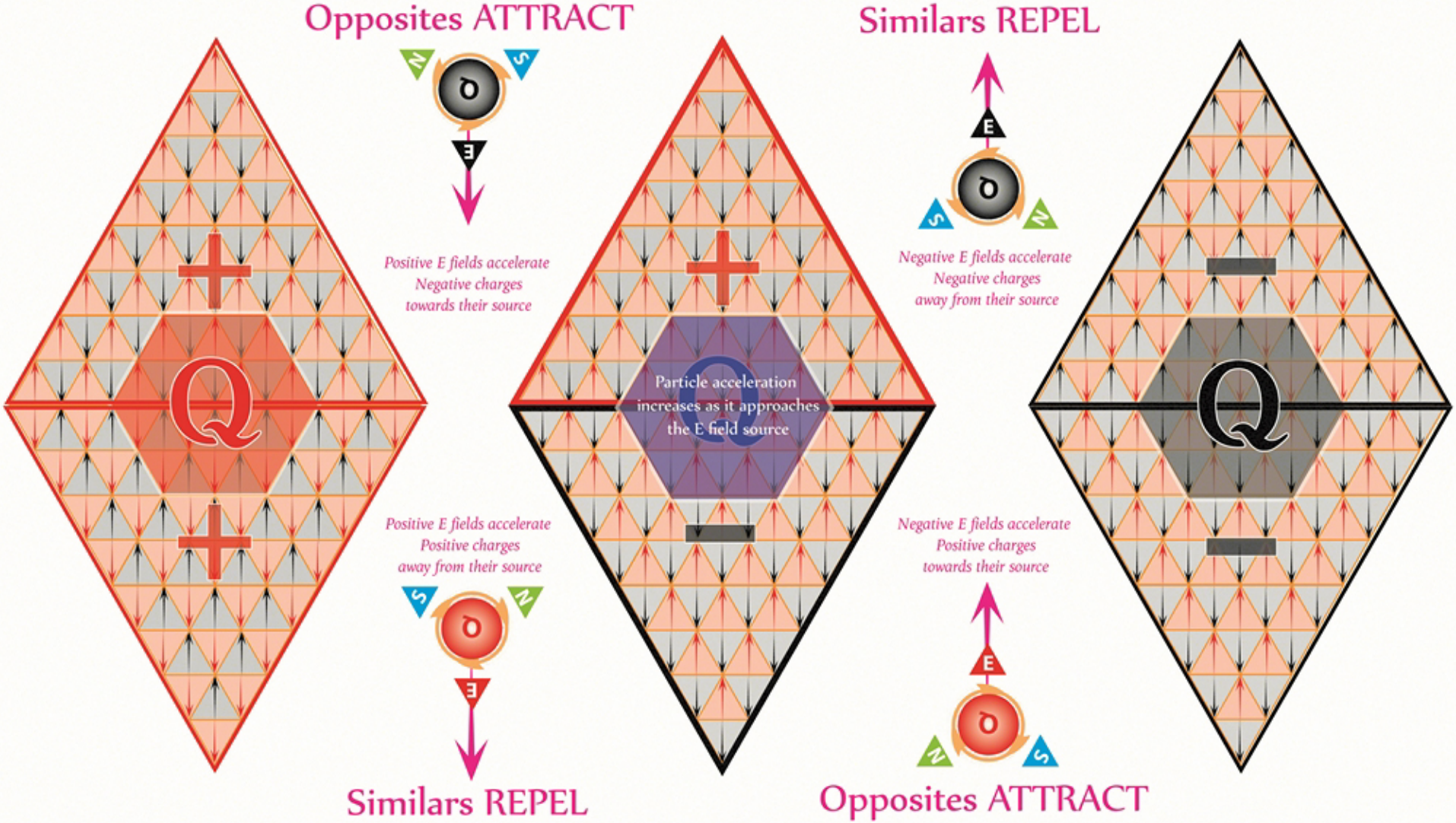
Positive charge electrostatic fields
attract Negative charges
repel Positive charges

16
[56-72]

Negative charge electrostatic fields
attract Positive charges
repel Negative charges

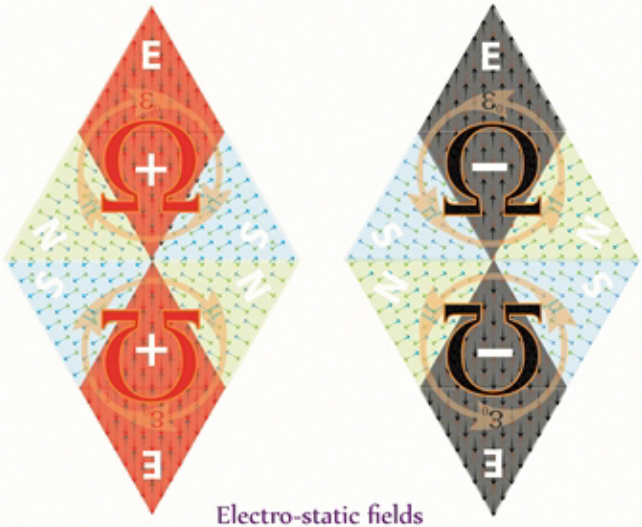
E field acceleration of charged particles

Electric fields can accelerate charged particles within their field geometry dependent on the particle's nett charged mass-Matter topology



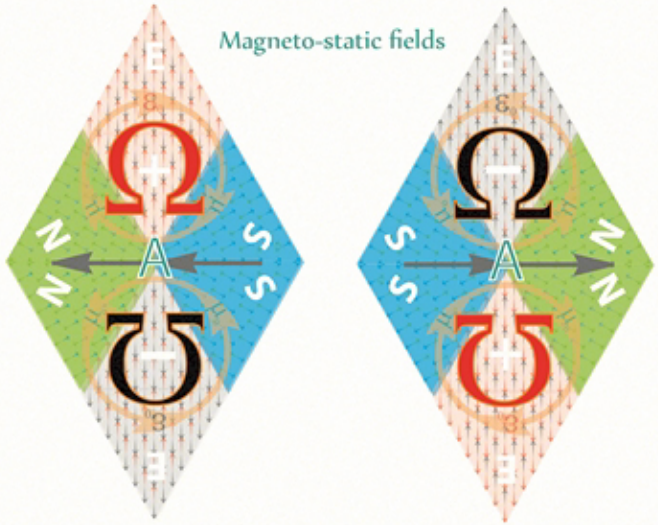
The charge quanta within Neutral particles are affected equally by Electric fields

ZPFs can combine to form
4 distinct static EM fields



Electro-static fields

ElectroMagnetic fields

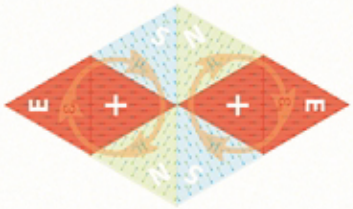


Magneto-static fields

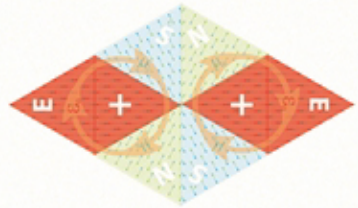
Similars REPEL
[QAM momenta vectors in opposition]

Opposites ATTRACT
[QAM momenta vectors in same direction]

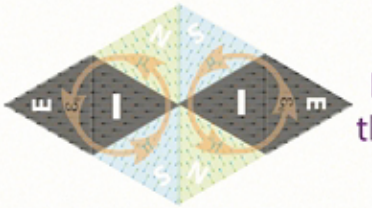
'THE LAW OF INTERACTION'



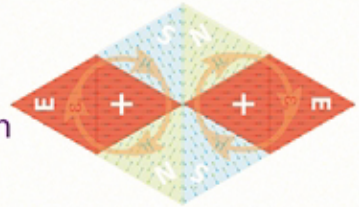
Flux momenta in opposition



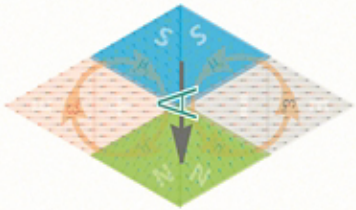
Electro-static fields
$1/r^2$



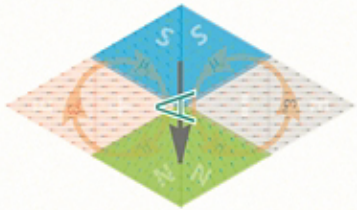
Flux momenta in the same direction



'FORCES OF INTERACTION'



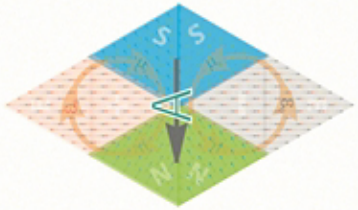
Parallel



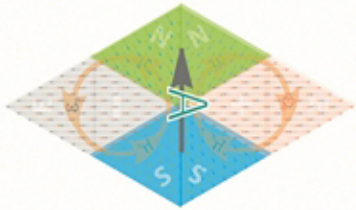
Flux momenta in the same direction

Magneto-static fields
$1/r^2$

Flux momenta in opposition



Anti-parallel



Positive electrostatic fields

divergent positive momenta

convergent negative momenta

$$\mathbf{E} = \frac{1}{4\pi\varepsilon_0}\frac{Q}{r^2}\hat{\mathbf{r}}$$

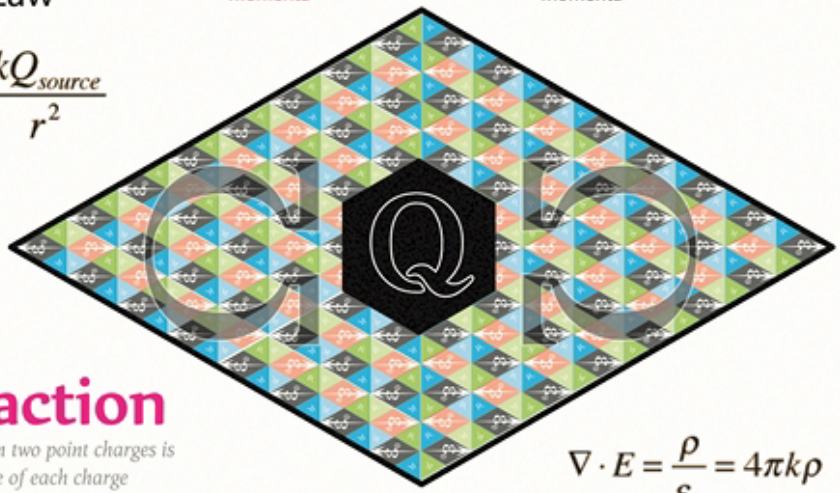
Coulomb's Force Law

$$E = \frac{F}{q} = \frac{kQ_{source}q}{qr^2} = \frac{kQ_{source}}{r^2}$$

Negative electrostatic fields

convergent positive momenta

divergent negative momenta



$$\nabla \cdot E = \frac{\rho}{\varepsilon_0} = 4\pi k\rho$$

Forces of Interaction

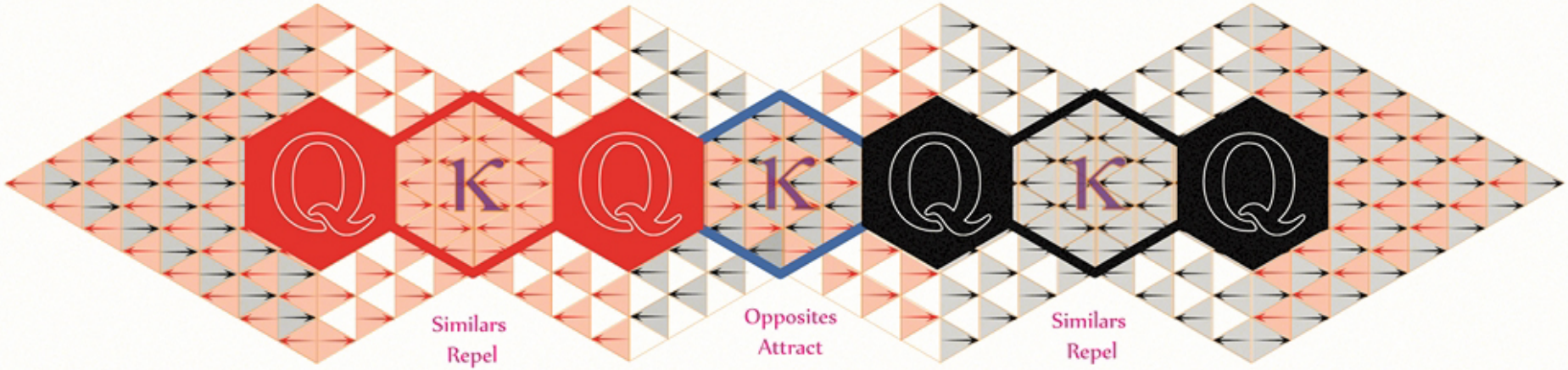
"The force of electrical attraction or repulsion between two point charges is directly proportional to the product of magnitude of each charge and inversely proportional to the square of distance between them"

attract Negative charged masses

repel Positive charged masses

attract Positive charged masses

repel Negative charged masses



Electro-Magnetic field Lines

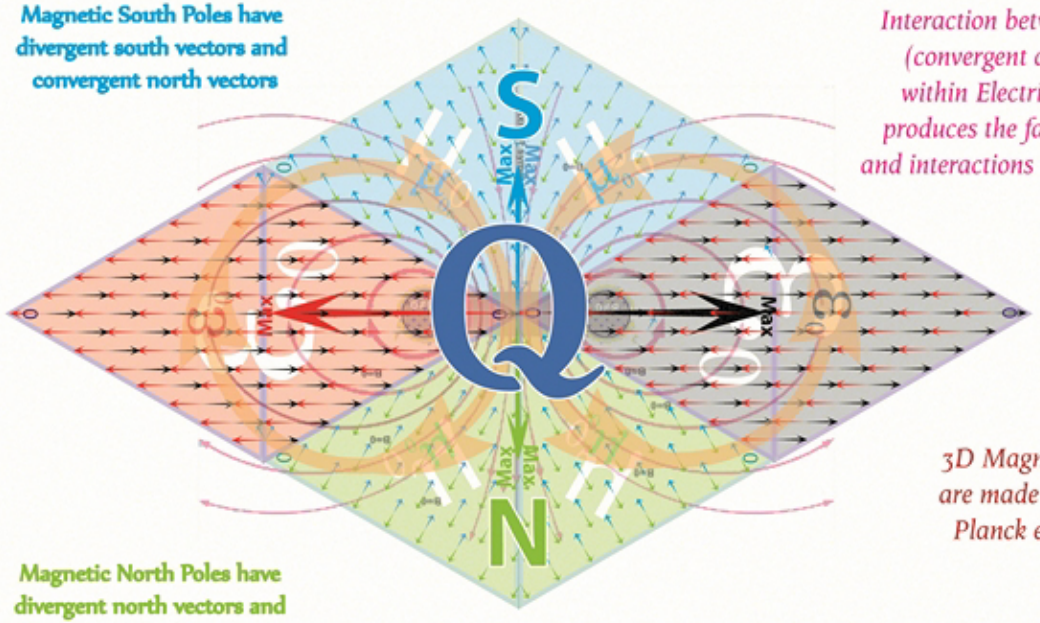
The magnetic field at any given point is specified by both its direction and magnitude

Magnetic dipoles can be produced by the coupling of opposite electric charge fields

or

by accelerating charged bodies of Matter which in turn produce associated Kinetic energies
[Neutral Electric field and equal strength Magnetic moment]

Magnetic South Poles have divergent south vectors and convergent north vectors



Magnetic North Poles have divergent north vectors and convergent south vectors

Interaction between vectorally opposed (convergent and divergent) vectors within Electric and Magnetic fields produces the familar lines of force and and interactions of Electro-Magnetic fields

3D Magnetic lines of Force are made up of 2D fields of Planck energy momenta

Every particle of Matter in motion possesses intrinsic Planck M-field dipoles becasue of their nett charged quanta which combine to produce a nuclear magneton.

The magnetic field lines of permanent bar magnets are the result of the equilateral charge [QAM] geometry of neutralised quanta that form their electrostatic fields

Magnetic field Forces

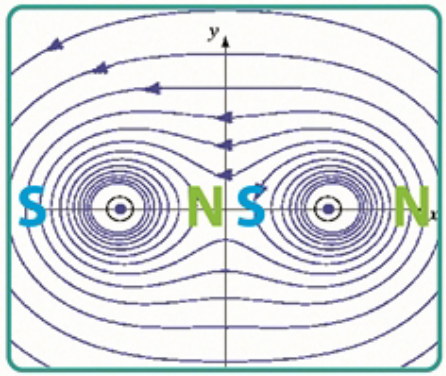
attractive magnetic forces

$$: \frac{m^2 \cdot kg}{s^2 \cdot A^2} = \frac{J}{A^2} = \frac{Wb}{A} = \frac{s^2}{F} = \frac{V \cdot s}{A} = \frac{J/C \cdot s}{C/s} = \frac{J \cdot s^2}{C^2} = \frac{m^2 \cdot kg}{C^2}$$

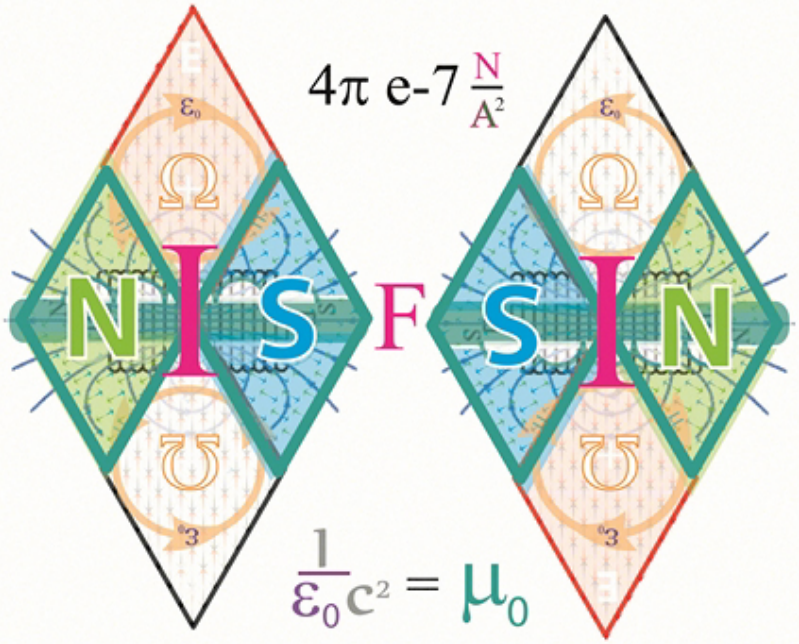
repulsive magnetic forces

In physics superpositioned M fields with interactive energy momenta produce Lorentz forces

Magnetic moments of same charges moving in the same direction

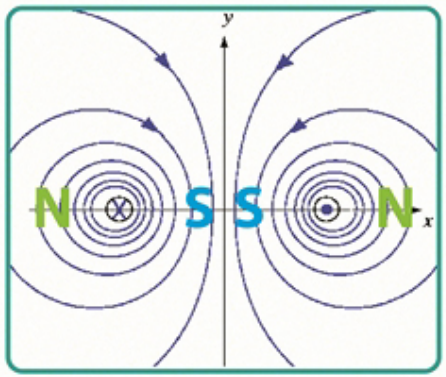


4π e-7 $\frac{N}{A^2}$

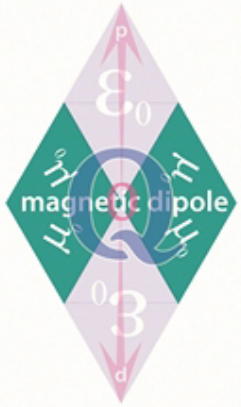


$$\frac{1}{\varepsilon_0 c^2} = \mu_0$$

Magnetic moments of same charges moving in opposite directions



magnetostatic fields



$$\mathbf{H} = \frac{\mathbf{B}}{\mu_0}$$

Coupled opposite charge EM fields produce Magnetic dipole fields

Joseph Henry

(17 December 1797 – 13 May 1878)

μ_B

Electrostatic charged particles in motion create magnetic moments

kinetic EM fields

Magnetic field lines

Magnetic field lines were introduced by Michael Faraday (1791-1867) who named them "lines of force"

Magnetostatic Dipole

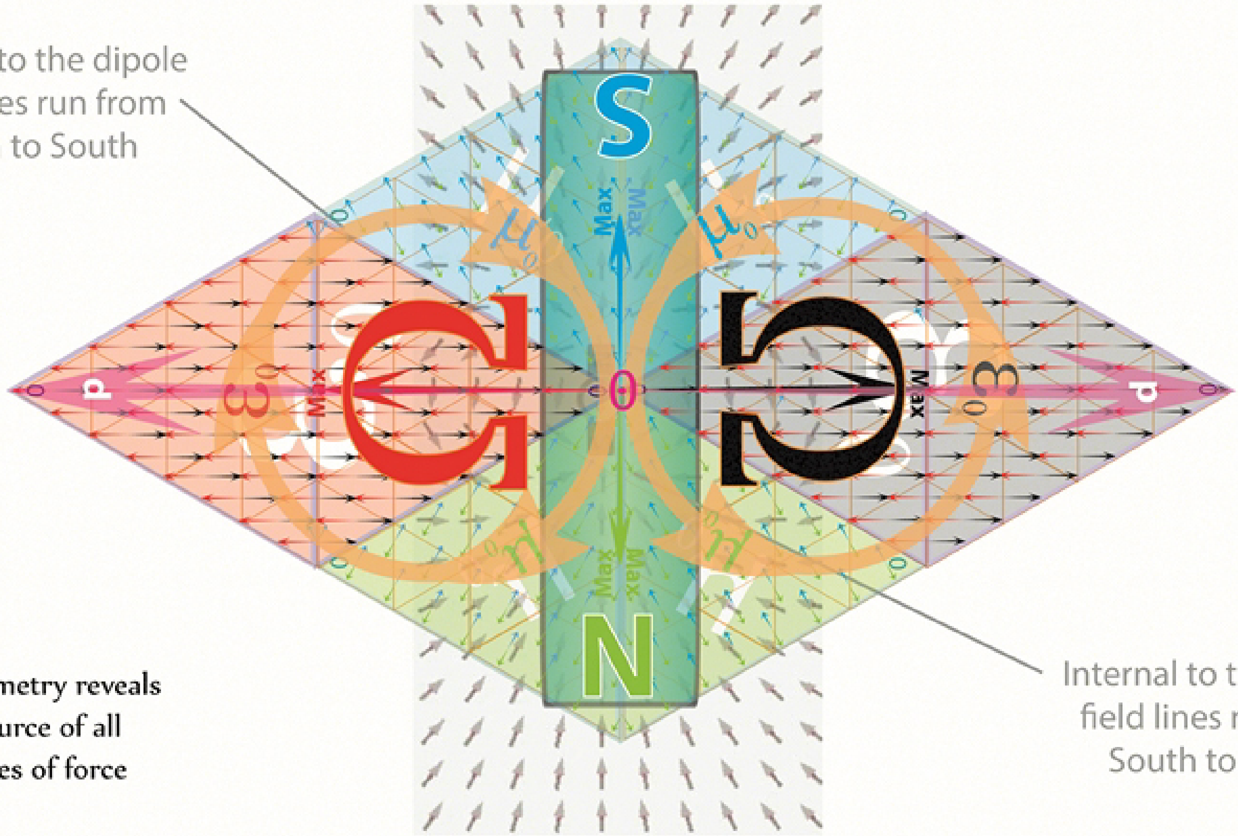
Michael Faraday

(22 September 1791 – 25 August 1867)

Magnetic South Poles have divergent south vectors and convergent north vectors

External to the dipole field lines run from North to South

Positive Electric fields have divergent positive E vectors and convergent negative E vectors



Negative Electric fields have divergent negative E vectors and convergent positive E vectors

Internal to the dipole field lines run from South to North

Tetryonic geometry reveals the true source of all EM field lines of force

Magnetic North Poles have divergent north vectors and convergent south vectors

Permanent Magnets can be viewed as neutral charge Electrostatic EM fields

Similar to conventional vs electron current flows Magnetic field vectors can be modelled with two directions of 'magnetic flux'

Parallel Magnetic Dipoles

Michael Faraday

(22 September 1791 – 25 August 1867)

James Clerk Maxwell

(13 June 1831 – 5 November 1879)

Magnetic lines of force are continuous and will always form closed loops.

Magnetic lines of force will never cross one another.

Parallel magnetic lines of force traveling in the same direction repel one another.

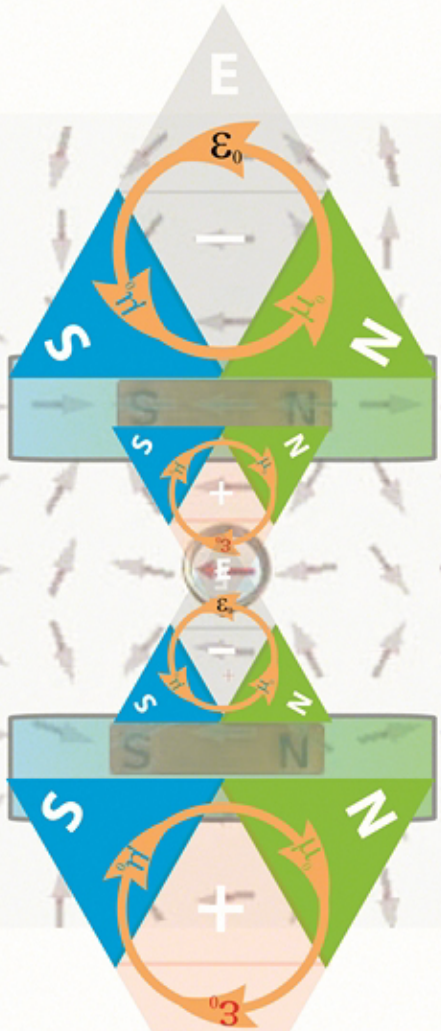
Parallel magnetic lines of force traveling in opposite directions tend to unite with each other and form into single lines traveling in a direction determined by the magnetic poles creating the lines of force.

Magnetic lines of force tend to shorten themselves.

Therefore, the magnetic lines of force existing between two unlike poles cause the poles to be pulled together.

Magnetic lines of force pass through all materials, both magnetic and nonmagnetic.

Magnetic lines of force always enter or leave a magnetic material at right angles to the surface



Maxwell had studied and commented on the field of electricity and magnetism as early as 1855/6 when "On Faraday's lines of force" was read to the Cambridge Philosophical Society.

The paper presented a simplified model of Faraday's work, and how the two phenomena were related. He reduced all of the current knowledge into a linked set of differential equations with 20 equations in 20 variables. [Quarterions]

This work was later published as "On physical lines of force" in March 1861.

In his 1864 paper "A dynamical theory of the electromagnetic field", Maxwell wrote, "The agreement of the results seems to show that light and magnetism are affections of the same substance, and that light is an electromagnetic disturbance propagated through the field according to electromagnetic laws

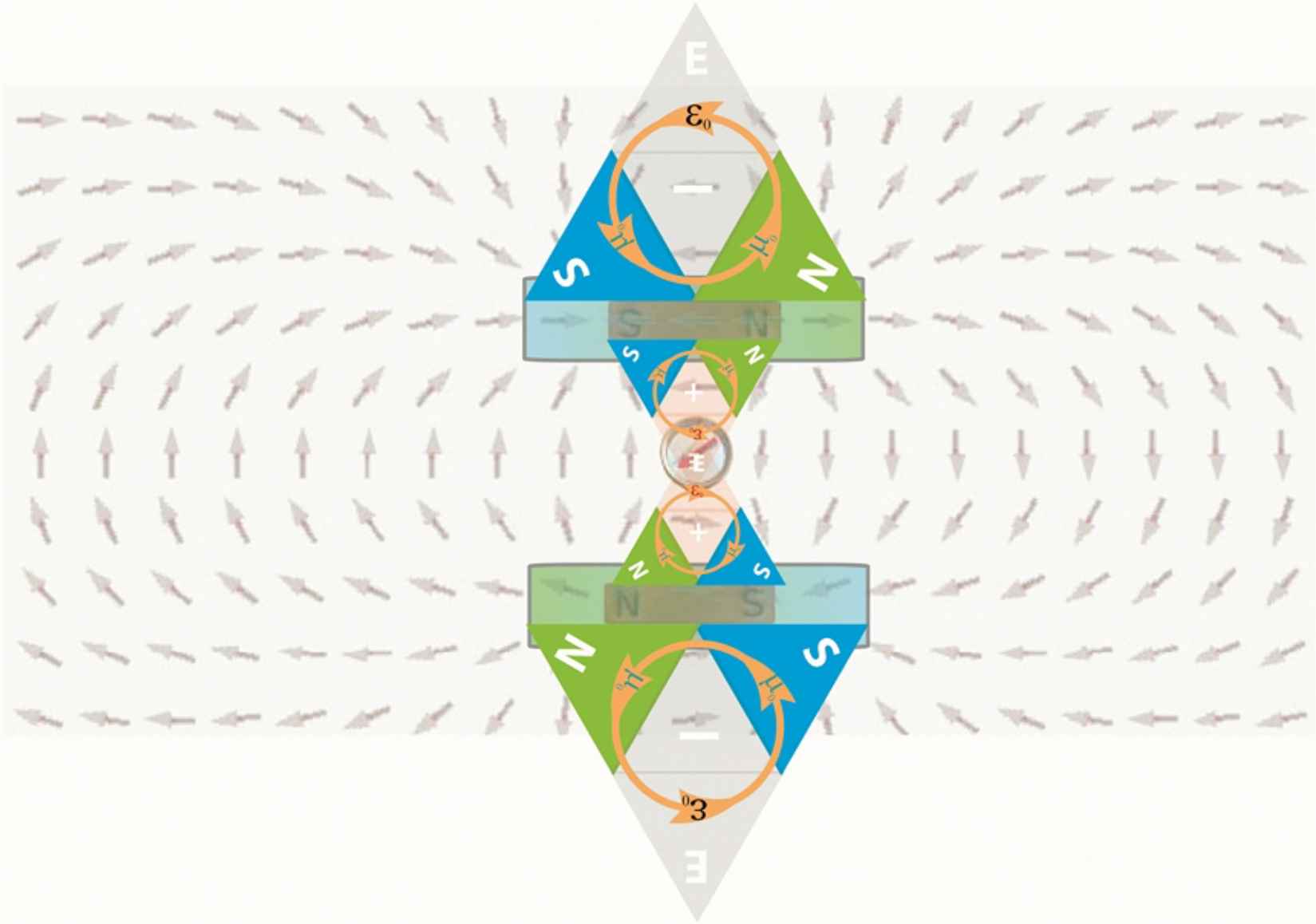
Maxwell showed that the equations predict the existence of waves of oscillating electric and magnetic fields that travel through empty space at a speed of 310,740,000 m/s.

His famous equations, in their modern form of four partial differential equations, first appeared in fully developed form in his textbook A Treatise on Electricity and Magnetism in 1873.

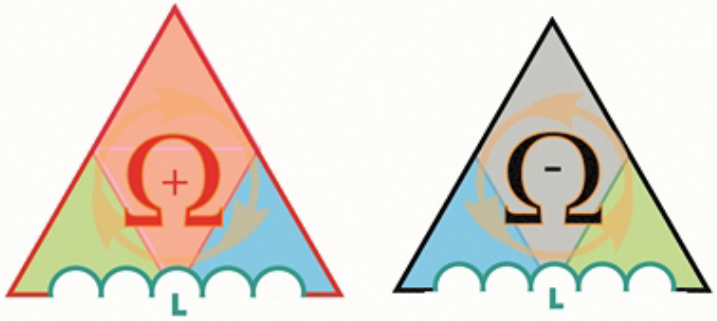
The specific features of Faraday's field concept, in its 'favourite' and most complete form, are that force is a substance, that it is the only substance and that all forces are interconvertible through various motions of the lines of force. These features of Faraday's 'favourite notion' were not carried on by Maxwell in his approach to the problem of finding a mathematical representation for the continuous transmission of electric and magnetic forces. Maxwell considered these electric and magnetic forces to be states of stress and strain in a mechanical aether, a notion further advanced by relativity theory with its 'stress energy' tensor math.

Tetryonics reveals lines of Force to be a direct result of the various superpositioned EM field geometries of equilateral mass-energy momenta

Anti-Parallel Magnetic Dipoles

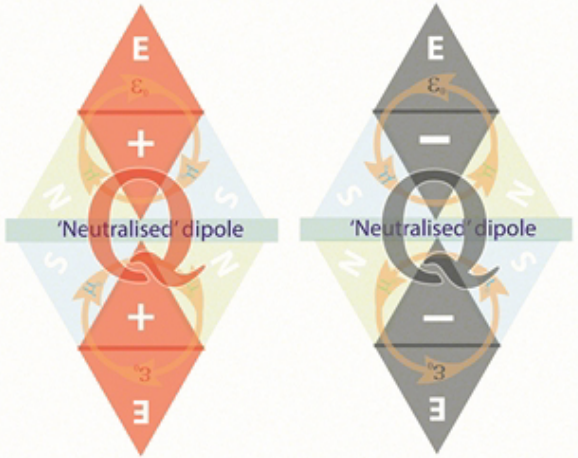


Magnetic Moments



Single ZPFs are
'ideal quantum inductor elements'

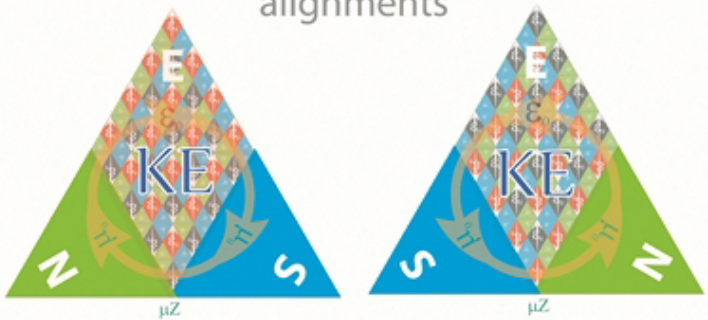
1
Electro-static Energies
Charges



All Matter in motion possesses kinetic energies
which are stored as Planck quanta in their KEM fields

The charge geometry of KEM fields are reflective
of the interactive component of the charged topology
of the particle in motion

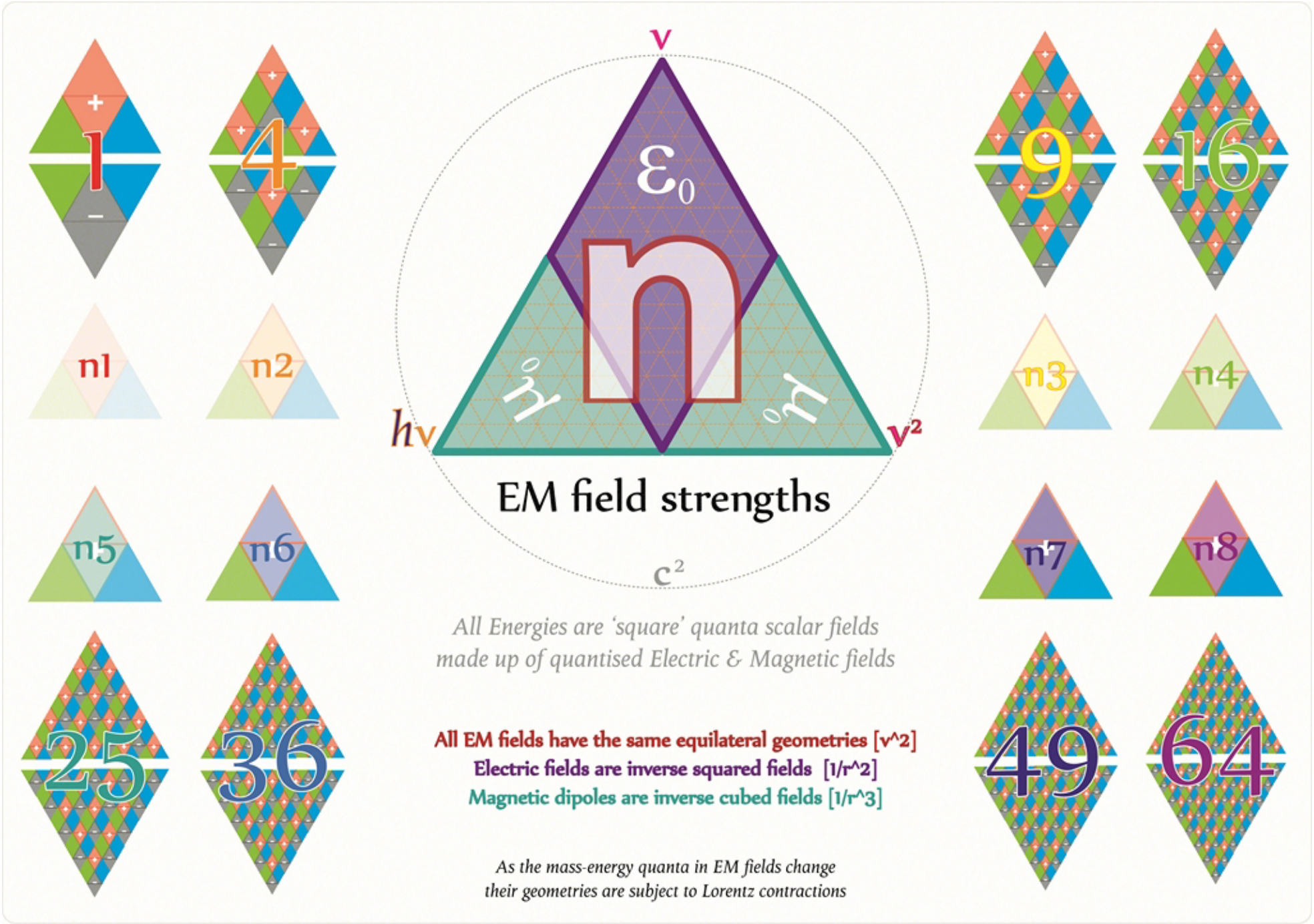
Each charge geometry
has distinct Magnetic dipole
alignments



which in turn can only create
2 distinct orientations [spins] of
magnetic moments

2
Magneto-static Energies
Kinetic Energies

ZPF sets can form inductively coupled
quantum Harmonic Oscillators



Electrostatic particle modeling

Tetryonic [4np] standing wave charge fields form electrostatic Particle topologies [Charged and Neutral Matter]

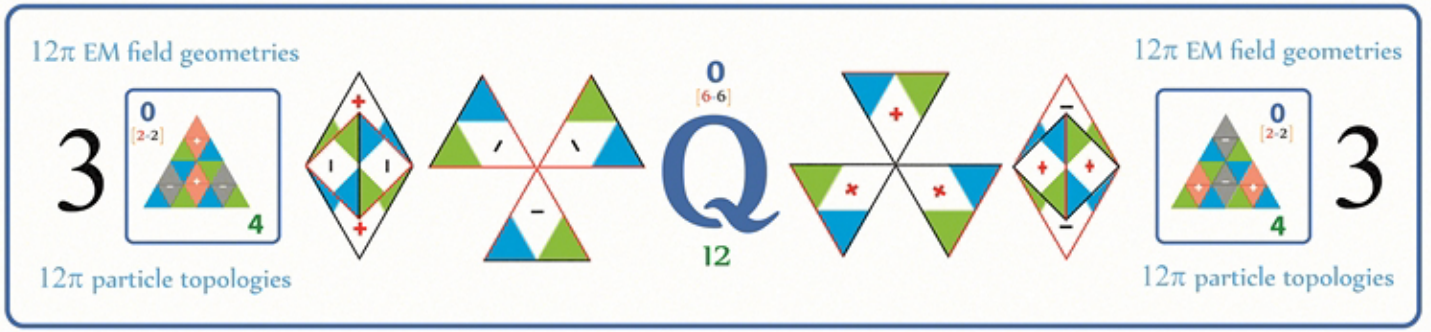
m EM mass-energy
Tetryonic field geometry

M Matter
tetryonic Matter topology

Non-neutral nett Tetryonic quanta

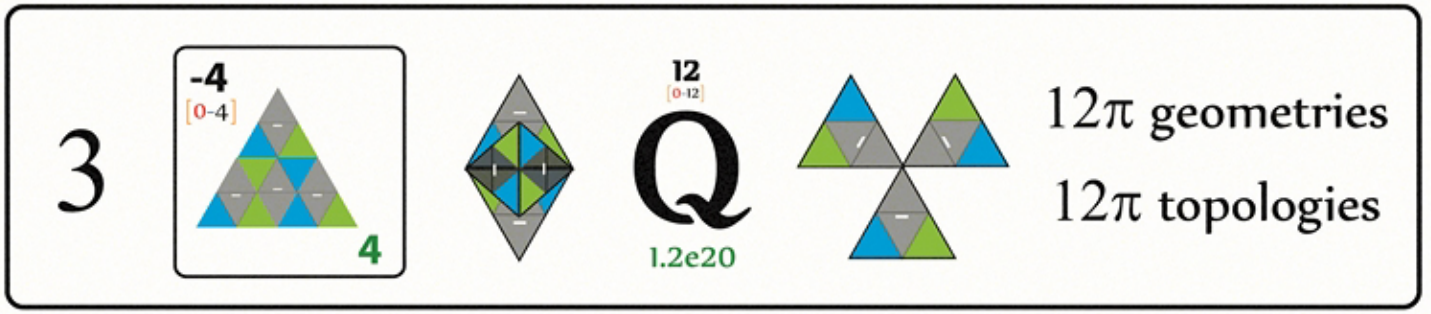
Positive Charge Particles

Equal numbers of opposite Tetryonic quanta



Neutral Charge Particles

Non-neutral nett Tetryonic quanta

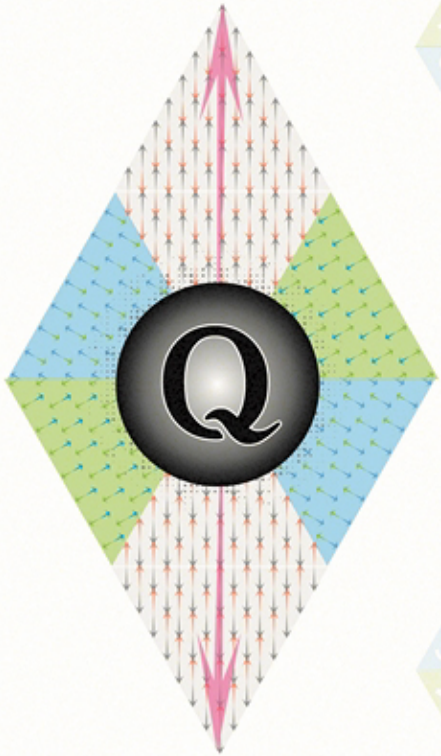


Negative Charge Particles

All particles in motion create secondary KEM field geometries [Kinetic energies and Magnetic moments]

Electro-static Fields

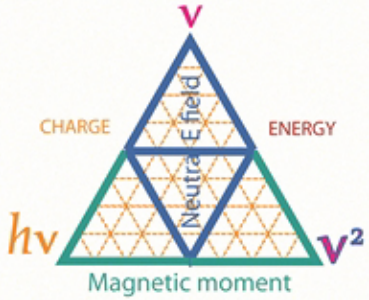
Momenta acting in oppose directions results in zero velocity



Zero Velocity equates to Zero nett Momentum

Stationary Charges have neutralised magnetic dipoles

The Kinetic Electric & Magnetic energies are contained in an KEM field extending from a charged particle in motion

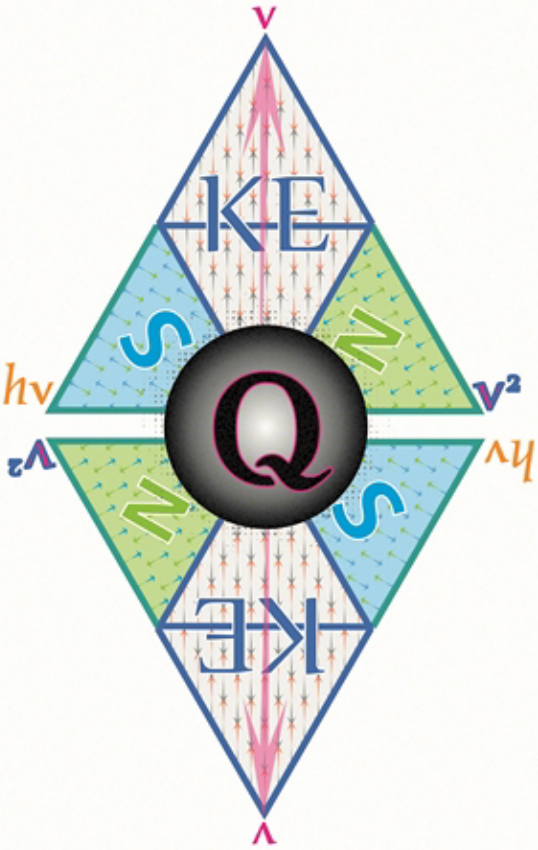


Charged particles in motion produce a Magnetic moment

Kinetic EM Fields

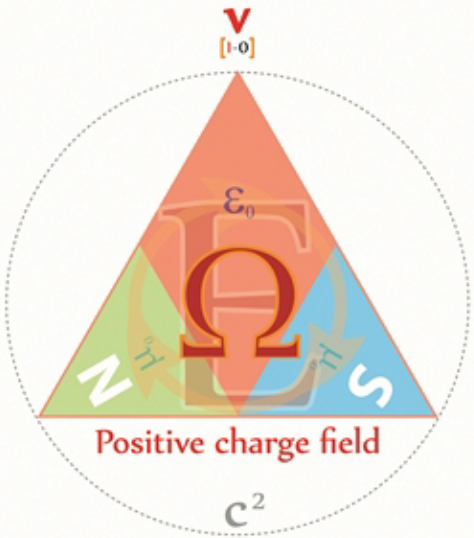
Moving Charges have neutral KE fields and Magnetic moments

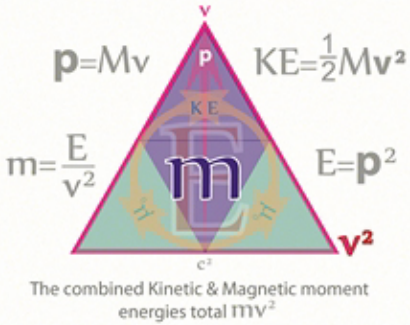
Motion in any direction produces Kinetic & Magnetic energies

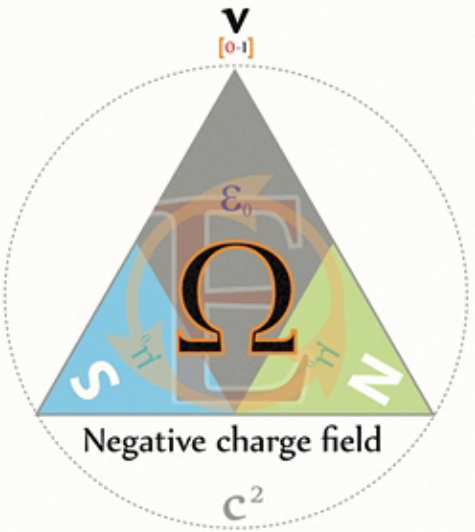


The Strength of the Kinetic Electric field & Magnetic moment is directly proportional to the square of the particle's Velocity

Electric & Kinetic Fields



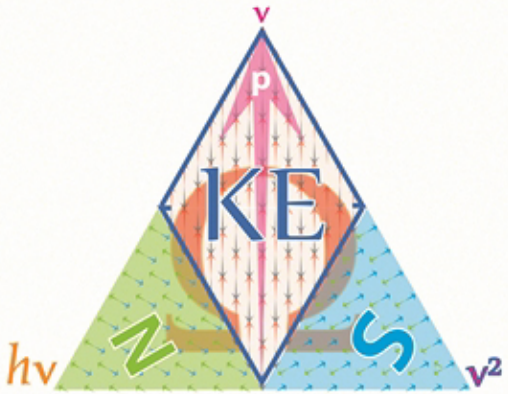




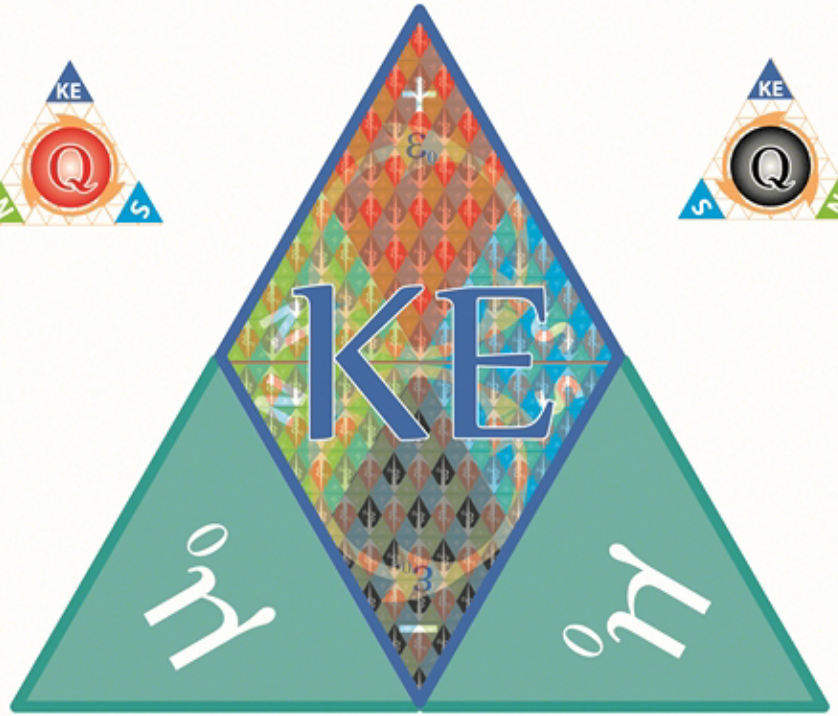
Kinetic Energy field

KEM field created by a Positive charged body

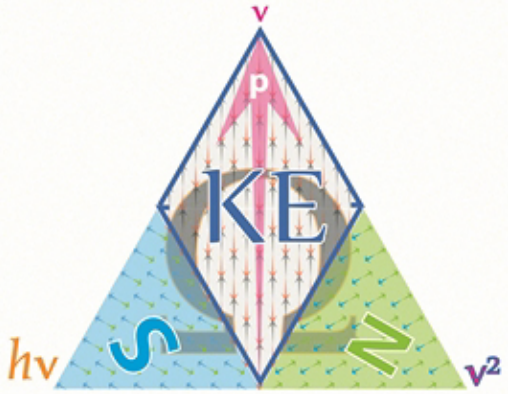
KEM field created by a Negative charged body



Positive charges repelled
Negative charges attracted



Neutralised Electric fields
Enhanced Magnetic moments



Negative charges repelled
Positive charges attracted

EM & KEM force vectors

All mass-energy quanta are ideal quantum Inductors

The E&M force vectors create orthogonal equilateral EM Fields

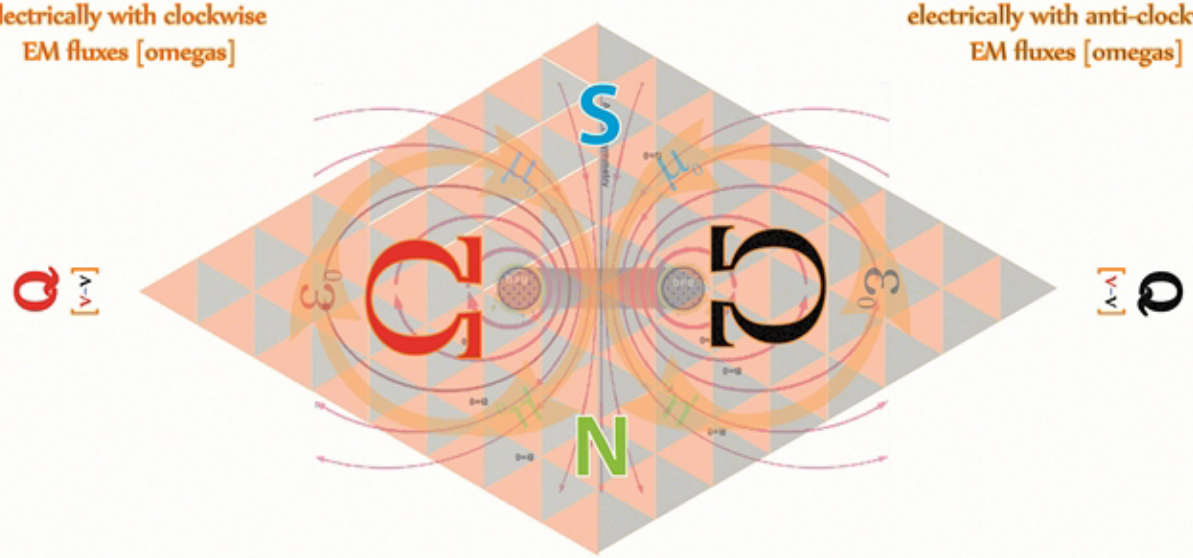
Electric fields propogate orthogonally to the Magnetic dipole field

Magnetic flux external to the Magnetic dipole flows from North to South & Internal to a Magnetic dipole it flows South to North

When ZPFs combine to form a Magnetostatic dipole they form orthagonal magnetic vectors

Positive charge can be modelled electrically with clockwise EM fluxes [omegas]

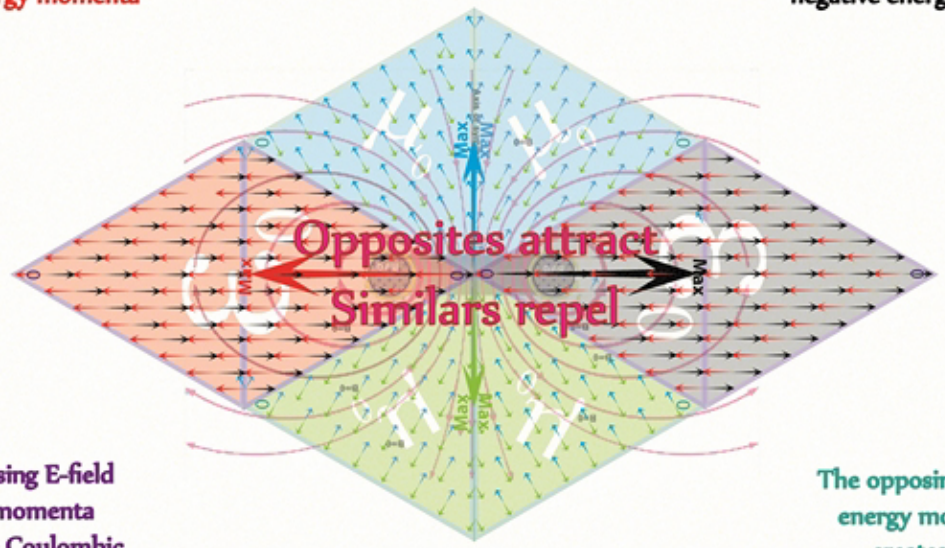
Negative charge can be modelled electrically with anti-clockwise EM fluxes [omegas]



Positive charge fields of interaction result from an excess of divergent positive energy momenta

Equal energy-momenta in opposition create static fields

Negative charge fields of interaction result from an excess of divergent negative energy momenta



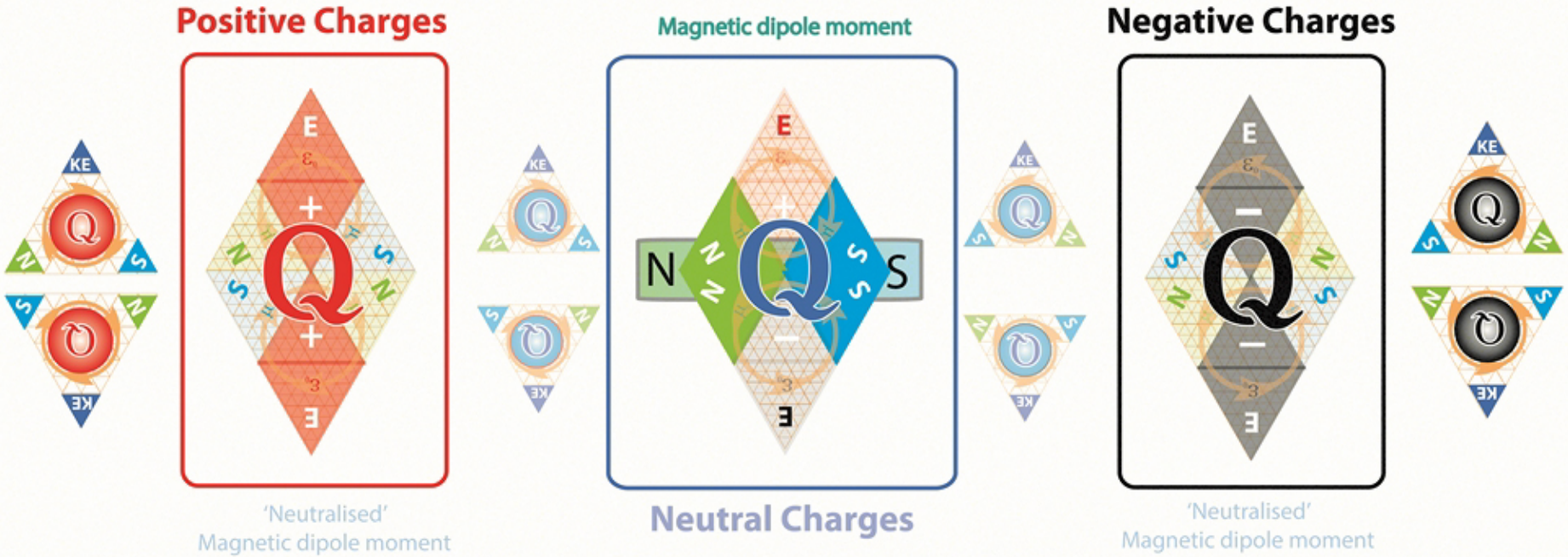
The opposing E-field energy momenta creates the Coulombic Law of Interaction

When E field is at Maximum - B field is at Minimum
when B field is at Maximum - E field is at Minimum

The opposing M-field energy momenta creates the Lorentz Force

EM Forces and ZPFs

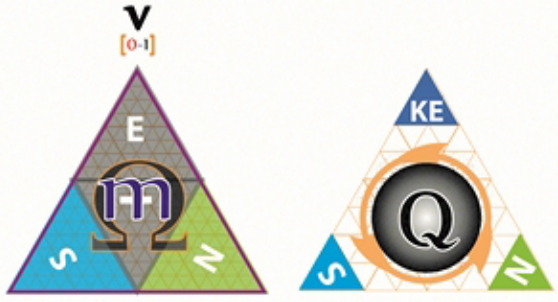
ZPF quanta can combine in differing combinations
to produce 3 distinct charged sets



All EM mass-Energy-Matter & forces can be modelled using Tetryonic geometries

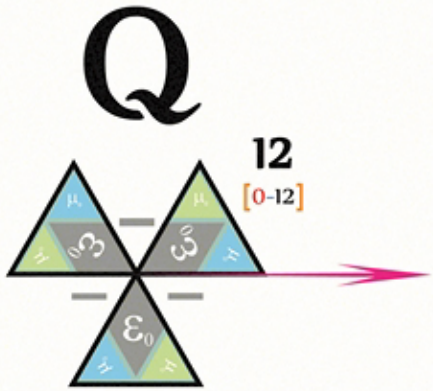
Zero Point Field EM geometry is the foundation for all the EM forces comprising, and acting between particles of Matter

Lorentz force, Lenz's Law, Right/Left Hand rules, etc can all be easily replaced with this simple geometric model



Kinetic EM fields

All Kinetic EM fields resulting from motion have charge field geometries resulting from the charged Matter geometry of the particle in motion



Positive charge particle topologies produce positive KEM fields

KEM field charge geometries do not contribute to the nett charge

Negative charge particle topologies produce negative KEM fields

Negative KEM field geometries viewed from different angles are positive KEM fields

Positive KEM field geometries viewed from different angles are negative KEM fields

As a direct result of the KEM field being a EM field permeating free space the symmetry of EM fields results in KEM field geometries being viewed as having neutral KE fields with a magnetic moment

Point Particles and KEM fields

e+

12

12

12n

e-

12

Charged rest mass-Matter topology

Quarks T[8π]
Leptons T[12π]

velocity invariant rest mass-Matter has a standing wave topology

Baryons T[20π]

Charged Leptons at rest are Electric field standing waves
(with neutral Magnetic poles)
KE from motion generates a Magnetic Moment

Bosons nπ [ODD]

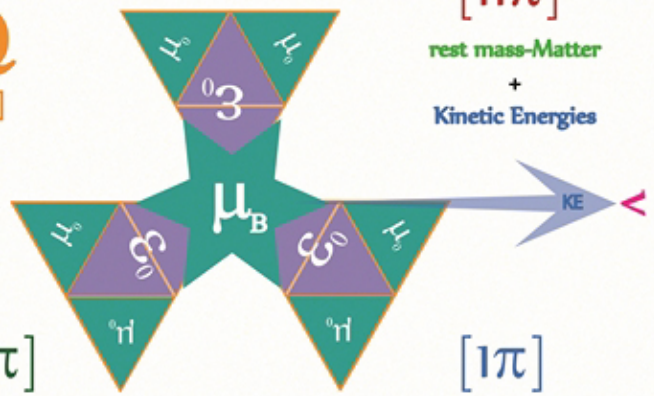
Kinetic EM field geometry is divergent from a particle's rest Matter topology

Photons nπ [EVEN]

Charge

Q

[v-v]



[nπ]

rest mass-Matter
+
Kinetic Energies

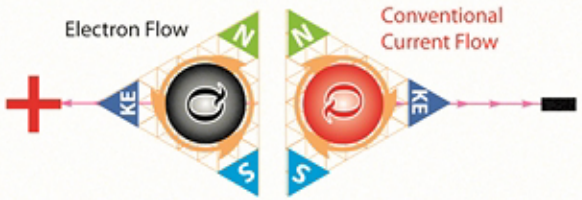
[12π]

rest Matter topology

[1π]

Kinetic Energy geometry

KEM fields of Matter in motion



ZPFs geometries can be used
to model the KEM fields
of charged particles

2D charged EM field geometries create Matter topologies

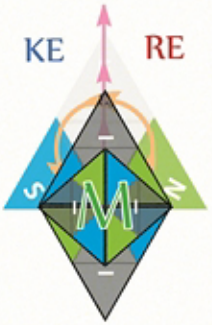
tetryons [4π]	tetryons [4π]
quarks [12π]	quarks [8π]
leptons [12π]	leptons [12π]
Baryons [36π]	Baryons [20π]
Elements [84π]	Elements [54π]

The mass-energy content of all charged fascia constituting massive particles have momenta that is proportional to the intrinsic velocity [c] of the standing wave

rest Matter

Electro-static particles
have neutralised
magnetic dipoles

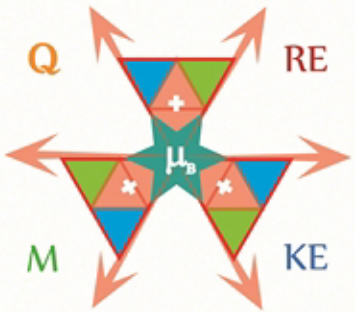
Relativistic mass



Kinetic motion
produces
Magnetic moments

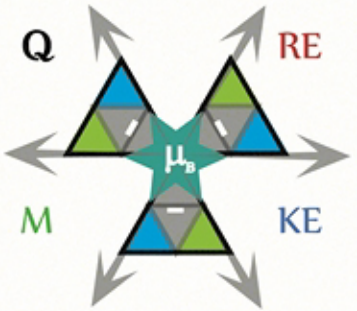
Spherical point charges do NOT exist

positron

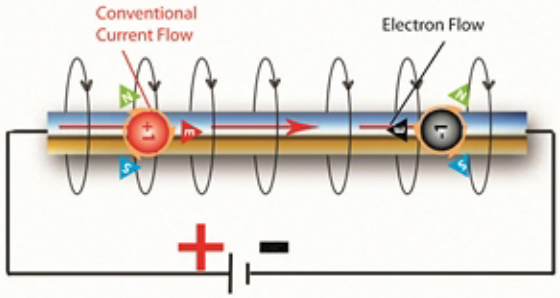


3D Matter is a standing-wave topology resulting from radiant 2D EM geometries
All leptons and quarks both have 12 charged fasica geometries,
[but differing mass-Matter-particle topologies]

electron

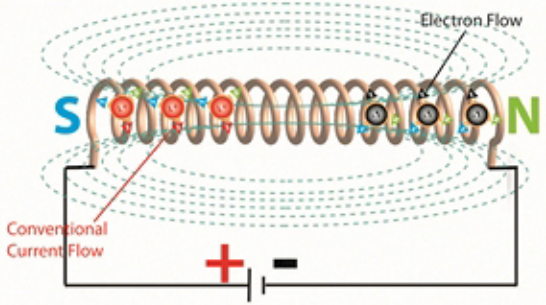


All EM fields resulting from Kinetic Energy (motion) radiate outwards
(the Intrinsic KEM fields contain both Negative and Positive Energy momenta quanta)



Magnetic field
around a
current carrying
conductor

Magnetic field
produced
by a
Solenoid

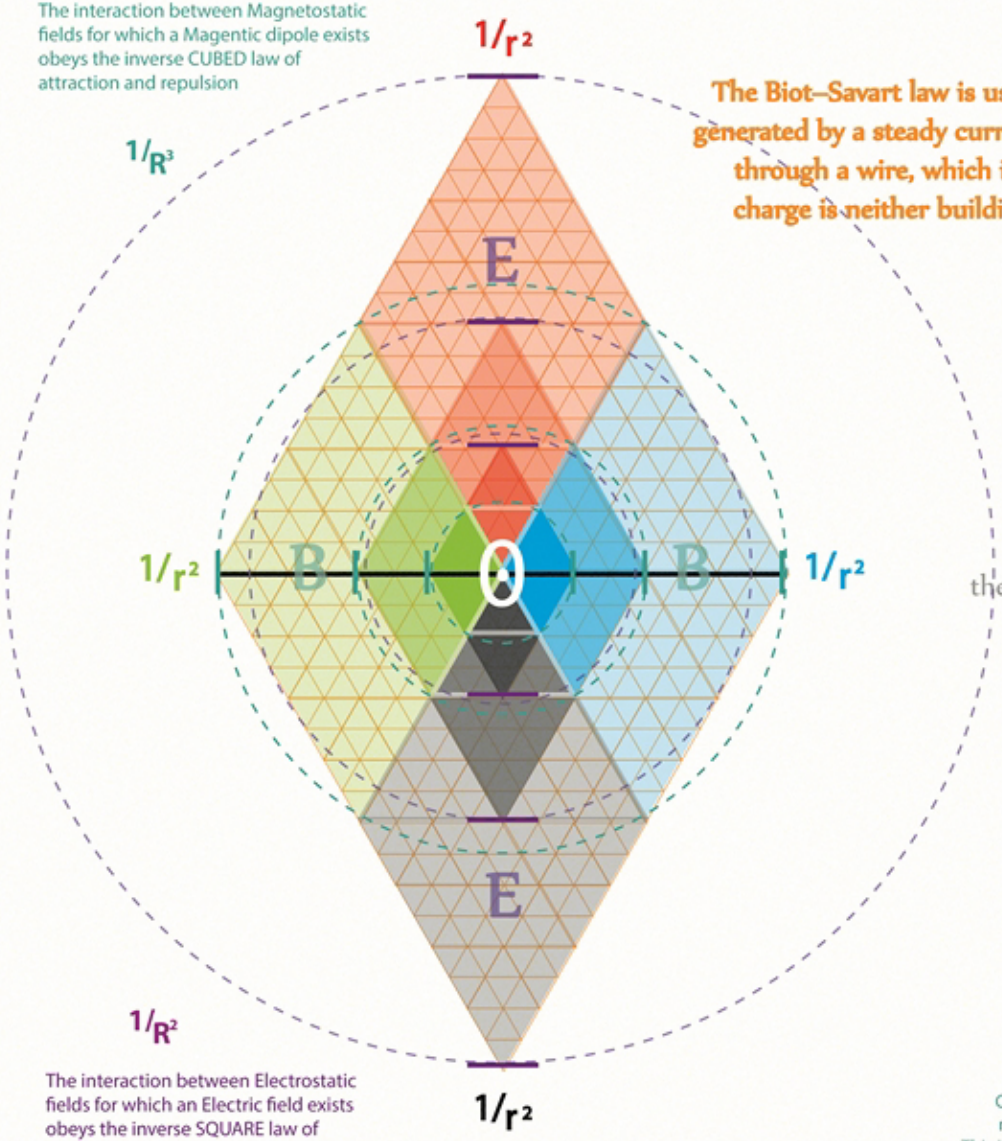


μ_0 There is an inverse cube relationship between magnetic field strength and magnetic field force with respect to distance from the magnet. ε_0

Biot-Savart Law

is an equation in electromagnetism that describes the magnetic field B generated by an electric current.

The interaction between Magnetostatic fields for which a Magentic dipole exists obeys the inverse CUBED law of attraction and repulsion



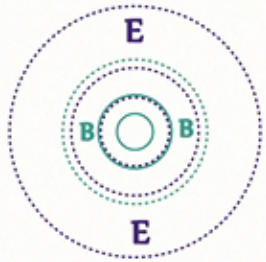
The interaction between Electrostatic fields for which an Electric field exists obeys the inverse SQUARE law of attraction and repulsion

The Biot–Savart law is used to compute the magnetic field generated by a steady current, i.e. a continual flow of charges, through a wire, which is constant in time and in which charge is neither building up nor depleting at any point

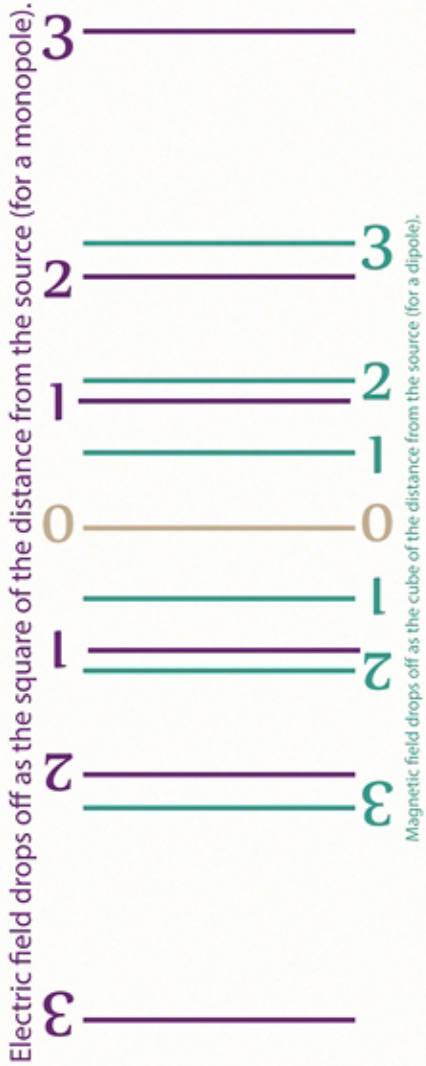
$$\mathbf{B} = \int \frac{\mu_0}{4\pi} \frac{Id\mathbf{l} \times \mathbf{r}}{|r|^3},$$

The radial distance between Magnetic dipoles is less than the distance between Electric dipoles

$$\mathbf{B} = \int \frac{\mu_0}{4\pi} \frac{Id\mathbf{l} \times \hat{\mathbf{r}}}{|r|^2},$$



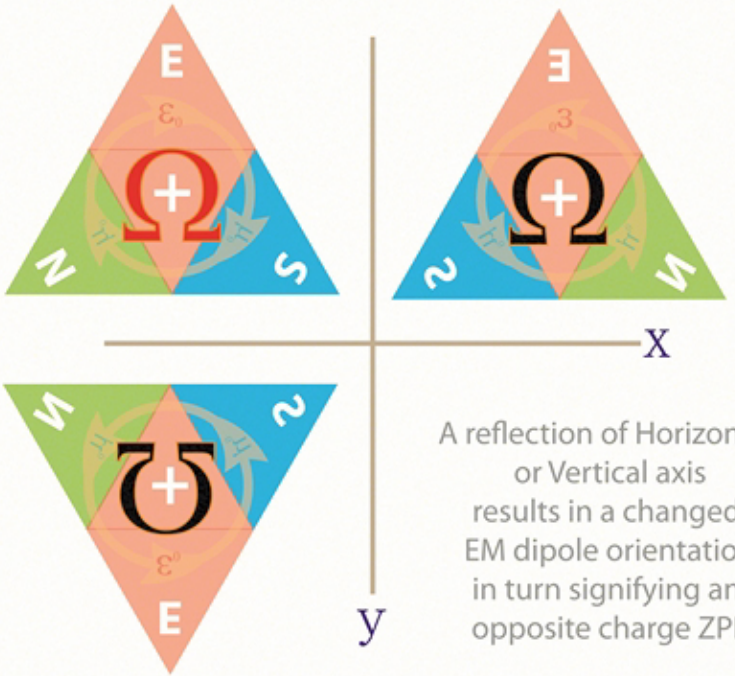
Close to one pole of a magnet, B field strength resembles the inverse square of Electric force. This is because it behaves as a "unipolar magnetic field"



Quantum Chirality

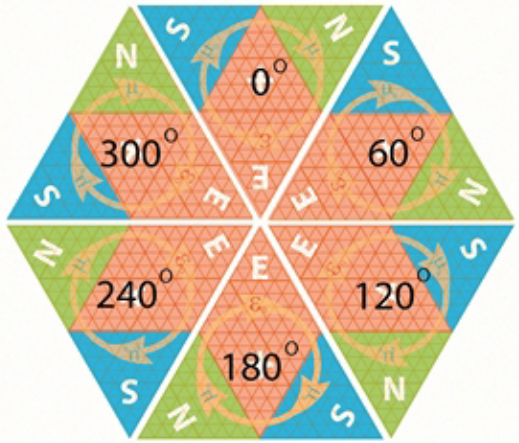
Its the equilateral geometry of quantised angular momenta that creates chirality in physics

Mirror imaged Planck quanta are NOT identical to each other



A reflection of Horizontal or Vertical axis results in a changed EM dipole orientation in turn signifying an opposite charge ZPF

The equilateral geometry of any EM field or Matter particle is determined by its nett Coulombic charge



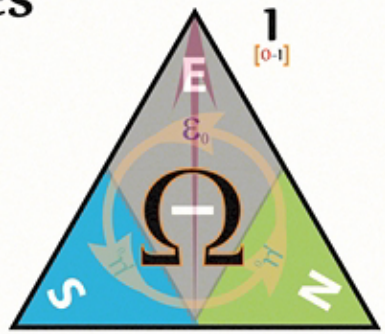
Any nominal rotation about an axis results in a re-orientation of the electromagnetic vectors but does not affect any change to charge etc.

Irrespective of orientation or rotation:

Positive charge fields have clockwise inductive flux geometries

Negative charge fields have counter-clockwise inductive flux geometries

Pi radian - energy momenta geometries

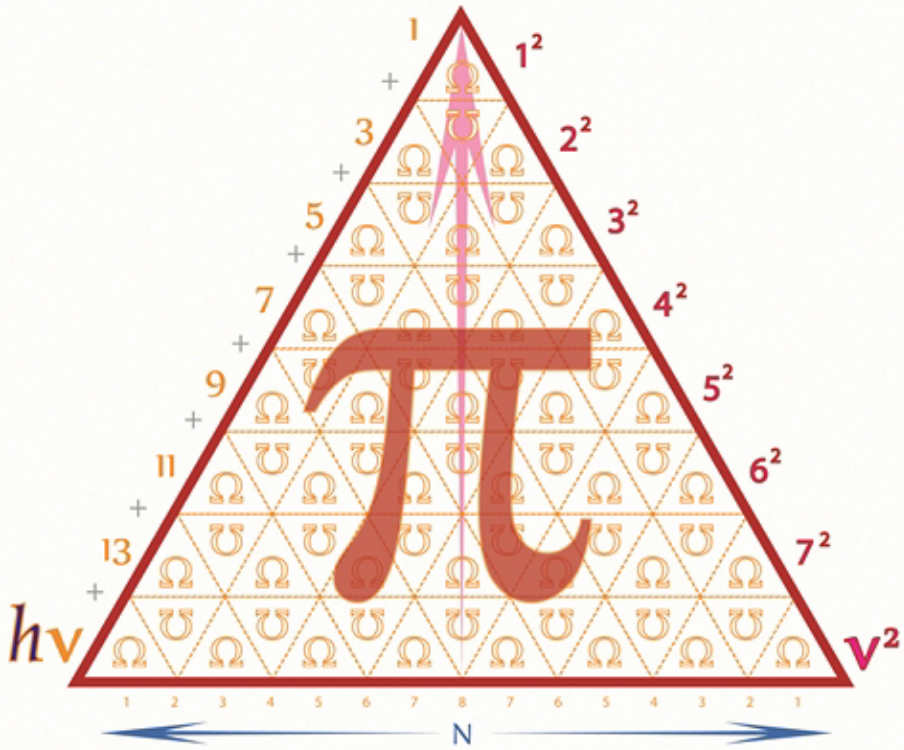


mass-energy momenta

Q

nett charge

[v-v]

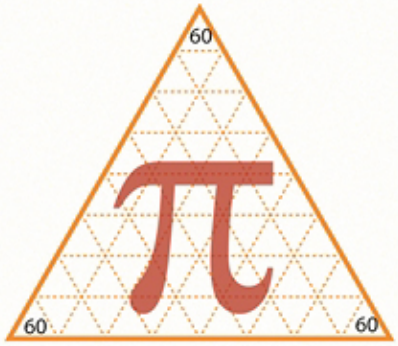


π

pi radian energy geometries

Ω

quantised angular momentum



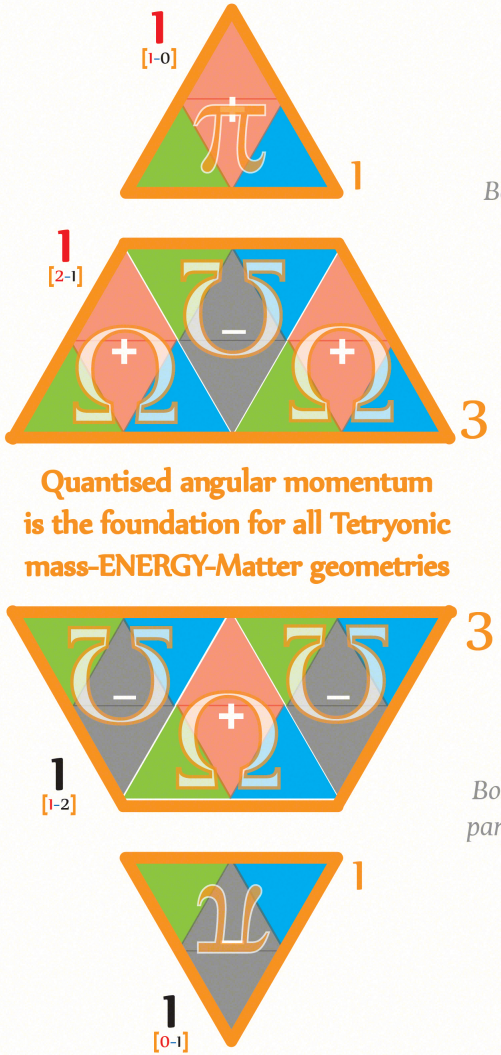
$$n\pi \left[m\Omega v \right]^2$$

energy — mass — velocity — Planck quanta

π radian geometries are comprised of equilateral mass momenta Ω

ZPFs and Bosons

ZPFs are Planck energy quantum elements



Quantised angular momentum is the foundation for all Tetryonic mass-ENERGY-Matter geometries

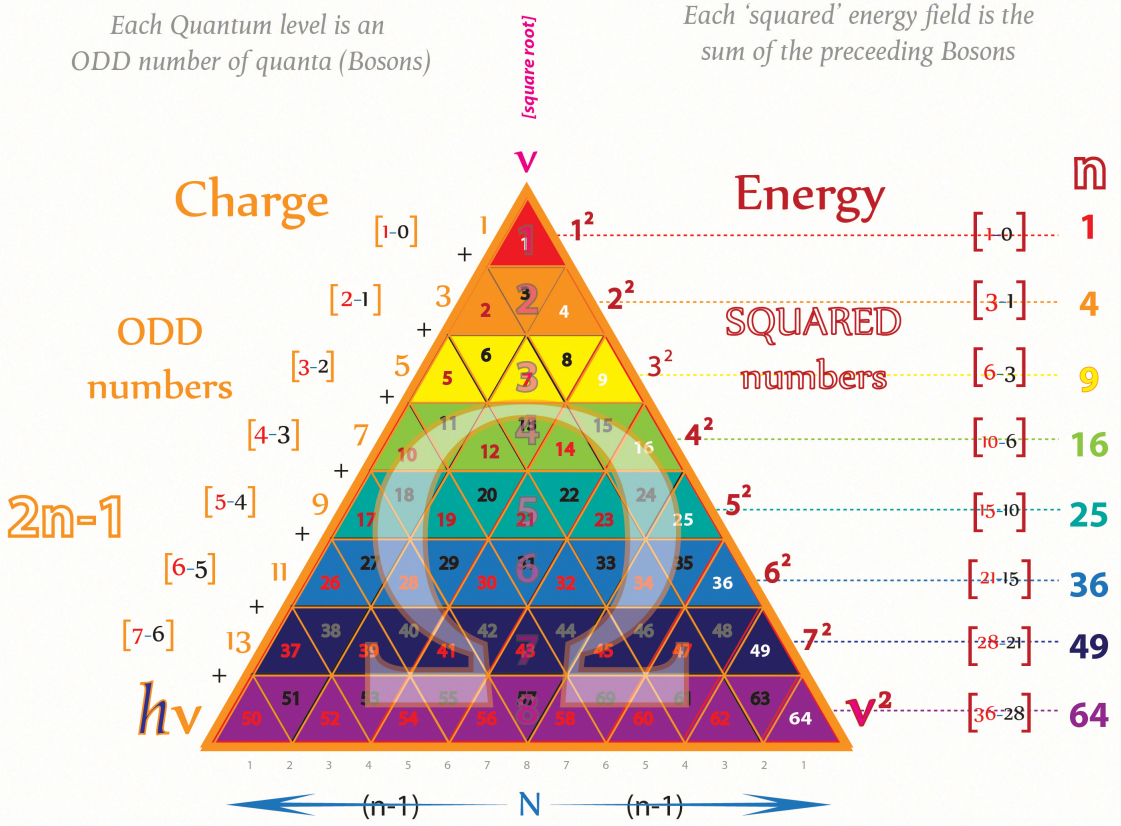
ZPFs are the quanta geometry for Charge, Bosons and Energy

Bosons are transverse Quantum levels

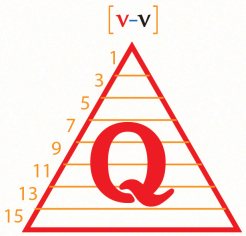
Bosons are the exchange particles for the EM force

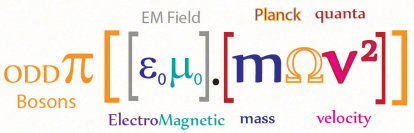
Each Quantum level is an ODD number of quanta (Bosons)

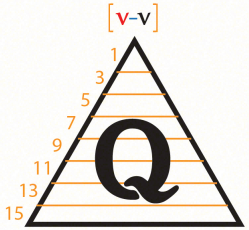
Each 'squared' energy field is the sum of the preceeding Bosons



The charged quanta in all mass-Energy geometries create a NORMAL Distributions







Bosons form the geometry of Quantum Levels

$$W^{+} = n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

Force carrier for Positive charge particles

W^{+} Boson

$$\text{ODD}\,\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

CHARGE carrier Bosons
are ODD number quanta

Bosons

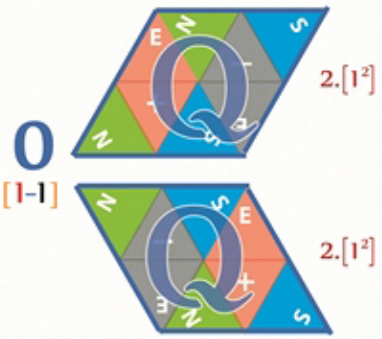
form unit charge Quantum levels that facilitate EM induction between mass-Energy-Matter

Neutral Z Bosons and Photons
are EVEN quanta Bosons

$$\text{EVEN}\,\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

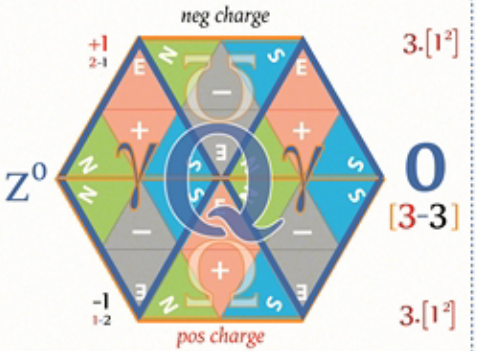
Neutral charge parallelogram geometry EM force carriers



Z^0 Boson

Neutral Z Bosons can be formed by combining EVEN numbers of W Bosons

They are EVEN numbered alternate geometry Photons



Photons are alternate (diamond) EM geometries formed from Z Bosons

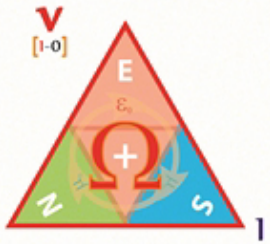
W^{-} Boson

Force carrier for Negative charge particles

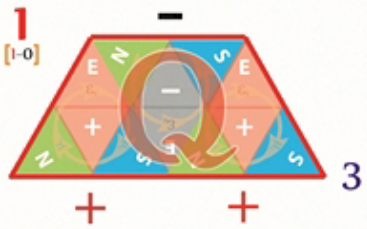
$$W^{-} = n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

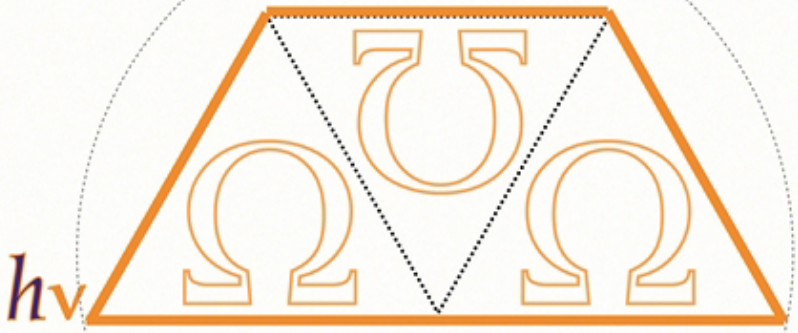
Bosons are charge carriers

[the geometric foundation of quantum levels]



W+ Positive charge carrier



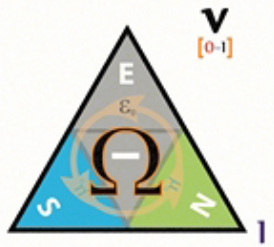


hν =1,3,5,7,9,11,13,15,17,19,21, ...

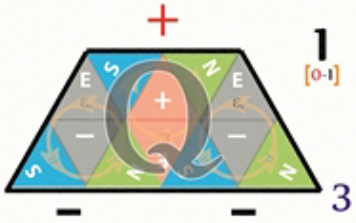
$$E = n.h\nu$$

Planck's Heat Law

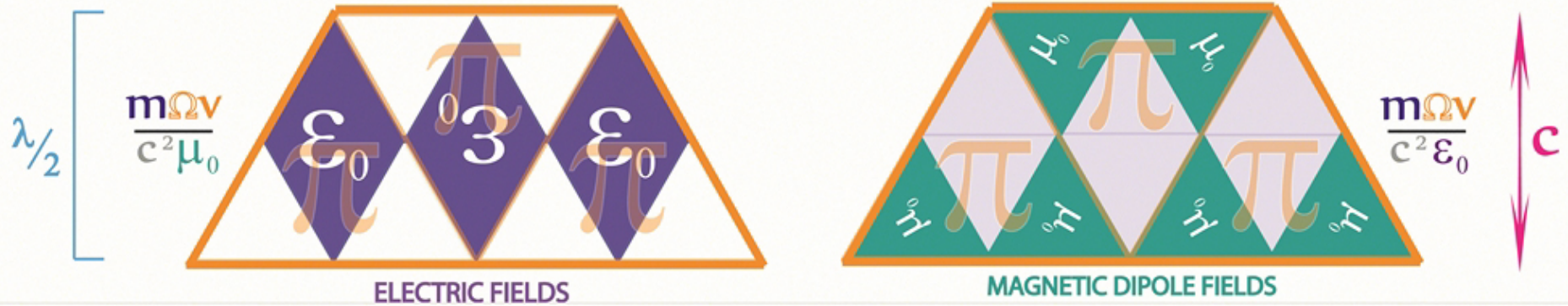
c^2



Negative charge carrier W-



All Bosons have ODD quanta trapazoidal charged EM mass-energy geometries



Boson Frequencies

All Bosons are 1/2 wavelength EM fields with ODD number quanta
They are the geometric basis for transverse EM field Quantum levels

$$\text{ODD}\,\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM Field (ElectroMagnetic) · Planck quanta (mass, velocity) · Bosons

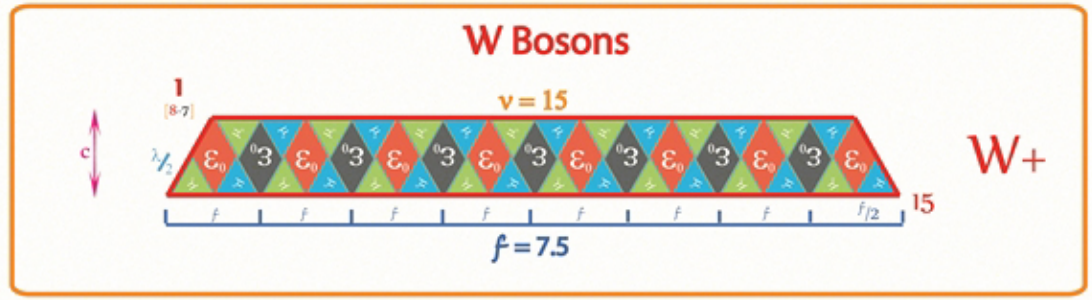
W Bosons are comprised of ODD number quanta

Bosons are TRANSVERSE Charge carriers

ODD #

$$Q$$

$$n\pi\left[\left[m\Omega v^2\right]\right]$$
Planck quanta (mass, velocity)

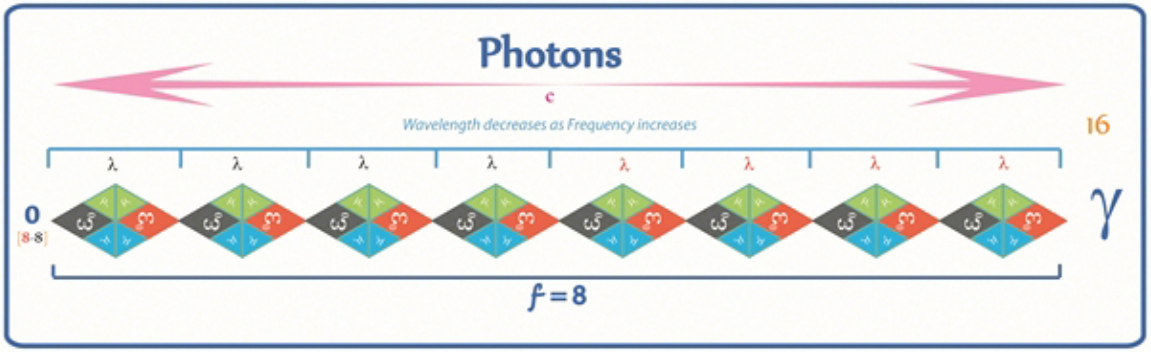


Neutral Z BOSONS and PHOTONS have differing EM geometries

EVEN #

$$Q$$

$$2n\pi\left[\left[m\Omega v^2\right]\right]$$
Planck quanta (mass, velocity)

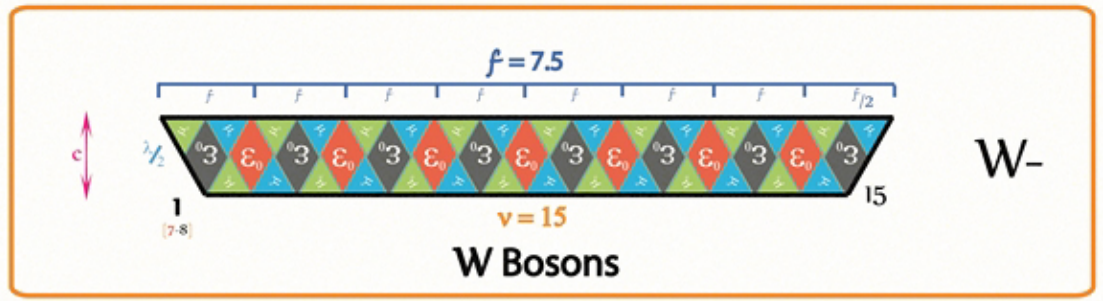


Photons are LONGITUDINAL neutral EM force carriers resulting from Bosons

ODD #

$$Q$$

$$n\pi\left[\left[m\Omega v^2\right]\right]$$
Planck quanta (mass, velocity)



EM waves are comprised of EVEN number quanta [Photons]

$$\text{EVEN}\,\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM Field (ElectroMagnetic) · Planck quanta (mass, velocity) · EM waves

Boson Waveforms

W The Electro-weak force is the result of Bosons interacting along their edge of Permeability

Boson exchange is the basis of Electro-Magnetic Induction & Charge transfer

S

The Strong Colour Force is the result of Bosons interacting via their their Electric charge fascia

All ODD Ω geometries [bosons] create a quantum of charge

Positive charge carrier

+1

W+

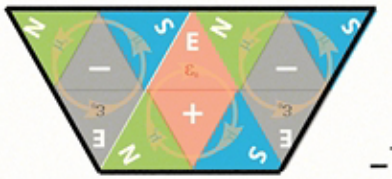
ODD number quanta

All charges are comprised of odd numbered Bosons

[each Boson is a Quantum level]

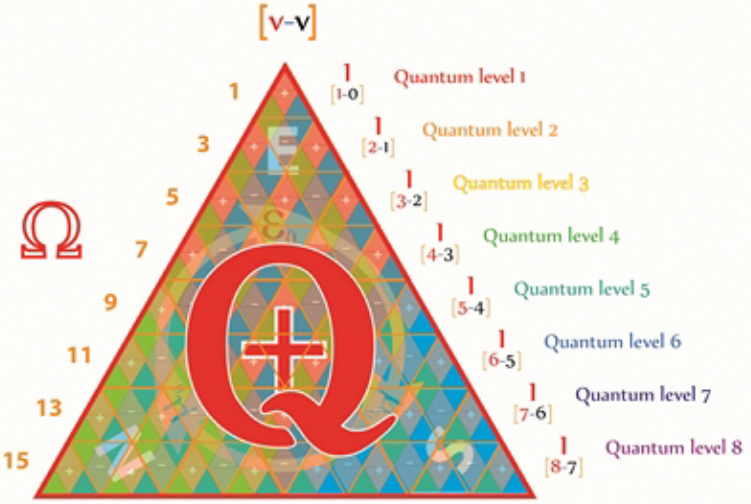
ODD number quanta

W-



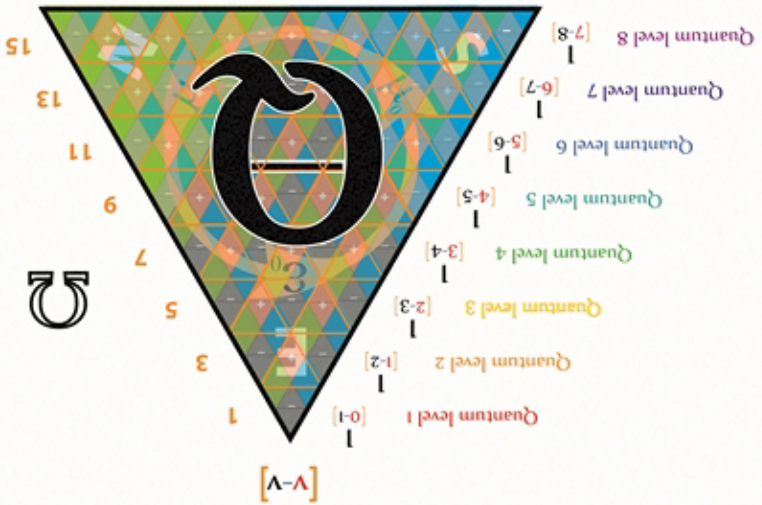
-1

Negative charge carrier

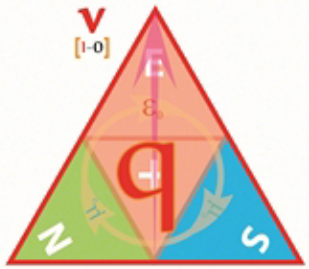


Integral W Bosons form square Energy geometries

Separated energy geometries create an electromotive force



Bosons



Positive Charges have nett
positive quantised angular momenta

Positive Bosons

$$\text{ODD}\pi \text{ Bosons } \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

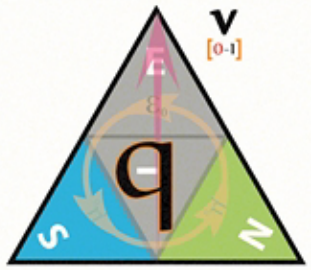
EM Field · Planck · quanta · ElectroMagnetic · mass · velocity

Bosons are the geometry of Quantum Levels

Each quantum Level is
a unit of Charge

Negative Bosons

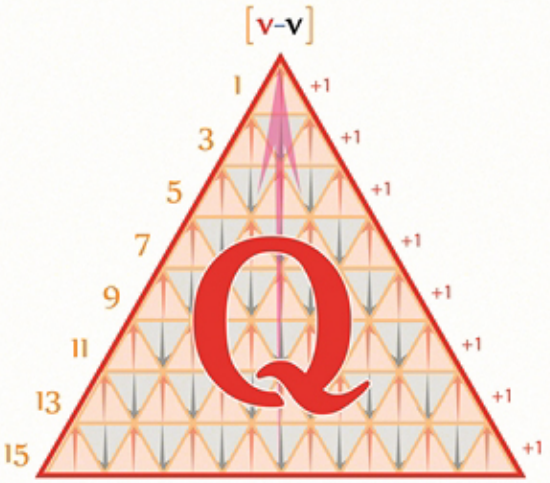
Negative Charges have nett
negative quantised angular momenta



Bosons are
TRANSVERSE
EM fields [levels]

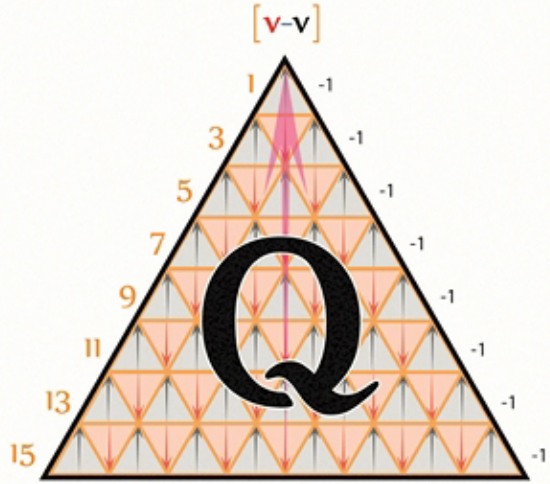
nett Charge
is a SCALAR
EM field property

Charge



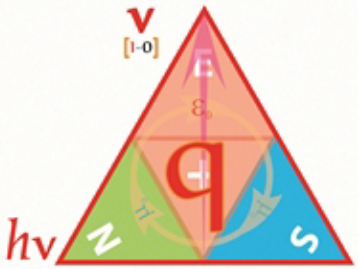
Positive Charge field

Charge is a measure of the nett quantised angular momenta - energy geometry of any given region of Space-time



Negative Charge field

Bosons



Positive Charges have nett
positive quantised angular momenta

Positive Bosons

$$\text{ODD}\pi \text{ Bosons } \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

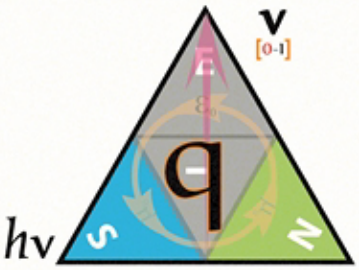
EM Field — Planck quanta — ElectroMagnetic — mass — velocity

Bosons are the geometry of Quantum Levels

Each quantum Level is
a unit of Charge

Negative Bosons

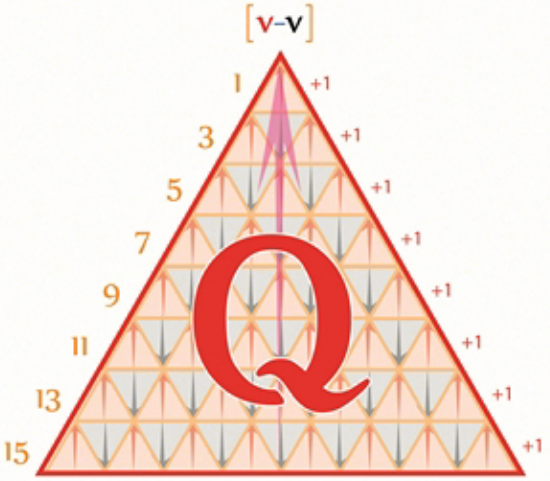
Negative Charges have nett
negative quantised angular momenta



Bosons are
TRANSVERSE
EM fields [levels]

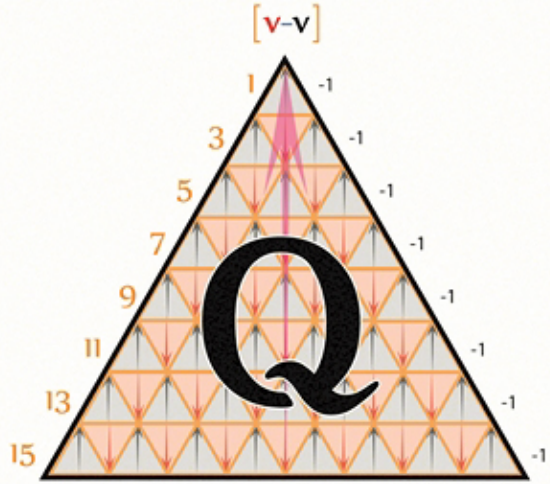
nett Charge
is a SCALAR
EM field property

Charge

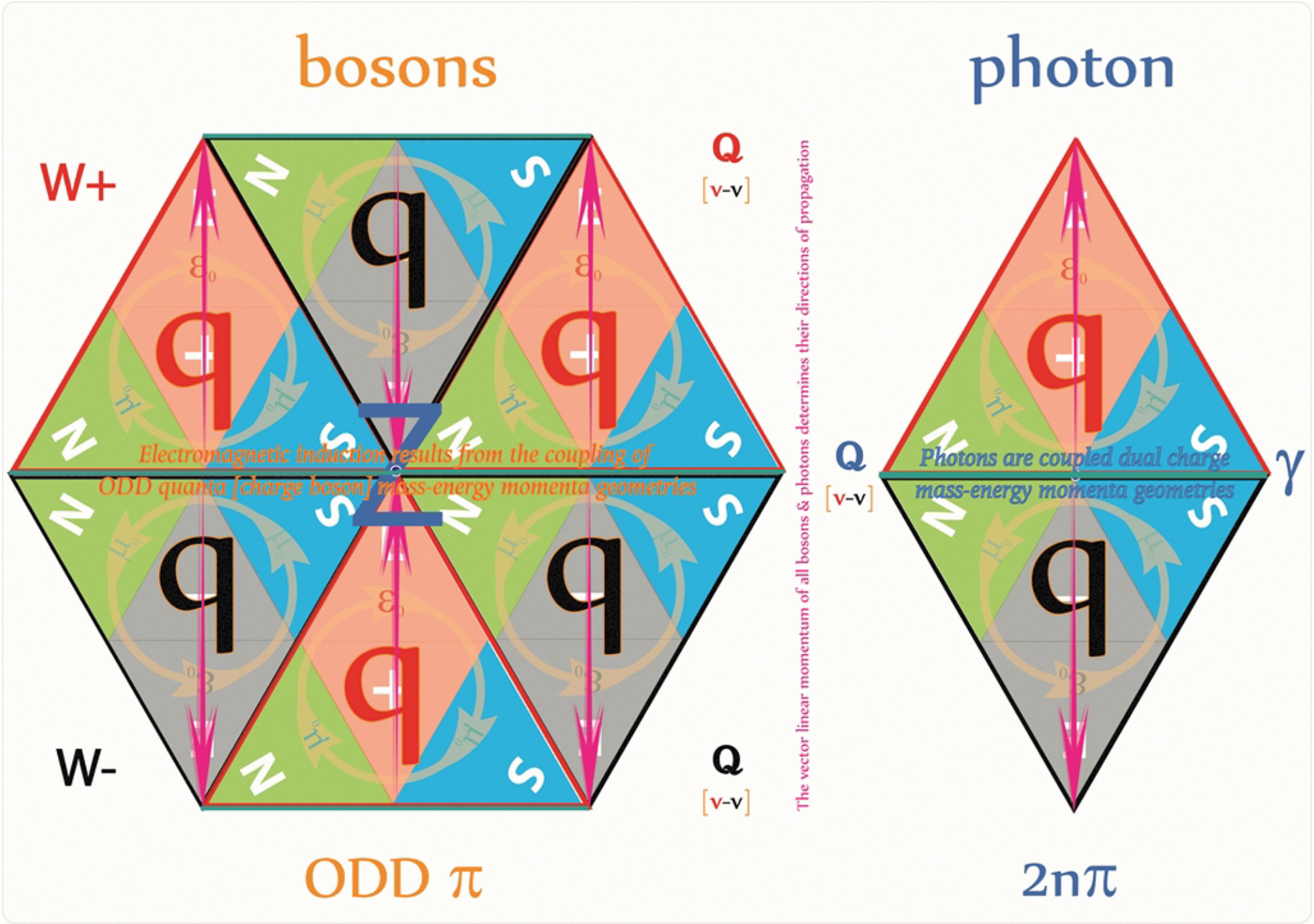


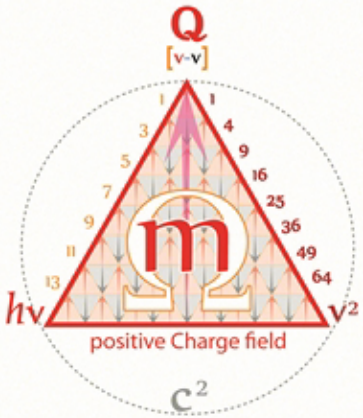
Positive Charge field

Charge is a measure of the nett quantised angular momenta - energy geometry of any given region of Space-time



Negative Charge field





mass geometries

$$m \quad n\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right] \quad \mathbb{E}$$

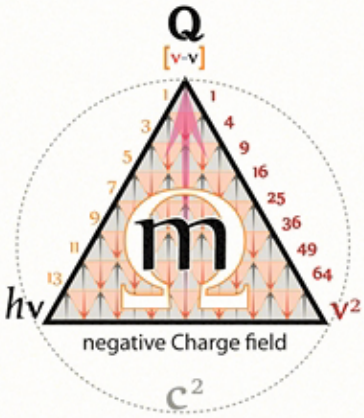
mass (energy) · spatial field (impedance) · Planck quanta (mass, velocity)

mass-energy

the distribution of energy momenta in EM fields creates charged fascia

charged planar mass-energy momenta form

radiant 2D equilateral geometries



energy momenta per second

$$\rho \qquad \frac{E}{c^2} = m_{mass} \qquad \mathbb{E}_{ENERGY} \qquad M_{Matter} = \frac{E}{c^4} \qquad \rho$$

energy momenta per second squared

mass-energy geometries

m

kg/m^2

mass-Matter topologies

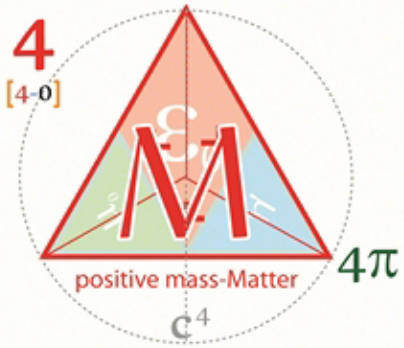
M

KG/m^3

charged mass-energy geometries form

standing-wave 3D tetrahedral topologies

Matter displacement topologies have internalised strong force fascia partitions

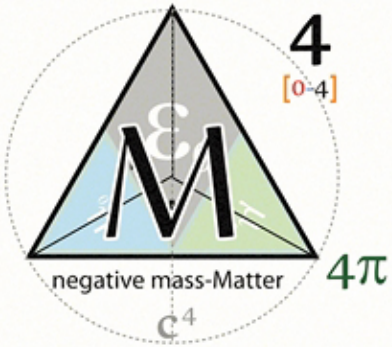


mass-Matter

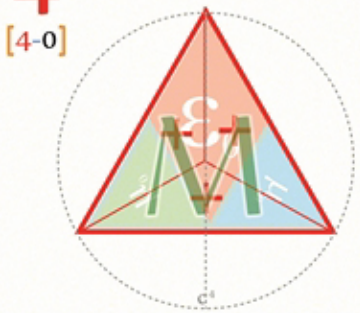
$$m \quad 4n\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right] \quad \mathbb{M}$$

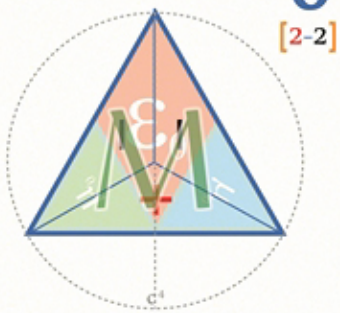
Matter · spatial field (impedance) · Planck quanta (mass, velocity)

Matter topologies



Matter



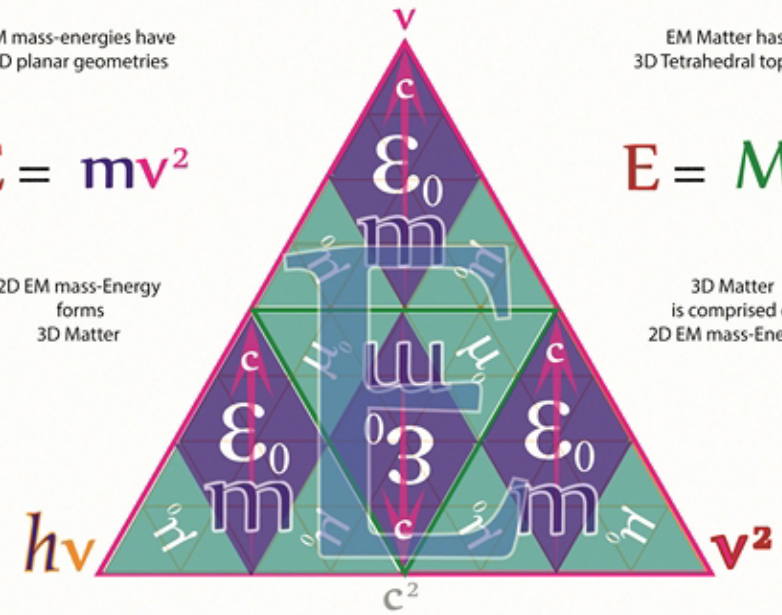


EM mass-energies have 2D planar geometries

$E = mv^2$

EM Matter has a 3D Tetrahedral topology

$E = Mc^4$



2D

ρ/sec

EM mass-energy per square metre

EM mass geometries

m

kg/m^2

3D

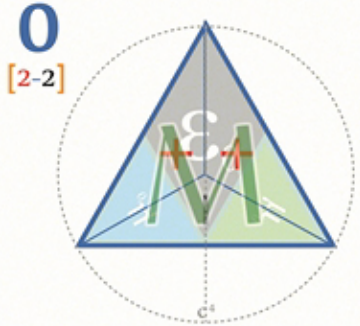
ρ/sec^2

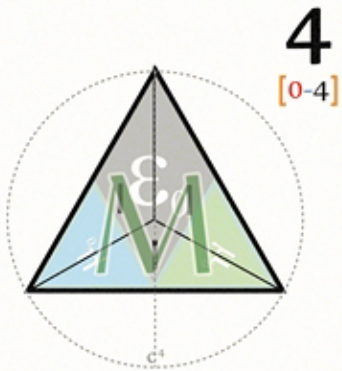
EM mass-energy per cubic metre

Matter topologies

M

kg/m^3





Matter is comprised of
4nπ mass-energy geometries
forming a 3D standing wave topology

$$4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

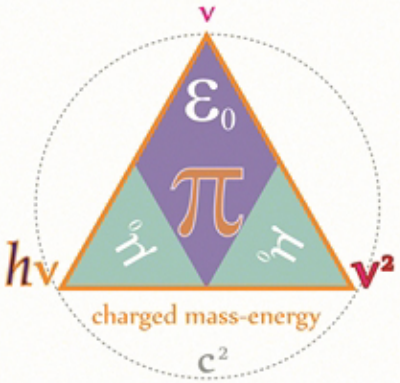
Tetryons (Matter quanta) — EM Field ($\varepsilon_0\mu_0$) — Planck quanta ($m\Omega v^2$: ElectroMagnetic mass, velocity)

Matter is anything that has a closed mass-energy topology and displaces a volume
(the 3D massive building blocks of quantum particles and atomic elements)

The EM mass-energy quanta of Matter can be measured transversely and longitudinally allowing them to exhibit a number of wave-like and particle-like properties
[de Broglie wavelength & Compton frequency]

Tetryons - the quanta of Matter

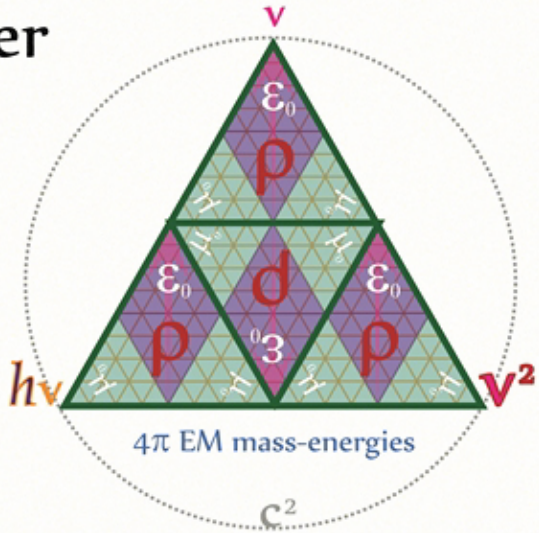
'massless' is a physics mis-nomer as
all energy exhibits mass equivalence



ZPF

mass-Energy quanta

m

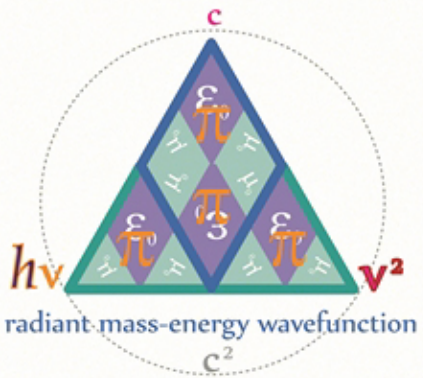


$$m = n\pi\left[\left[\frac{1}{c^2}\right]_{\text{impedance}}.\left[m\Omega v^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right]_{\text{momenta}}^{\text{Energy}}$$

$$T\pi\left[\left[\frac{1}{c^4}\right]_{\text{impedance}}.\left[m\Omega v^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right]_{\text{momenta}}^{\text{Energy}} = M_{\text{Matter}}$$

TETRYONS

Platonic tetrahedrons are the foundational topologies of all 3D Matter



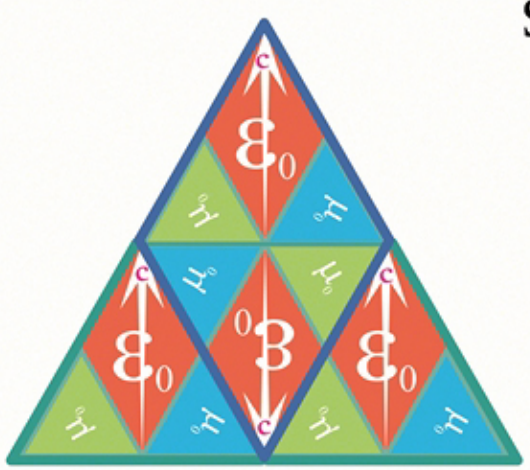
Tetryon

Matter Quantum

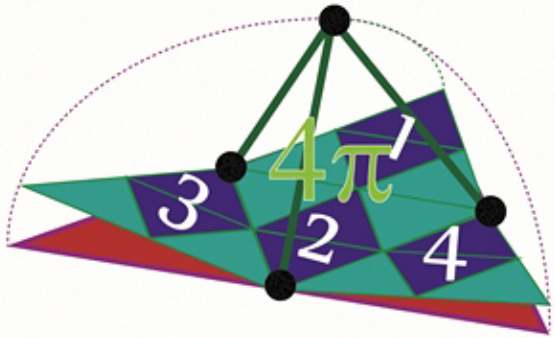
M

2D mass-energy geometries
can be combined to form
3D mass-ENERGY-Matter particles

Standing wave mass-energy geometries and Matter topologies

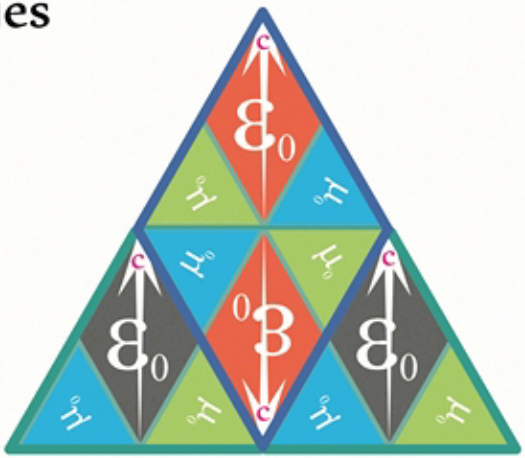


As each charged fascia's E field tries to propagate outwards it interacts with a M field dipole at each apex



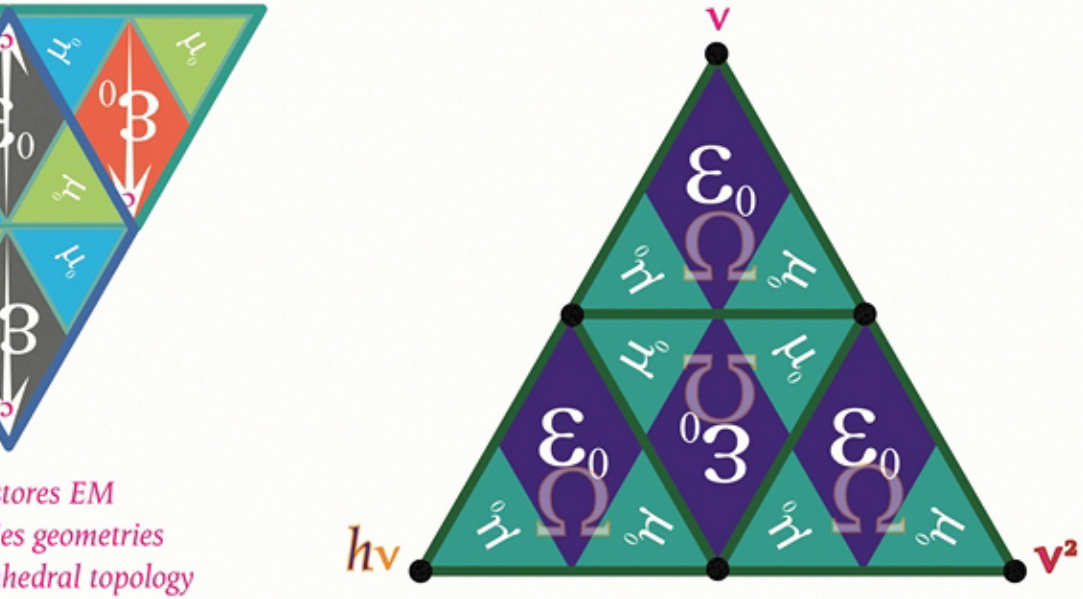
$$M_{\text{Matter}} = T\pi\left[\left[\frac{1}{c^4}\right]_{\text{impedance}}^{\text{spatial}}.\left[m\Omega v^2\right]_{\text{mass velocity}}^{\text{Planck quanta}}\right]$$

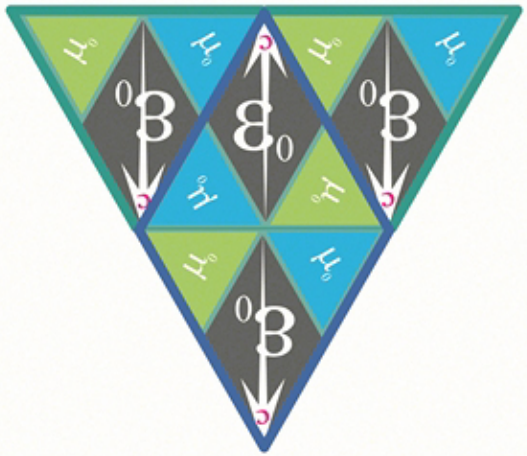
Energy momenta



In turn energised M fields supply energy to the E Fields creating a EM standing wave [the EM topology of Matter]

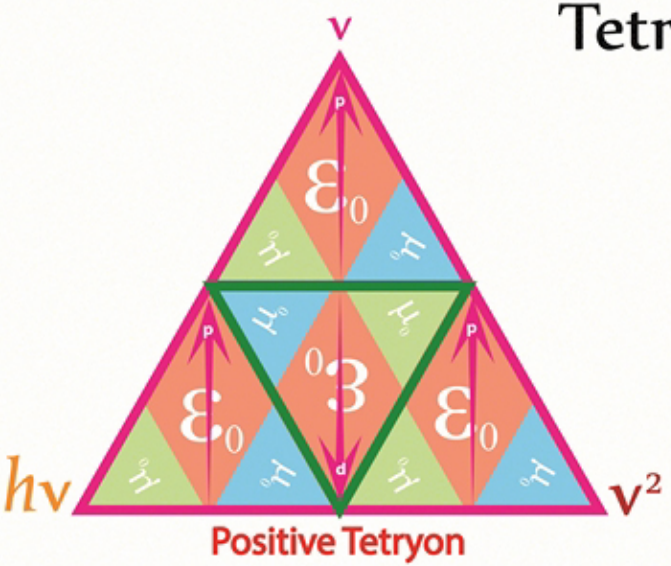
Matter stores EM mass-energies geometries in its 3D Tetrahedral topology





All mass-energy propagate at the speed of light creating linear energy momentum

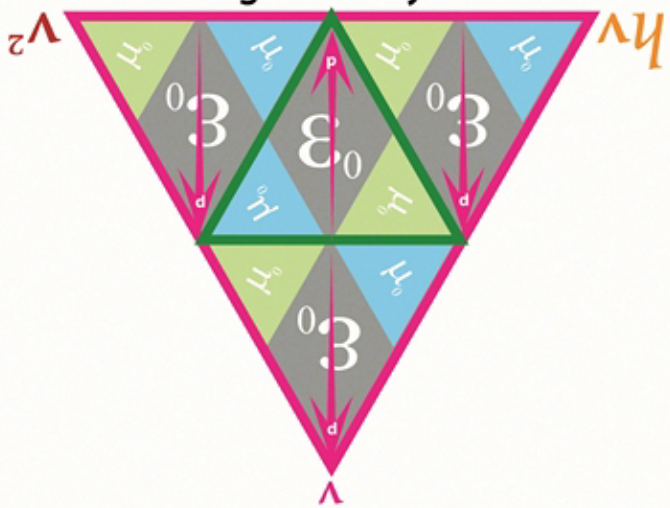
Tetryonic charge topologies



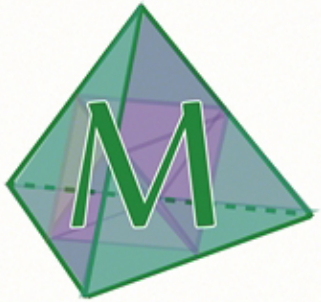
Positive Tetryon

The 3D Tetryonic volume of Matter is what distingushes it from 2D EM mass-energies

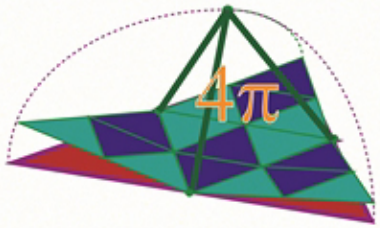
Negative Tetryon



TETRYONS



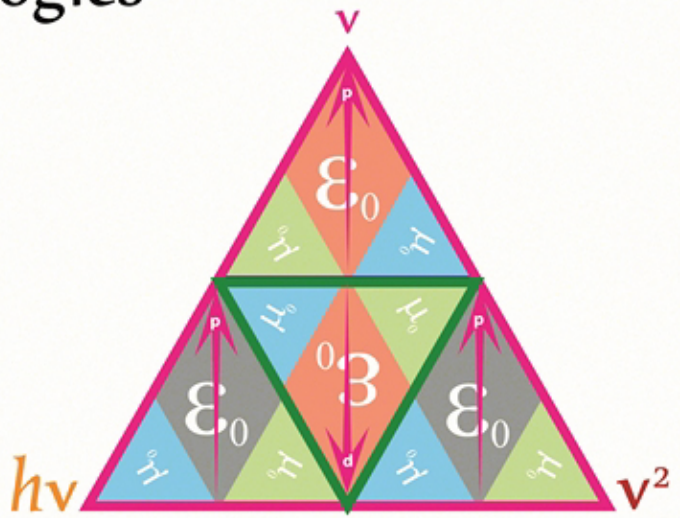
[MATTER]



The four EM mass-energy momenta produced by Tetryonic collapse must not be confused with the classical 4 Energy-momenta (which refers to x,y,z co-ordinates & v)

4pi radiant mass-energies

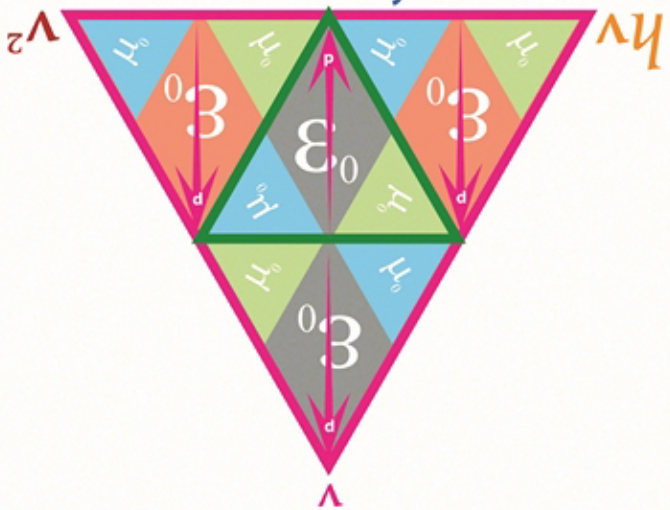
Four 2D mass-energy geometries can combine to form via charge interactions 3D tetrahedral Matter topologies



Neutral Tetryon

A 3D Tetryon can be 'collapsed' into a 2D waveform radiant four energy momenta EM waveform that conserves all of its 2D mass-energy-momenta

Neutral Tetryon

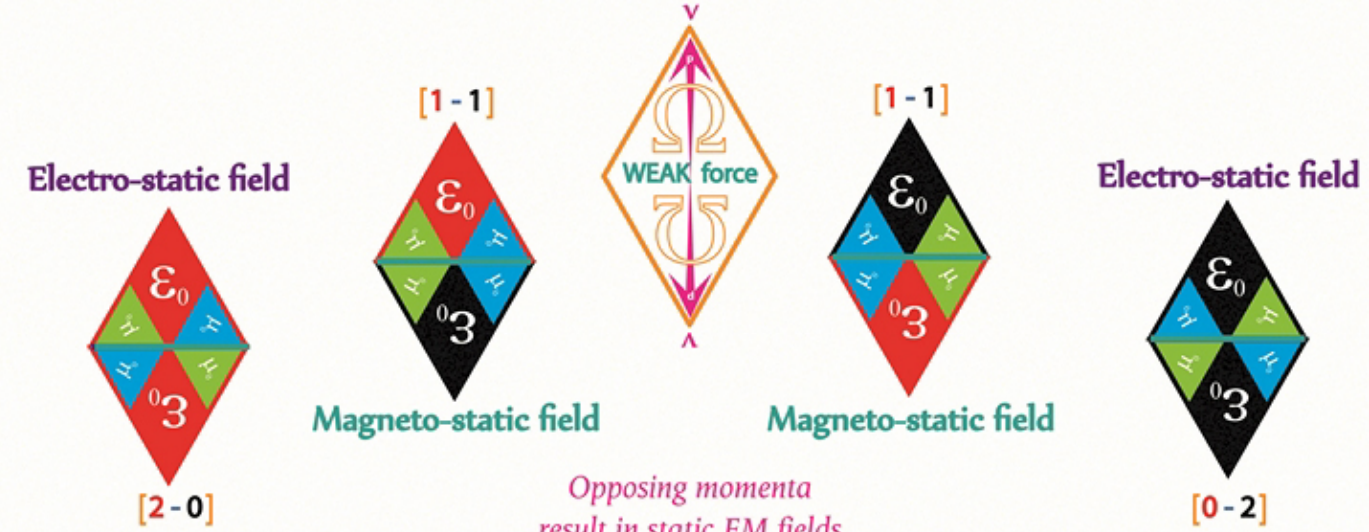


Tetryon Genesis

1. WEAK interaction
Mutual Inductive Coupling
[Magnetic dipoles interact]

ODDπ
charged mass-energies

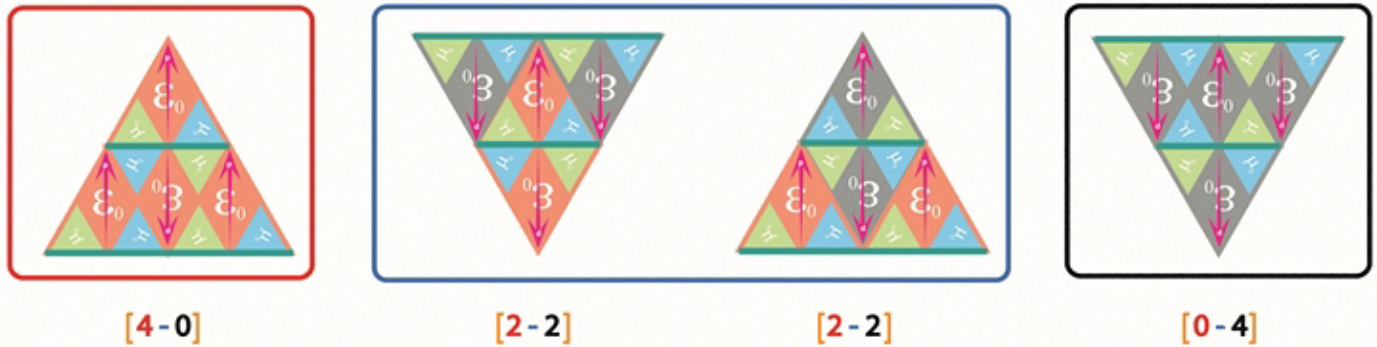
Non-Zero
nett mass-Energy-momenta
result in Linear momentum



2. EVENπ
radiant mass-energies

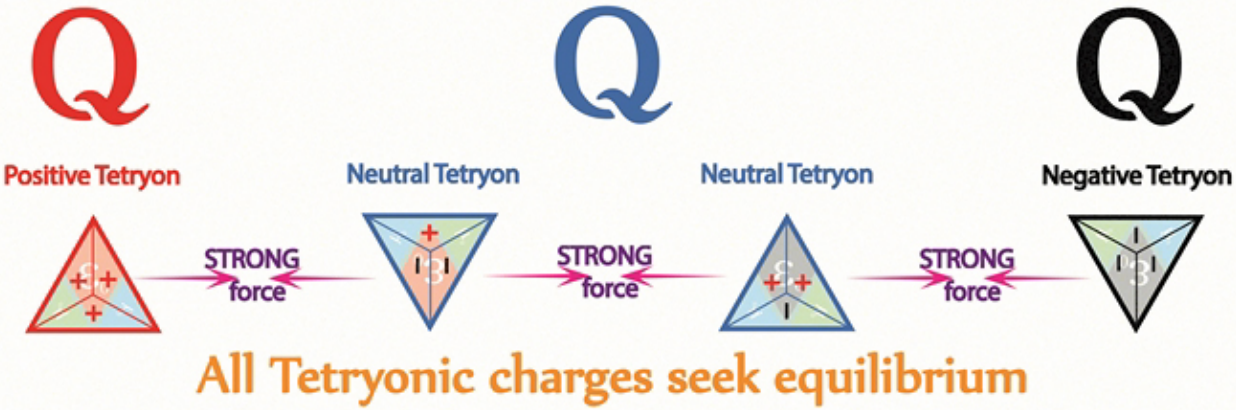
2D EM mass-energies
interact to form
3D Matter topologies

EM wave momenta
can form standing waves
[Matter geometries]



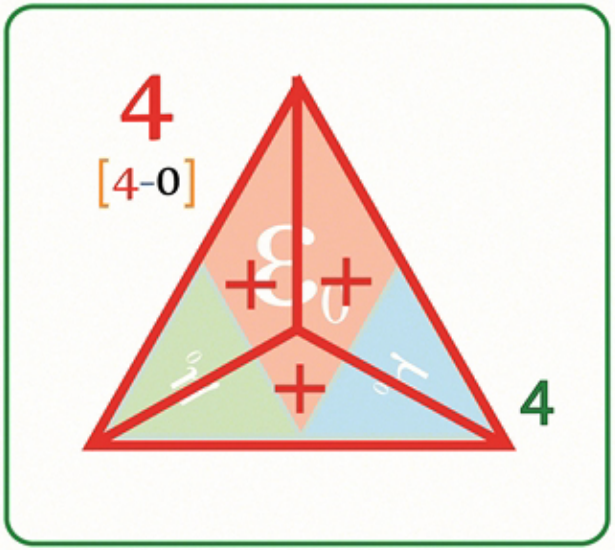
3. STRONG interaction
Electrostatic Matter attract
via Electric charges and
Magnetic dipoles

4nπ
mass-Matter geometries

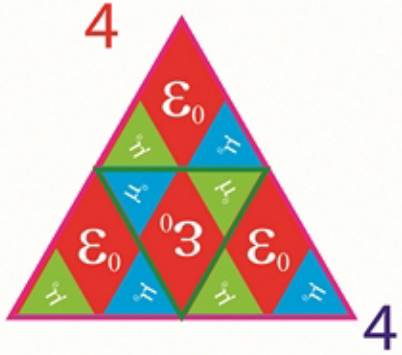


Positive Tetryon

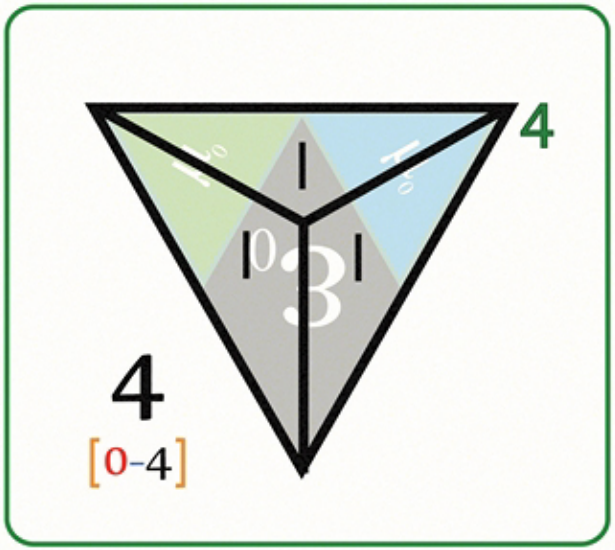
charged boson geometry

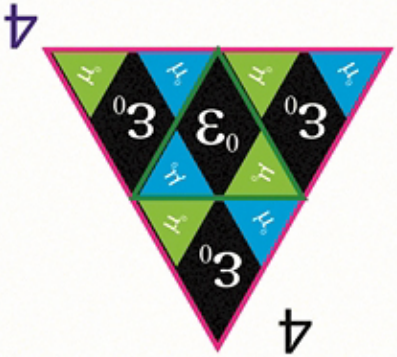


standing-wave Matter topology



radiant mass-energy geometries

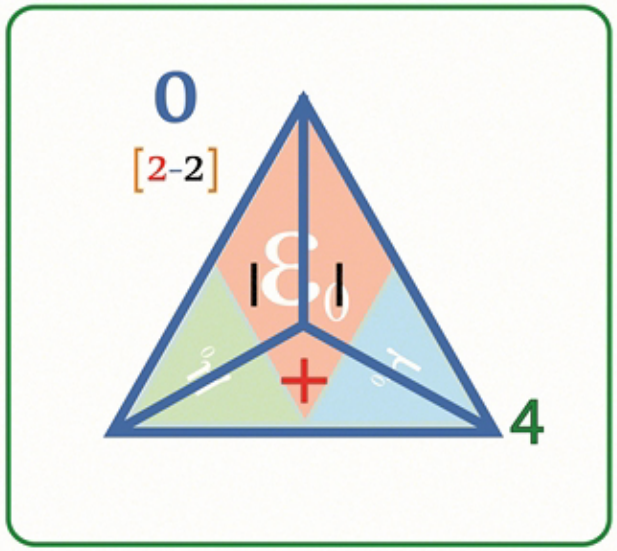




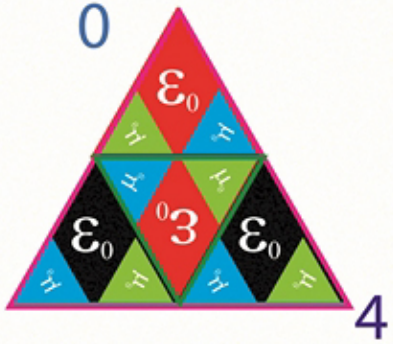
Negative Tetryon

Neutral Tetryons

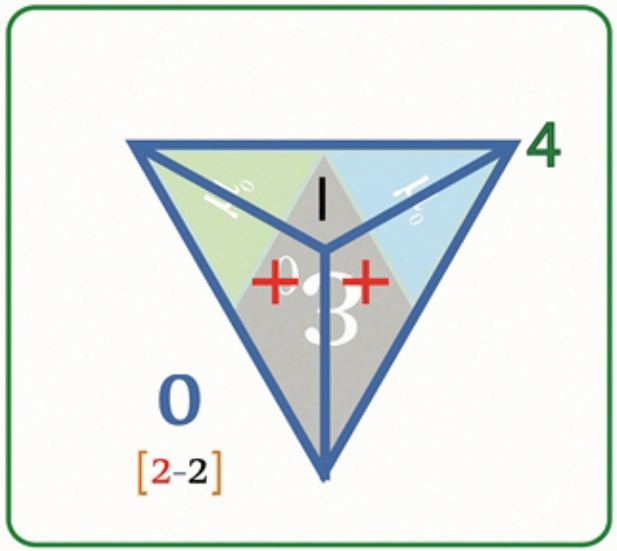
charged boson geometry



standing-wave Matter topology



radiant mass-energy geometries



mass

$$m_{mass} = n\pi\left[\left[1/c^2\right]_{impedance}.\left[m\Omega v^2\right]_{mass\ velocity}\right]_{momenta}^{Energy}$$

radiant mass-energy geometries

$$E = mc^2$$

Energy per second

energy

$$n\pi\left[m\Omega v^2\right]_{mass\ velocity}^{Planck\ quanta}$$

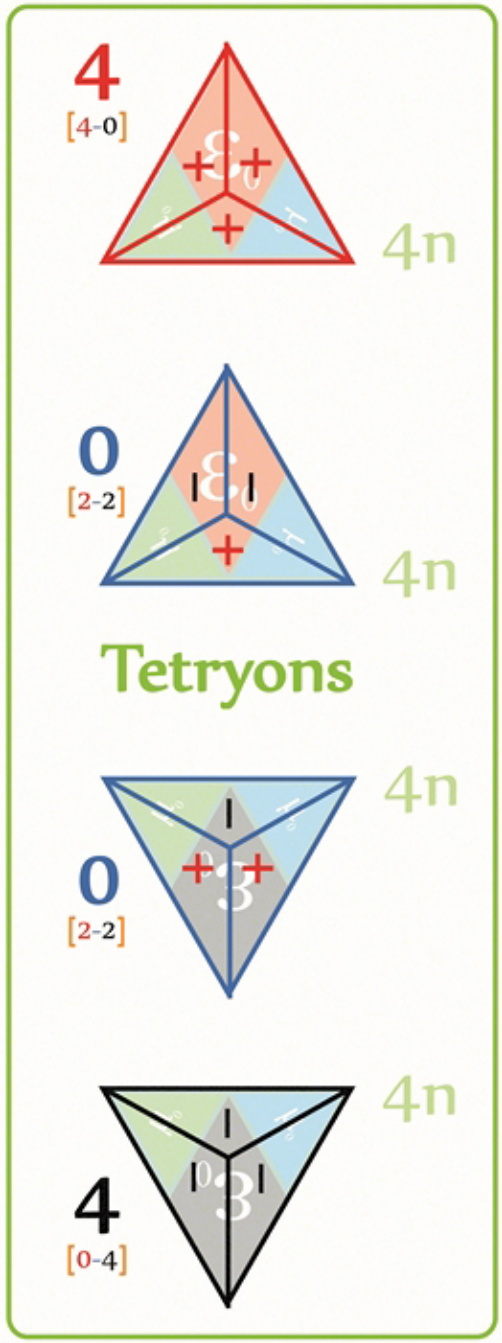
Energy per second ^{2}

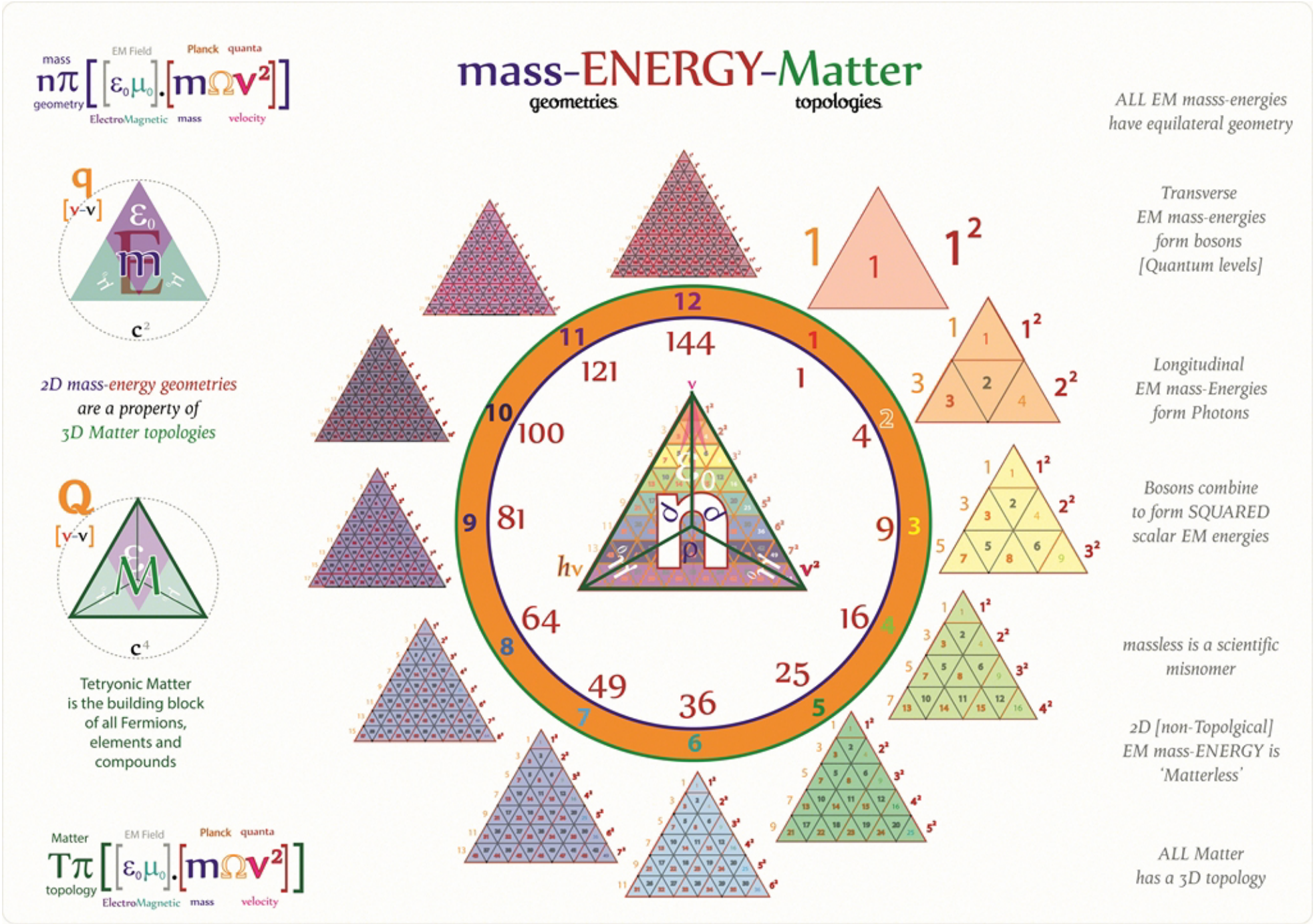
$$E = Mc^4$$

Matter

$$M_{Matter} = T\pi\left[\left[1/c^4\right]_{impedance}.\left[m\Omega v^2\right]_{mass\ velocity}^{Planck\ quanta}\right]_{momenta}^{Energy}$$

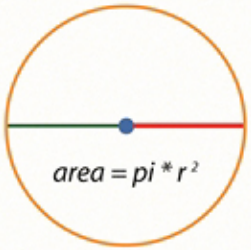
standing wave Matter topologies

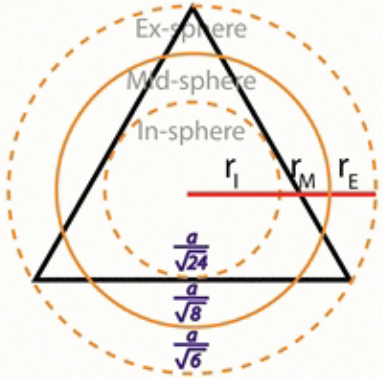




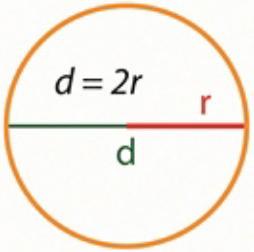
Tetryonic Matter

All quantum Matter has a foundational tetrahedral topology as a result of their equilateral mass-energy geometries [not spherical as has been assumed from the math]





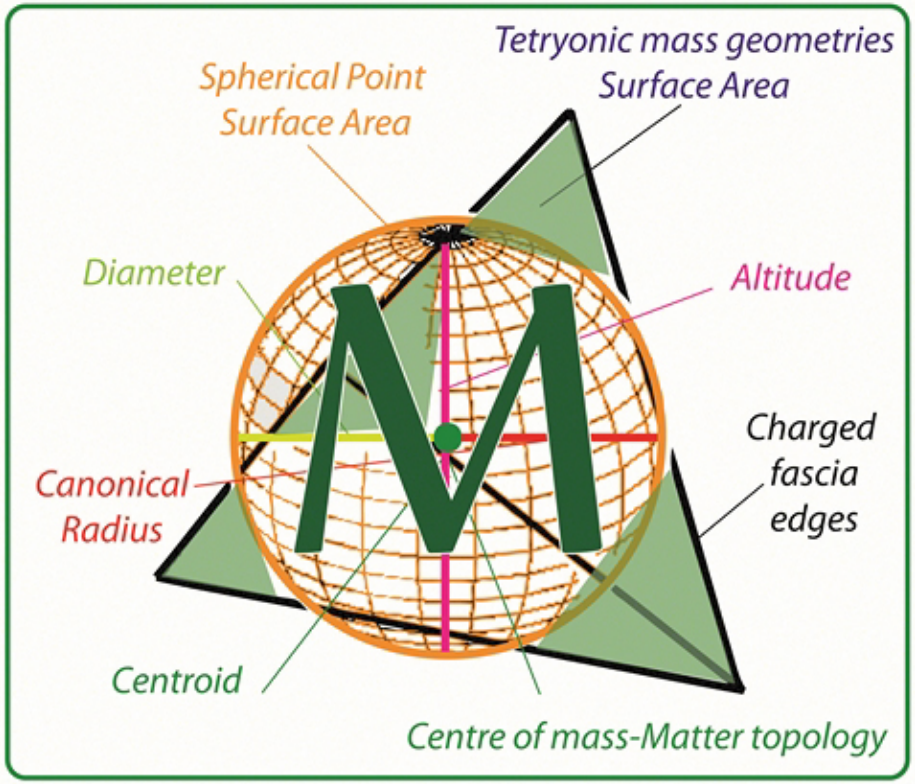
Sphere



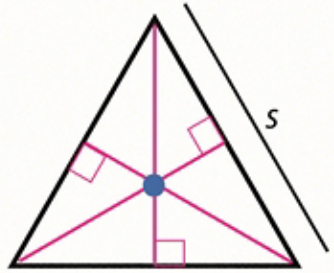
Area sphere= 4π r²

Surface curvature = 1/r²

Total curvature = 4π

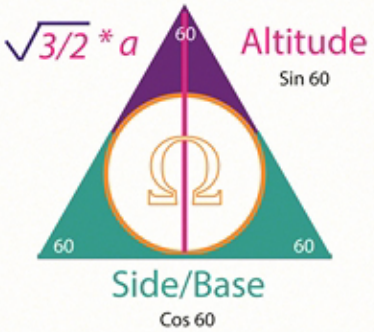


Spheres & Tetrahedra are both 3D Platonic solids with 4π scalar integral Gaussian topologies and physical displacement volumes [Gauss-Bonnet theorem]



area = $\sqrt{3/4} * a^2$

ZPF fascia



Area Tetryon

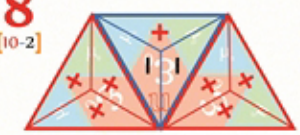
$A = 4\,A_0 = \sqrt{3}a^2$

Vertex curvature = π

Total curvature = 4π

Dodecyons

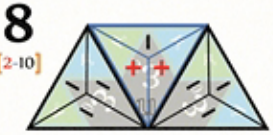
while quarks & leptons are comprised of
12π mass-energy geometries
they have differing final Matter topologies

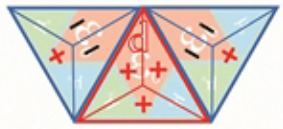
up quark +1/3
8 [10-2]


anti-strange quark
top quark +2/3
charmed quark

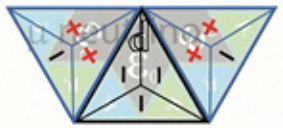
8π

strange quark
bottom quark -1/3
anti-bottom quark

8 [2-10]

anti-up quark

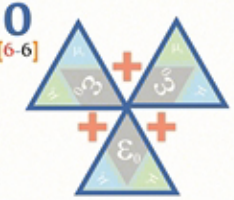
anti-down quark
4 [8-4]

anti-charmed quark

quarks

anti-top quark
4 [4-8]

down quark

electron neutrino
0 [6-6]


neutrinos

0 [6-6]

positron neutrino

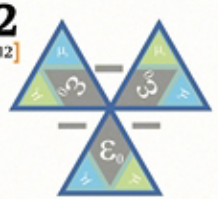
positron
12 [12-0]

e +1

anti-τ neutrino
anti-μ neutrino
tau

12π 0

muon
muon neutrino
tau neutrino

12 [0-12]

e -1
electron

EM Field Planck quanta

$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

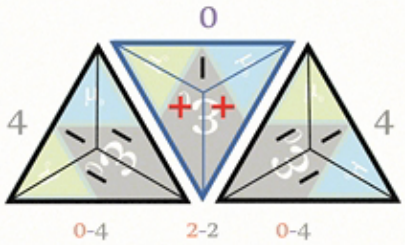
ElectroMagnetic mass velocity

Quarks have octahedral topologies

Leptons have dodecahedral topologies

-2/3

quark octahedral topology



attractive dodecyon geometry

anti-up quark

as mass-energy momenta is added to
Matter topologies & KEM fields of motion
different generations of particles are created

$$12\pi \text{ dodecyon } \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

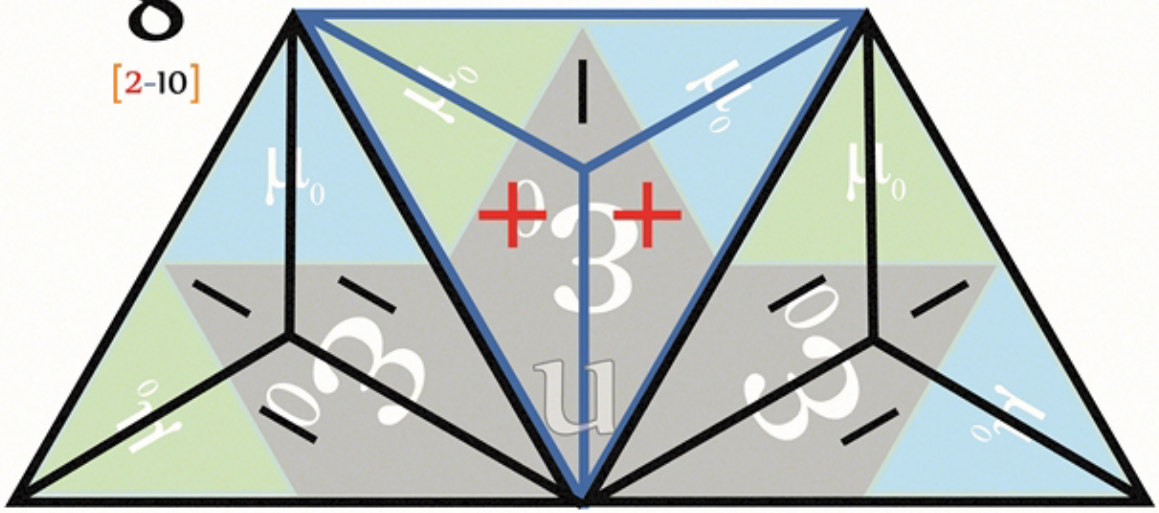
EM Field (ElectroMagnetic) · Planck quanta · mass · velocity

1. **anti-up** quark
2. **anti-charmed** quark
3. **anti-top** quark

nett charge

8

[2-10]



charged mass-Matter topology

8π

Quarks have 12 charged fascia - mass-energy geometries

2 Positive 10 Negative

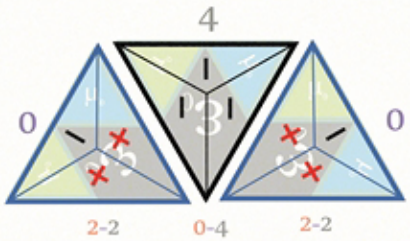
Quarks have octahedral mass-Matter topologies

[-2/3 elementary charge]

down quark

-1/3

quark octahedral topology



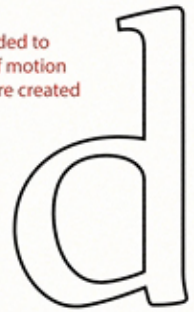
attractive dodecyon geometry

$$12\pi \text{ docdecyon } \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field — ElectroMagnetic; Planck quanta; mass; velocity

as mass-energy momenta is added to Matter topologies & KEM fields of motion different generations of particles are created

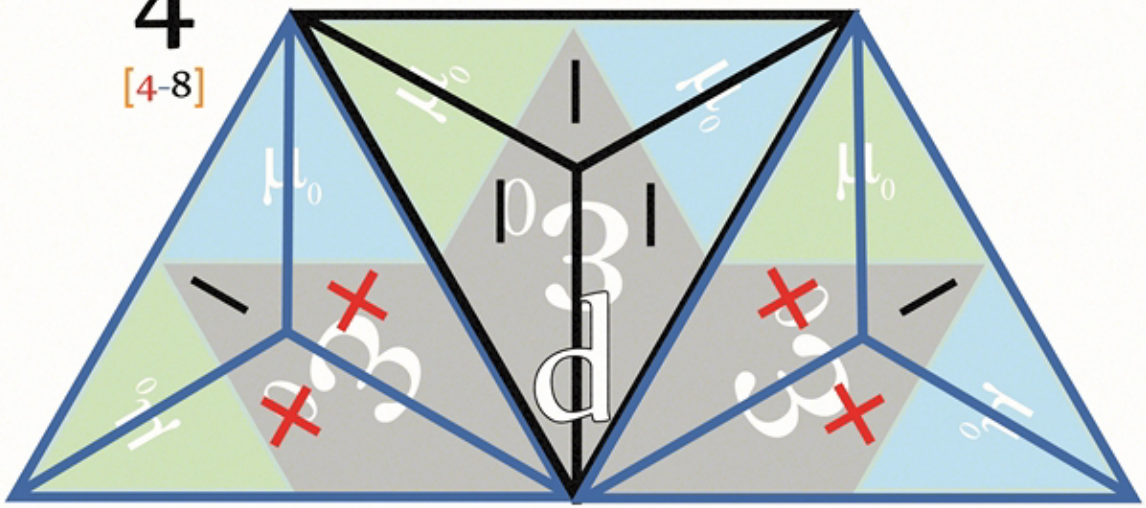
1. **down** quark
2. **strange** quark
3. **bottom** quark



nett charge

4

[4-8]



charged mass-Matter topology

8π

Quarks have 12 charged fascia - mass-energy geometries

4 Positive 8 Negative

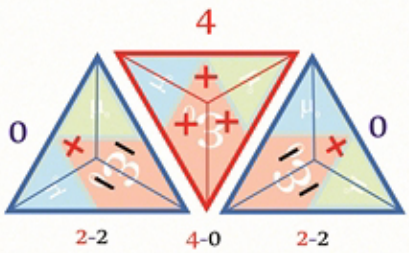
Quarks have octahedral mass-Matter topologies

[-1/3 elementary charge]

anti-down quark

+1/3

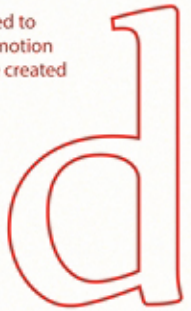
quark octahedral topology



attractive dodecyon geometry

as mass-energy momenta is added to
Matter topologies & KEM fields of motion
different generations of particles are created

1. **anti-down** quark
2. **anti-strange** quark
3. **anti-bottom** quark



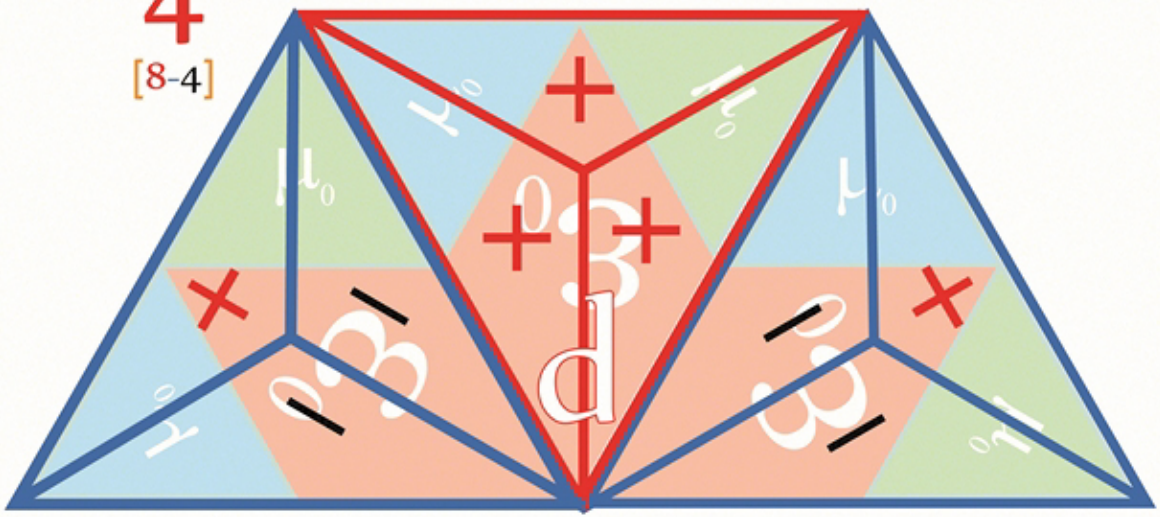
$$12\pi \text{ dodecyon } \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

nett charge

4

[8-4]



charged mass-Matter topology

8π

Quarks have 12 charged fascia - mass-energy geometries

8 Positive 4 Negative

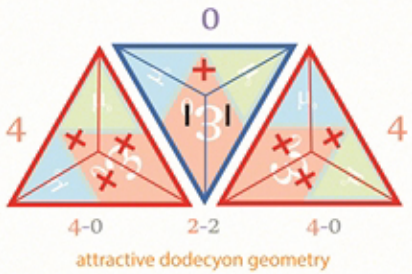
Quarks have octahedral mass-Matter topologies

[+1/3 elementary charge]

up quark

+2/3

quark octahedral topology



attractive dodecyon geometry

$$12\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m \Omega v^2 \right] \right]$$

dodecyon — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

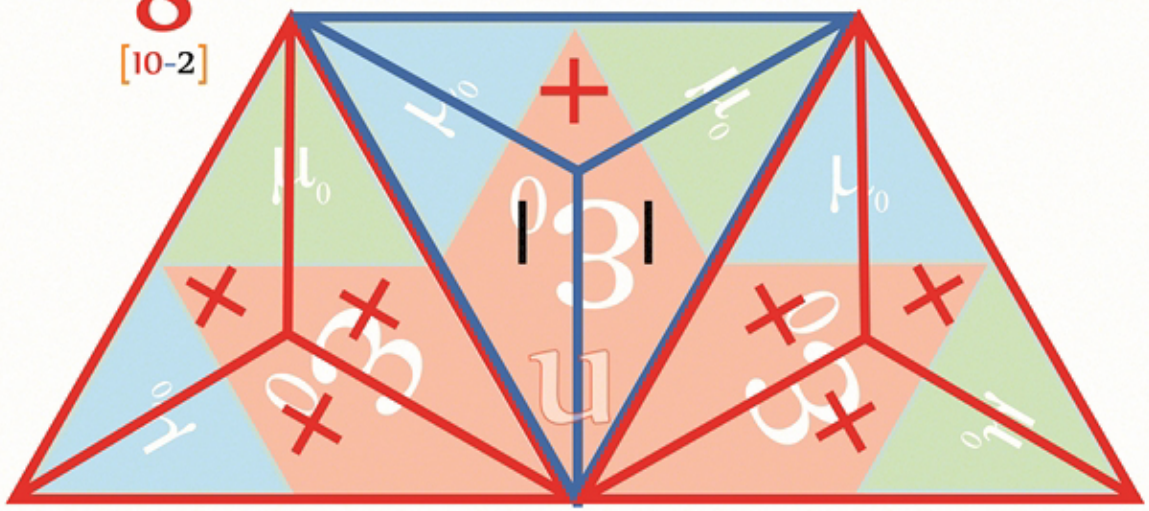
as mass-energy momenta is added to
Matter topologies & KEM fields of motion
different generations of particles are created

1. **up** quark
2. **charmed** quark
3. **top** quark

nett charge

8

[10-2]



charged mass-Matter topology

8π

Quarks have 12 charged fascia - mass-energy geometries

10 Positive 2 Negative

Quarks have octahedral mass-Matter topologies

[+2/3 elementary charge]

Charged mass geometries & Matter topologies
are the physical basis for differentiating particles

DODECAHEDRALS
Quarks and Leptons are both 12π [dodecadeltahedral] mass geometries
[differentiated by their final nett charged Matter topologies]

OCTAHEDRALS

TETRAHEDRALS
Tetryons are the [4π] tetrahedral quanta of Matter

hν

BOSONS
ZPFs are single quanta Bosons

ZPF

W+ boson

W- boson

PHOTONS
Photons are dual quanta Bosons

tetryon

quark

anti-quark

Lepton

neutrino

Elementary Charges

2D mass
[radiant energies]

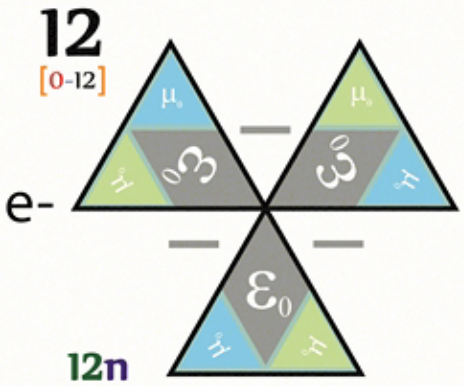
All mass-energy-Matter geometries are comprised of Bosons containing quantised angular momenta

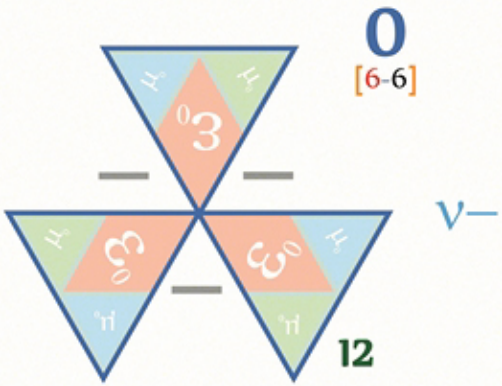
3D Matter Fermions
[standing-wave energies]

divergent negative E-fields

electron

convergent negative E-fields





ν−

divergent negative E-fields

electron neutrino

convergent positive E-fields

Leptons have 12 charged mass-energy fascia geometries

Repulsive STRONG force creates Lepton topologies

12π

Tetryonic charged fascias creates the Matter topologies of all Leptons

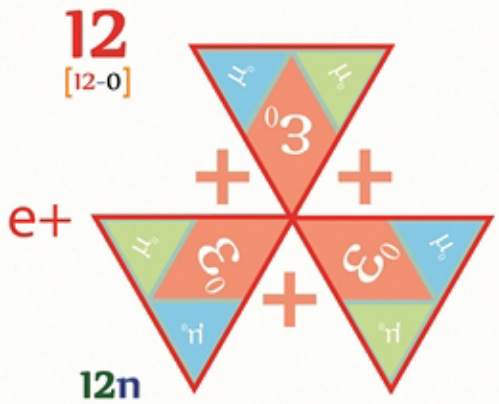
Repulsive STRONG force creates Neutrino topologies

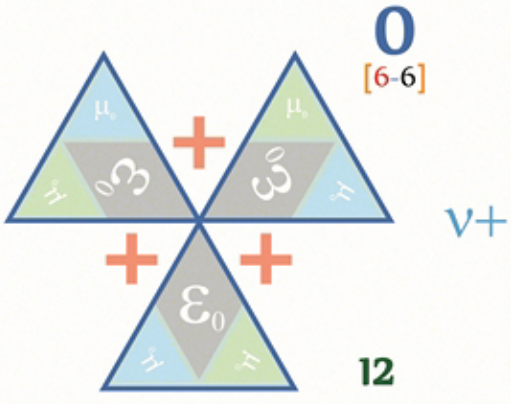
Leptons have dodecadeltahedral mass-Matter topologies

divergent positive E-fields

positron

convergent positive E-fields





ν+

divergent positive E-fields

positron neutrino

convergent negative E-fields

Charged Leptons

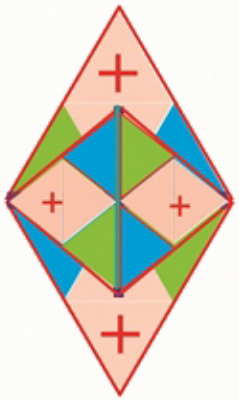
$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

Dodecyon — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

positron

e+

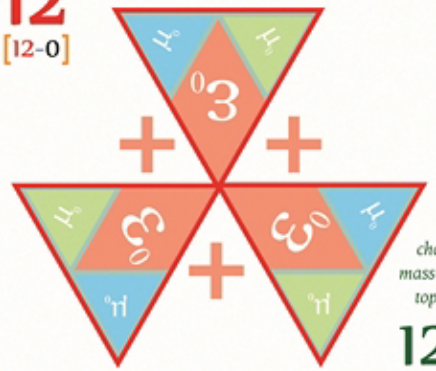
12



nett charge

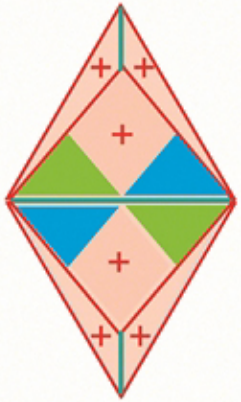
12

[12-0]



charged mass-Matter topology

12π



1. positron
2. anti-muon
3. anti-tau

Leptons have 12 charged mass-energy fascia geometries

12 positive charge fascia or 12 Negative charge fascia

repulsive dodecyon geometries

lepton topologies

Charged Leptons have dodecadeltahedral mass-Matter topologies

[1 elementary charge]

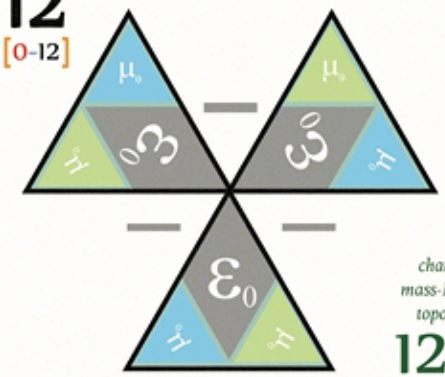
e-

12

nett charge

12

[0-12]



charged mass-Matter topology

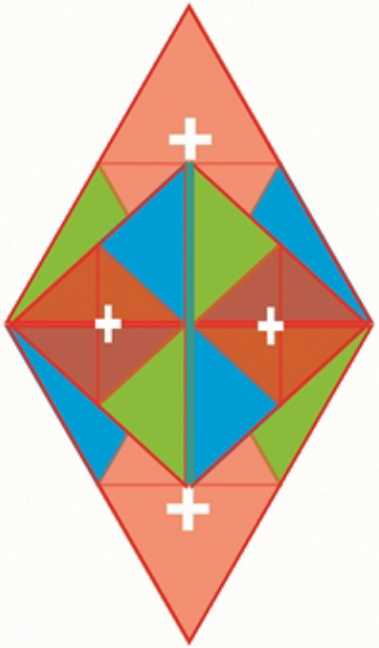
12π

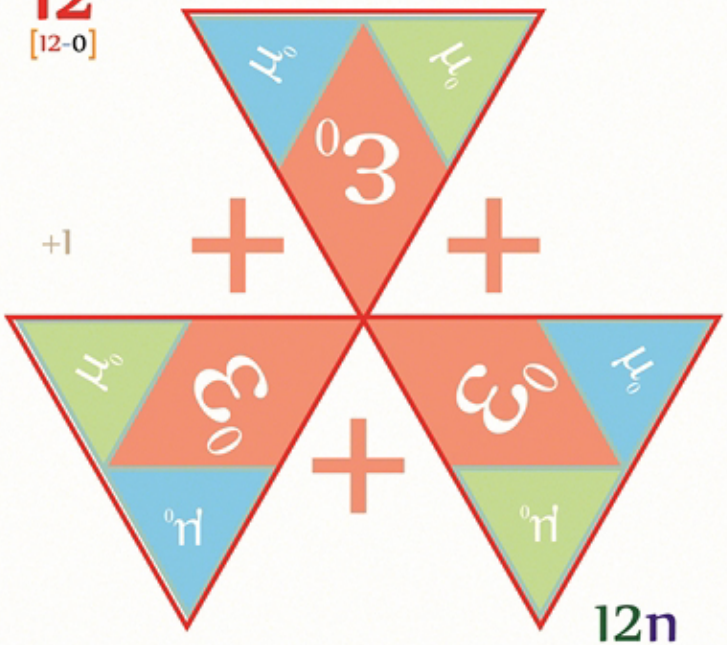
1. electron
2. muon
3. tau

electron

as mass-energy momenta is added to Matter topologies & KEM fields of motion different generations of particles are created

positron





repulsive charge dodecyon geometry

lepton mass-Matter topology

$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

Dodecyon — EM Field: ElectroMagnetic — Planck quanta: mass, velocity

1. positron
2. anti-muon
3. anti-tau

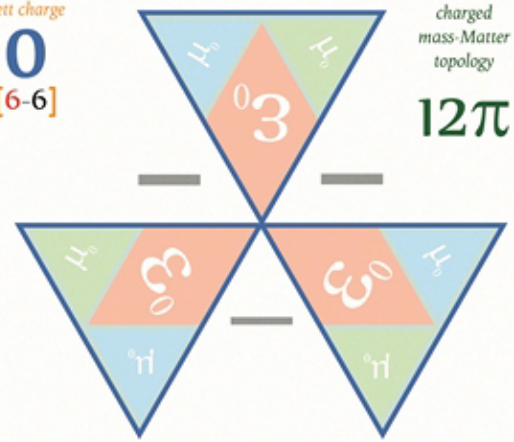
Neutral Leptons

$12\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m \Omega v^2 \right] \right]$

Dodecyon — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

$\nu -$
0

nett charge
0
[6-6]



charged mass-Matter topology
12π

1. electron neutrino
2. muon neutrino
3. tau neutrino

Neutrinos have 12 charged mass-energy fascia geometries

6 Positive & 6 Negative

repulsive dodecyon geometries

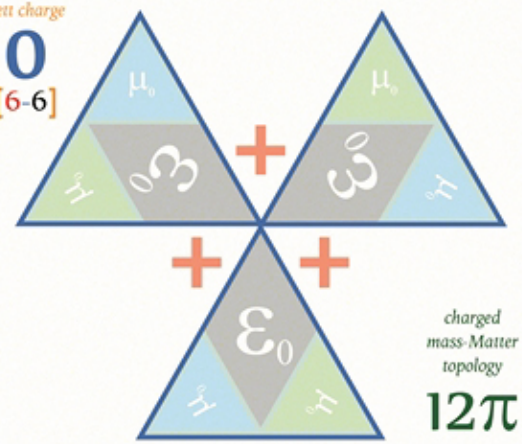
lepton topologies

Neutrinos have neutral dodecadeltahedral mass-Matter topologies

[0 elementary charge]

$\nu +$
0

nett charge
0
[6-6]

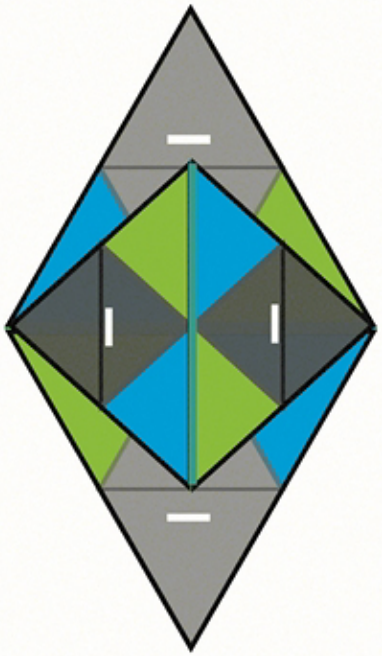


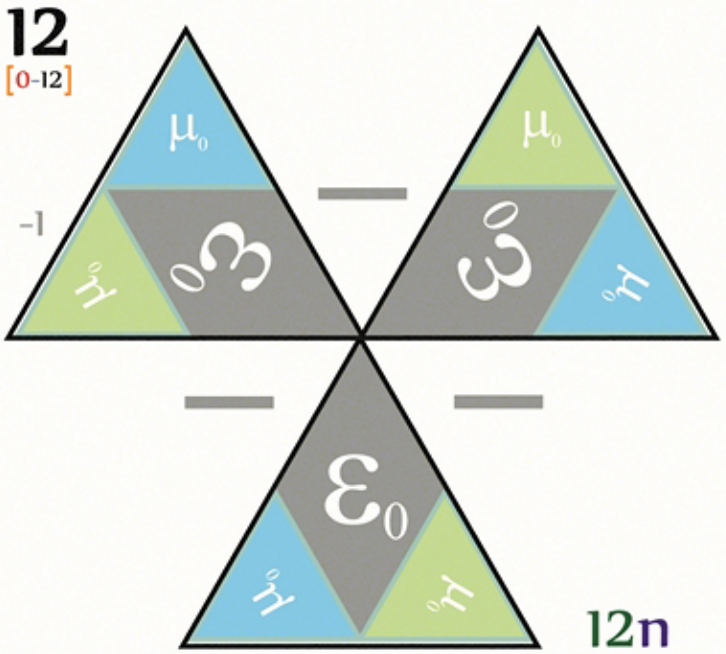
charged mass-Matter topology
12π

1. positron neutrino
2. anti- muon neutrino
3. anti-tau neutrino

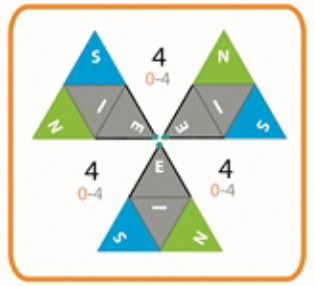
as mass-energy momenta is added to Matter topologies & KEM fields of motion different generations of particles are created

electron

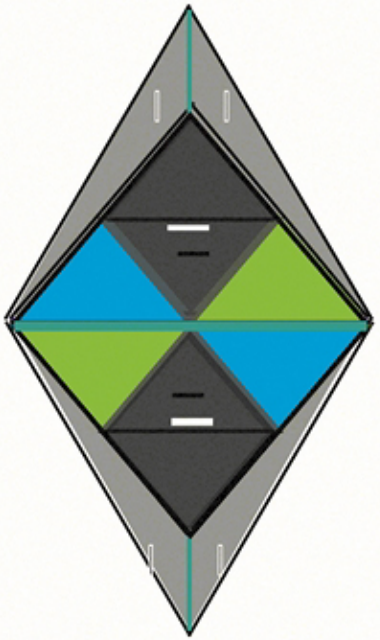




repulsive charge dodecyon geometry



lepton mass-Matter topology



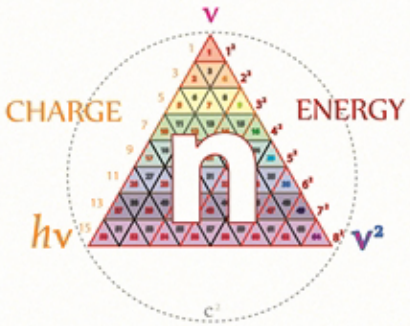
$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

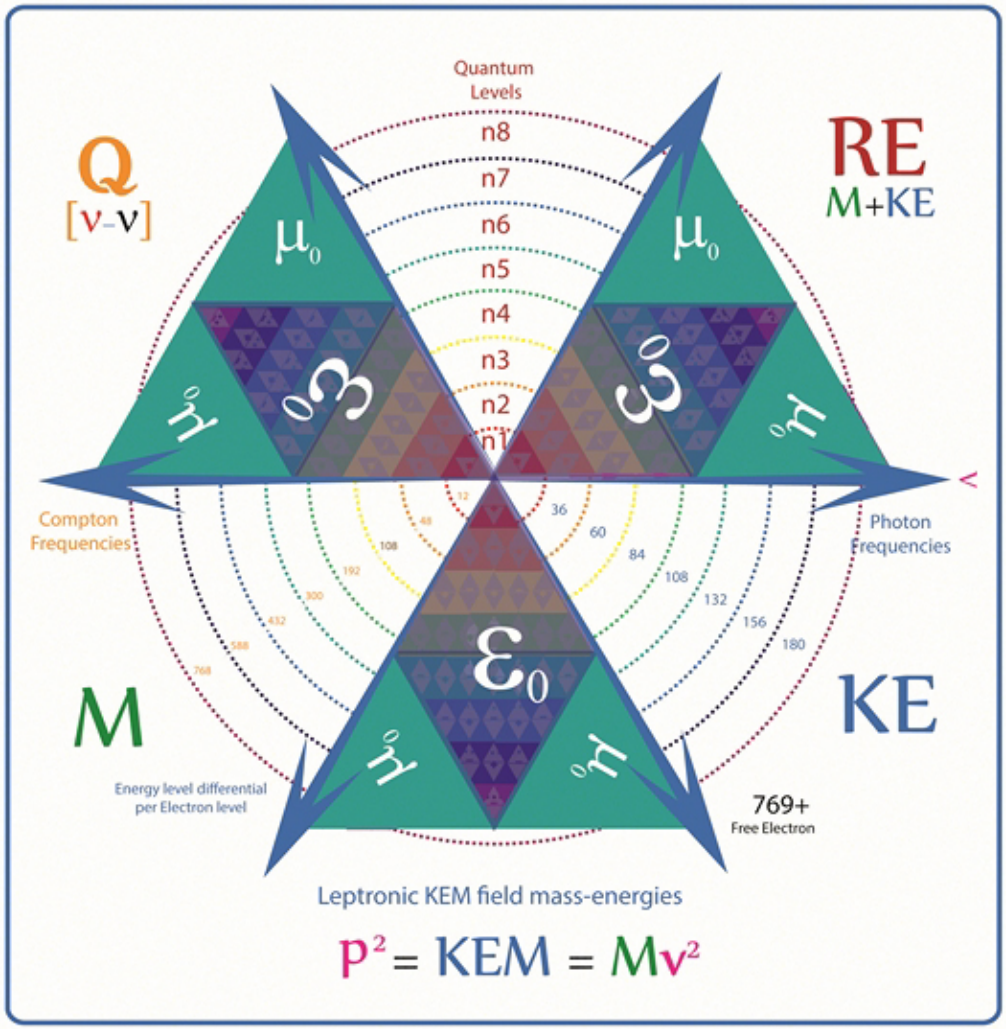
Dodecyon · EM Field · ElectroMagnetic · Planck quanta · mass · velocity

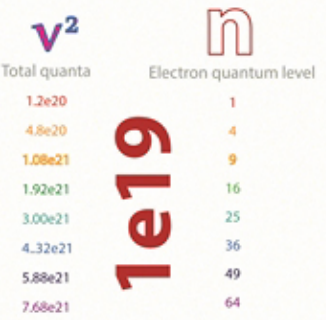
1. electron
2. muon
3. tau

Leptronic Quantum levels

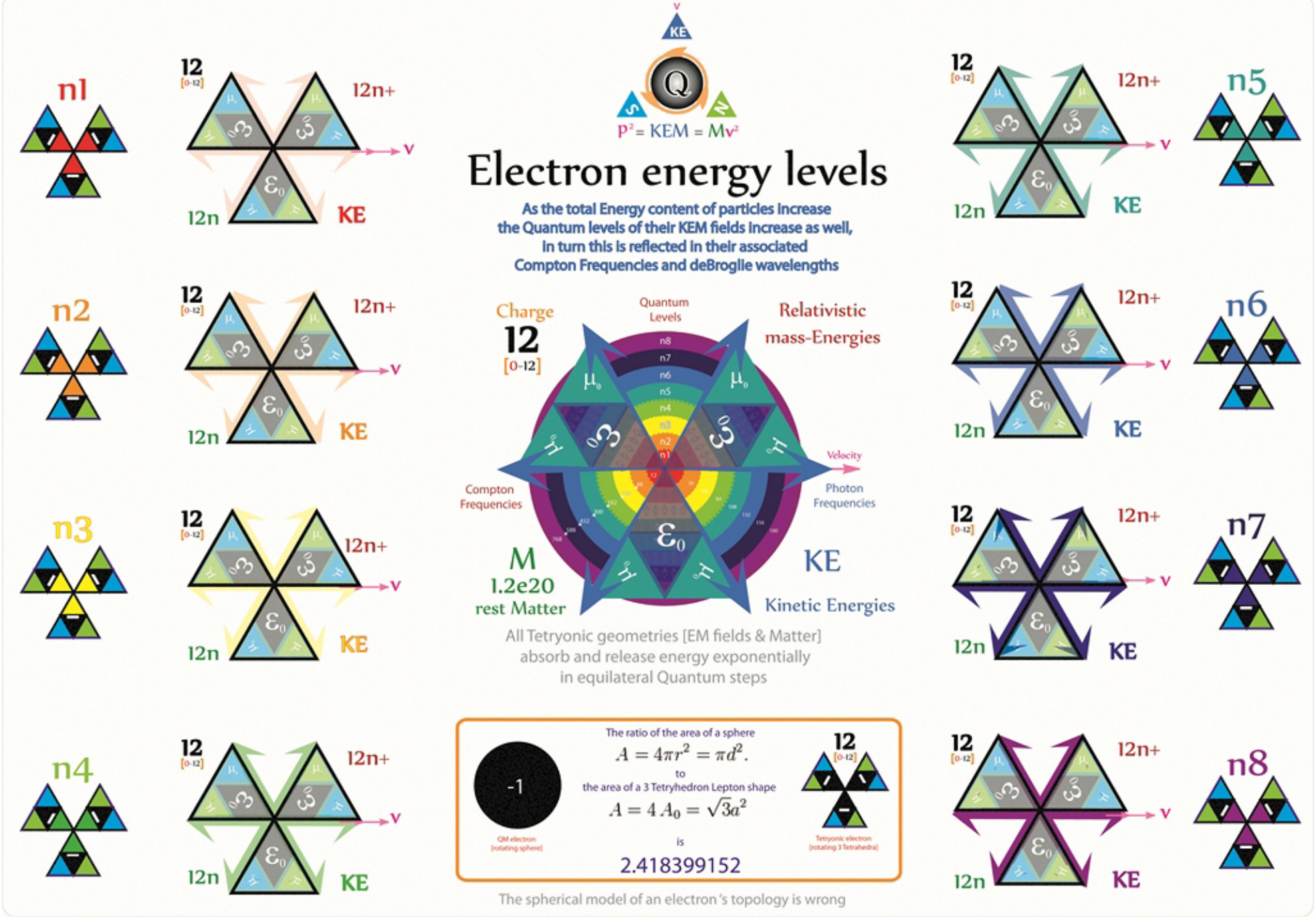
[KEM field mass-energy geometry]



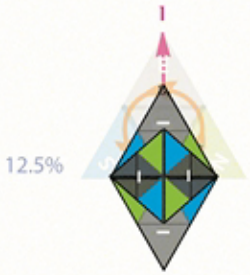




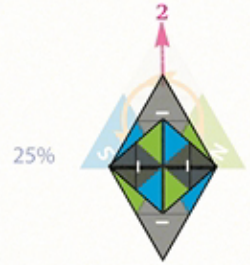
Illustrative schema only: All Leptonic quantum levels have the same equilateral KEM geometry as the compton frequency of the KEM field increases the wavelengths of the quanta decrease



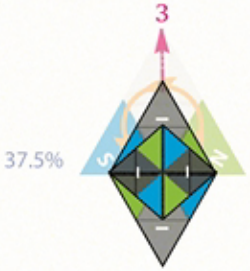
Leptronic Kinetic EM Fields



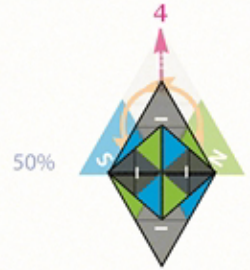
12 [0-12] n1 12n 12



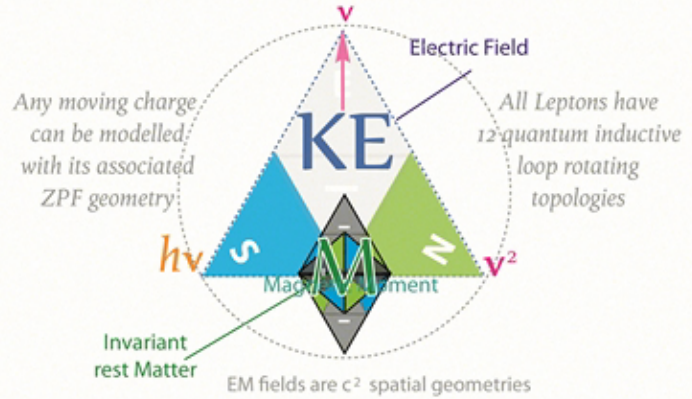
12 [0-12] n2 12n 24



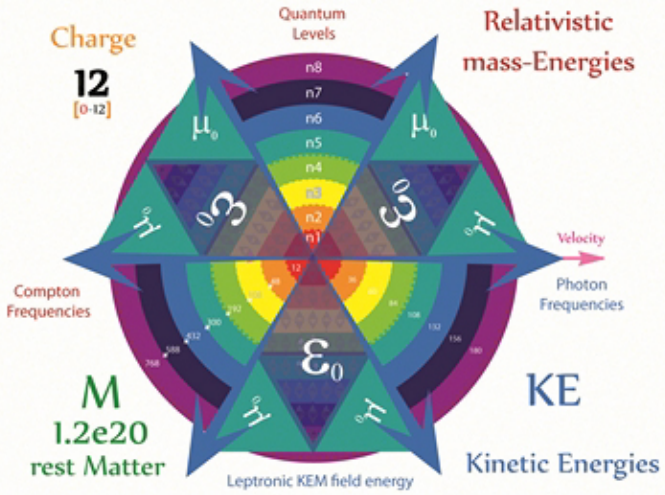
12 [0-12] n3 12n 48



12 [0-12] n4 12n 192



$$p^2 = KEM = Mv^2$$



The motion of an Electron's Matter topology through any external EM fields creates a proportional KE field and Magnetic Moment as a direct result of the 'quantum inductive loops' formed by the Leptronic EM field geometries

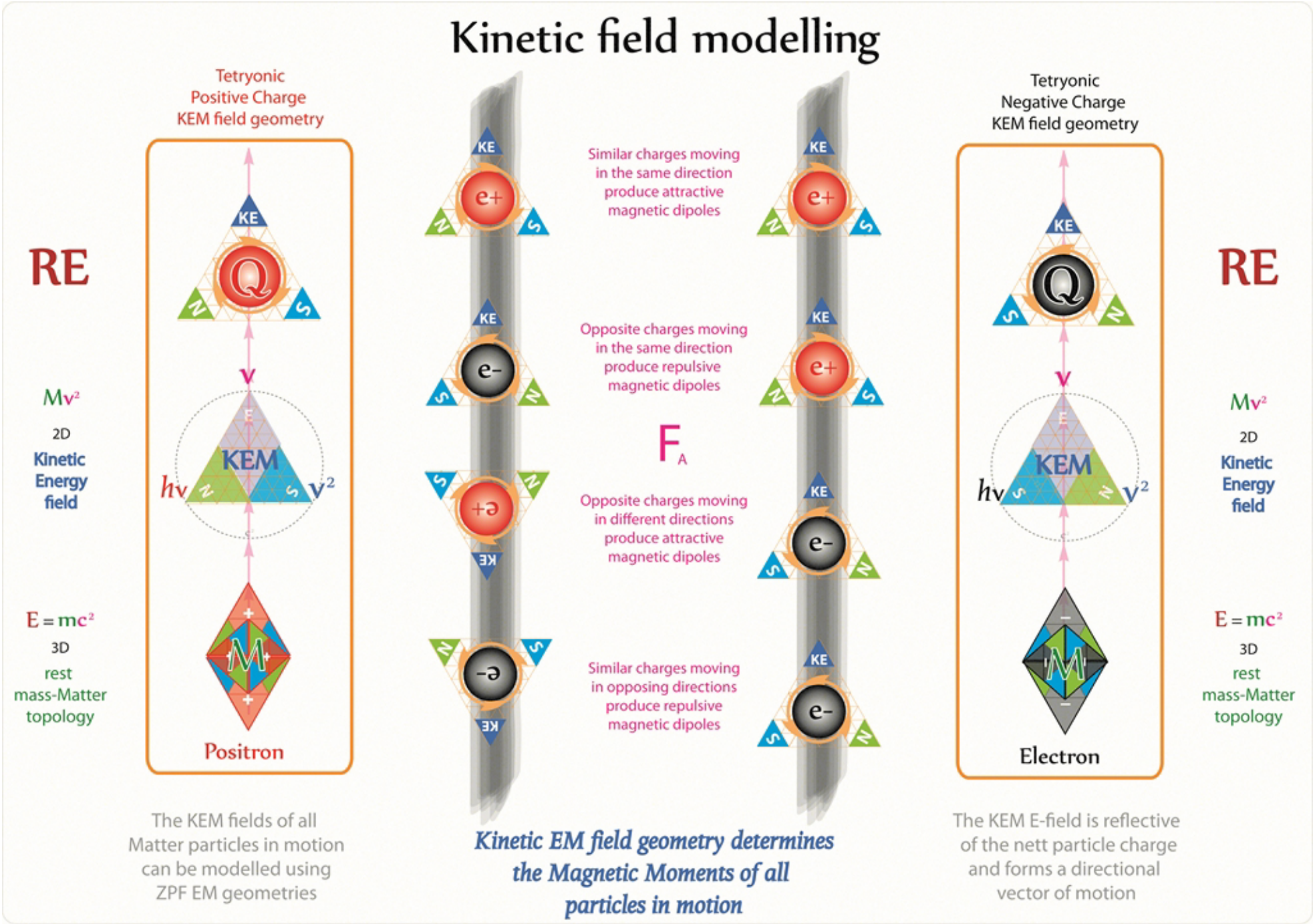
12 [0-12] n5 12n 300

12 [0-12] n6 12n 432

12 [0-12] n7 12n 588

12 [0-12] n8 12n 768

Kinetic field modelling

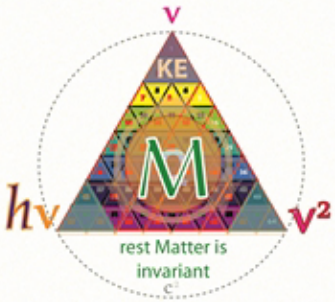


The KEM fields of all Matter particles in motion can be modelled using ZPF EM geometries

Kinetic EM field geometry determines the Magnetic Moments of all particles in motion

The KEM E-field is reflective of the nett particle charge and forms a directional vector of motion

Lepton Families & Generations



Charged Matter topologies in motion creates Kinetic EM field geometries

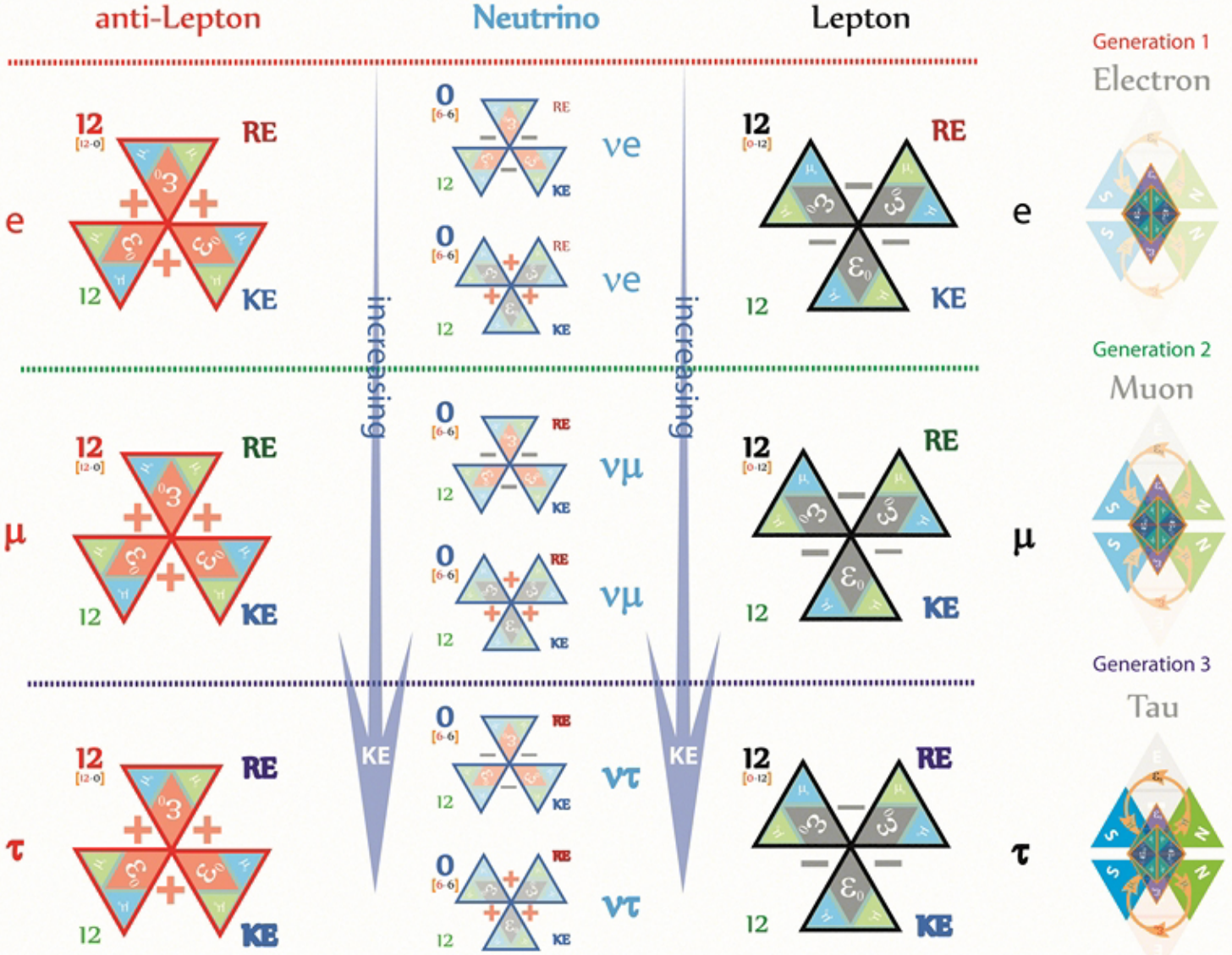
Charged mass-energy geometries form elementary particle topologies

12π

$KEM = Mv^2$

Total relativistic mass-energies
[rest Matter + KEM]

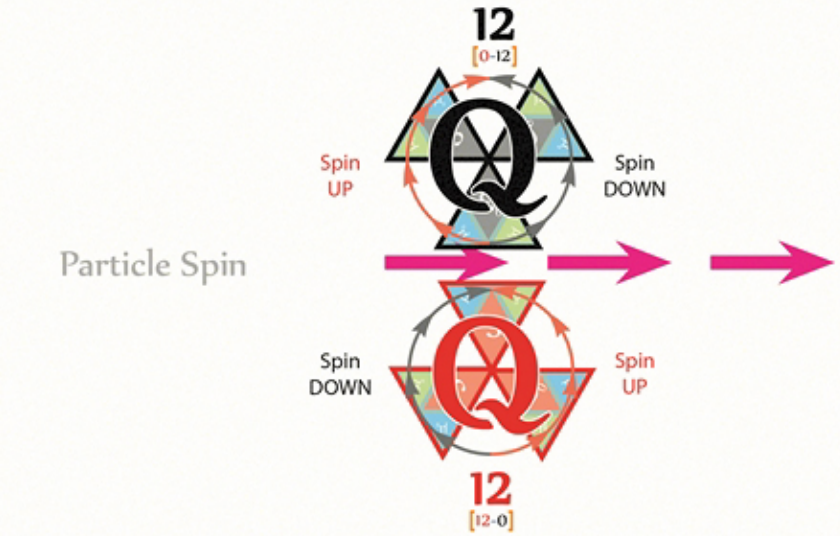
All high mass-energy particles 'decay' into low mass-energy particles by emitting photons

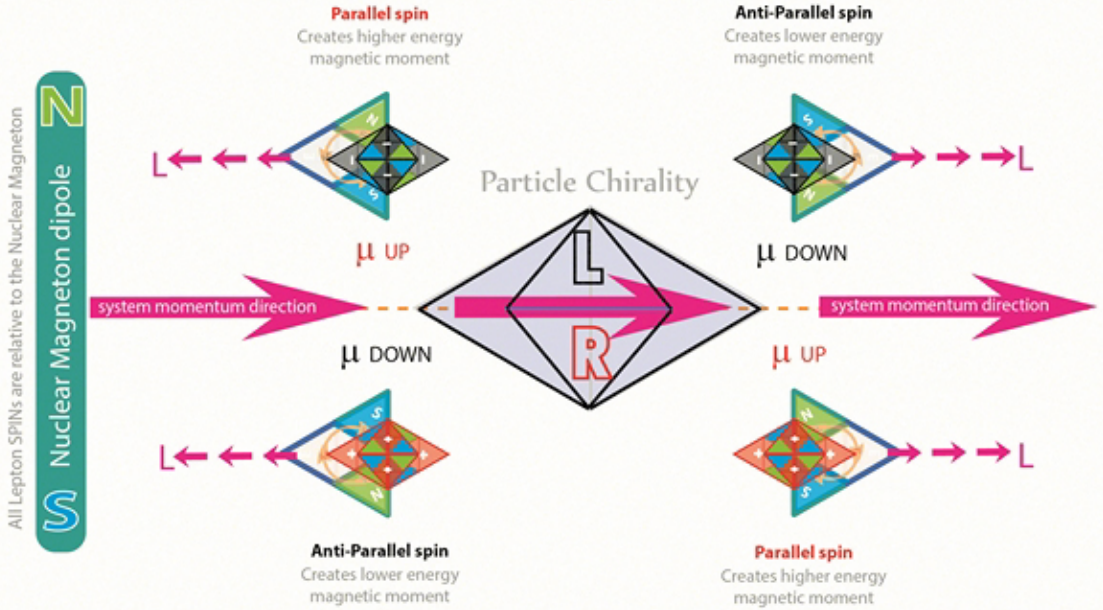


Note: All Lepton geometries are the same size - only the energy density of the EM field changes

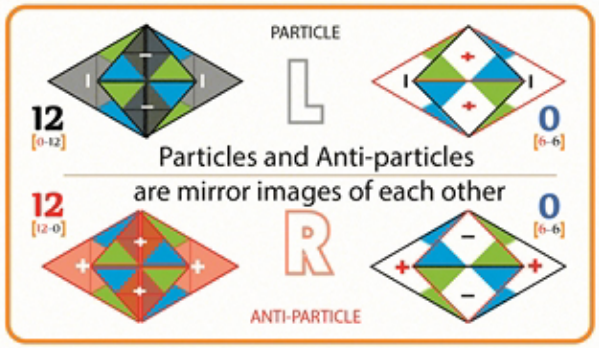
Lepton Helicity and Chirality

Particle Spin and Handedness is always referenced
with respect to the direction of nett total system linear Momentum

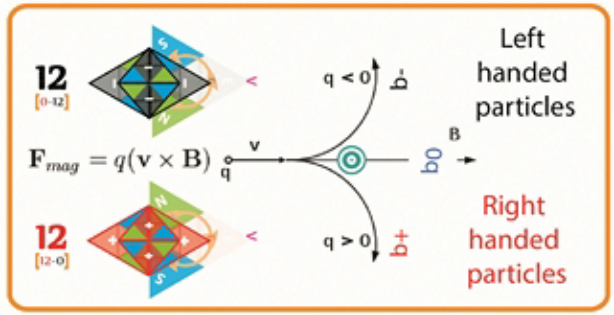




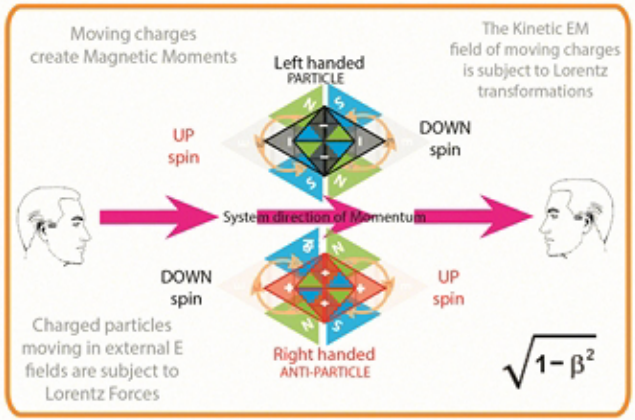
Particle Chirality



Particle Helicity



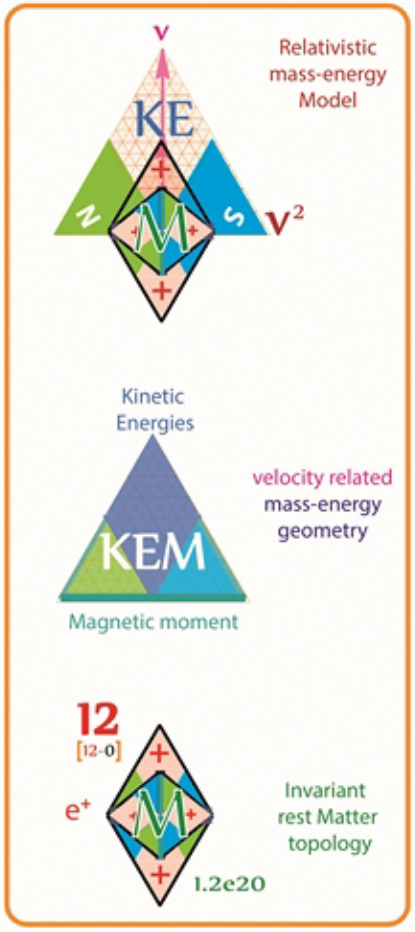
Lorentz Force and Transformation

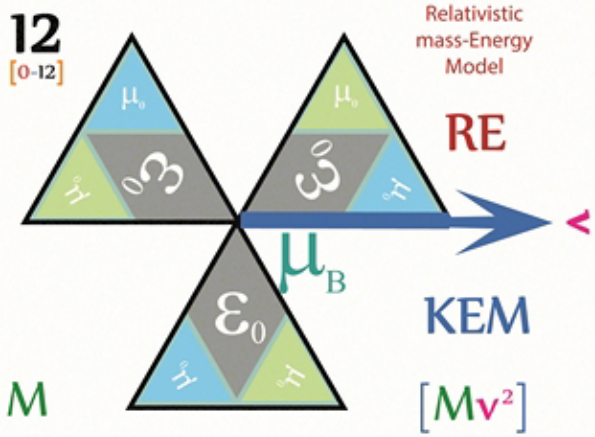


'Point Charges'

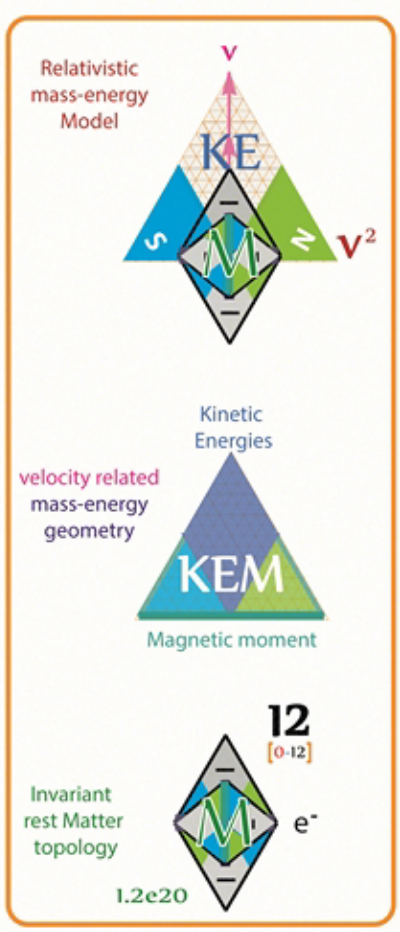
The only true 'point charges' are Zero Point Fields

Positive Particles



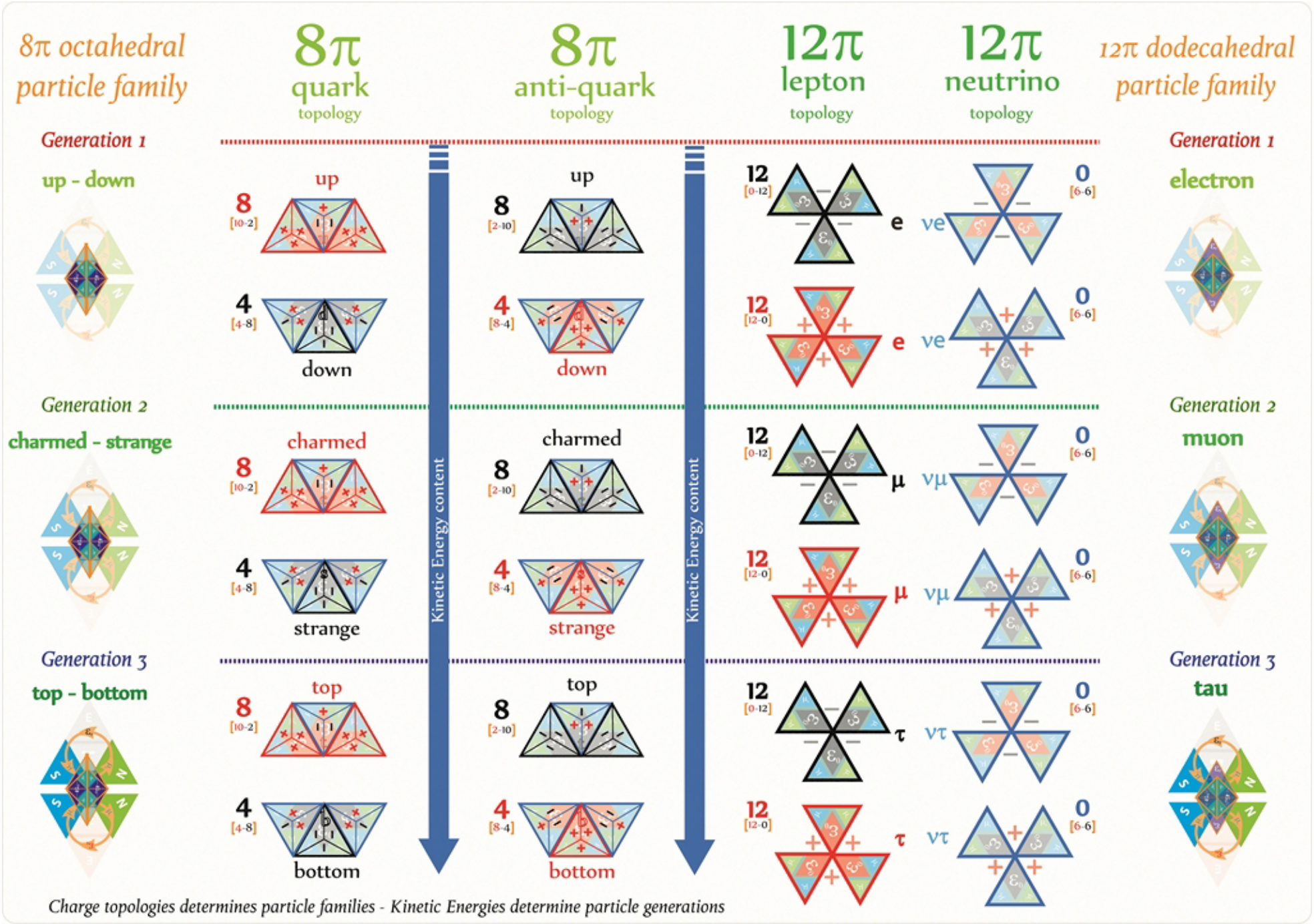


Negative Particles



It is the Kinetic EM field geometry of charged Matter topologies in motion that produces Magnetic Moments

[not a relativistic distortion of speherical charge topologies]

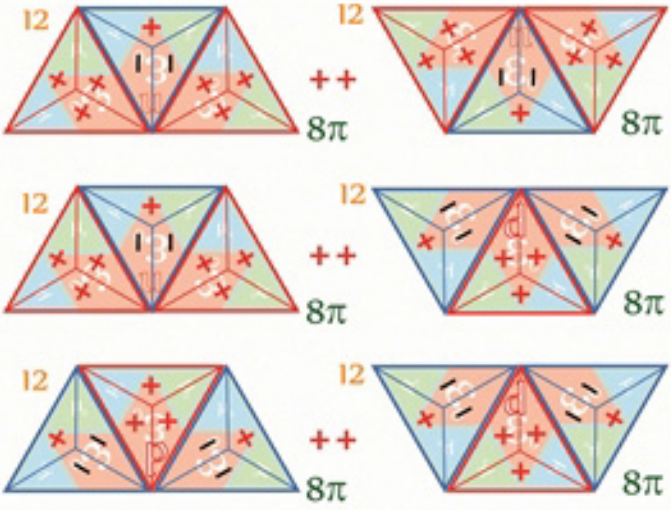


Mesons

are 24π subatomic mass-Matter particles composed of one quark and one antiquark

$$24\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

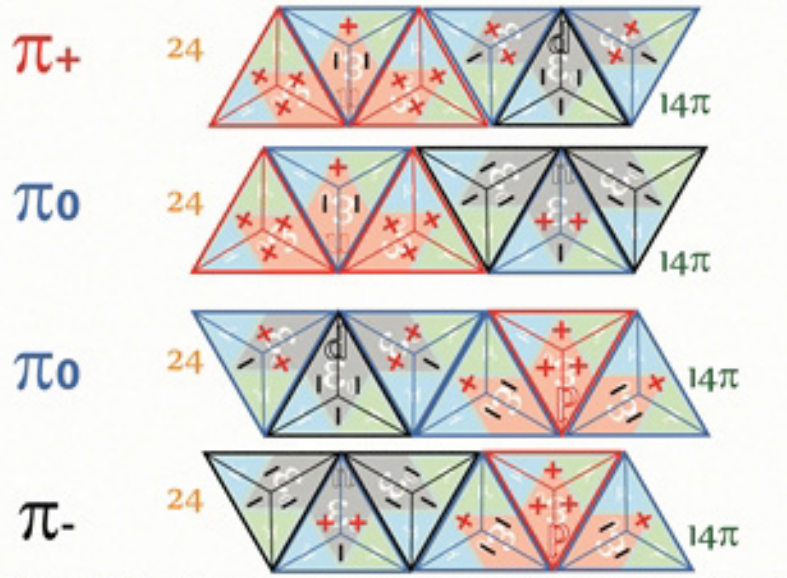
Mesons · EM Field (ElectroMagnetic) · Planck quanta · mass · velocity



prevented by strong repulives forces

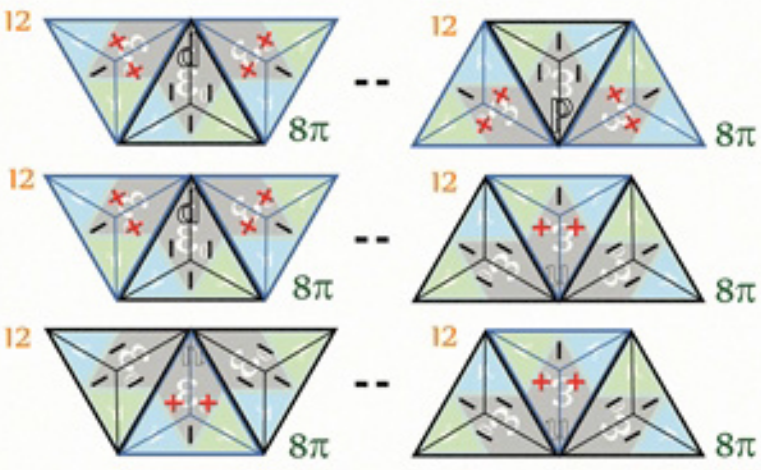
24π charged mass-energy fascia geometries

Pions

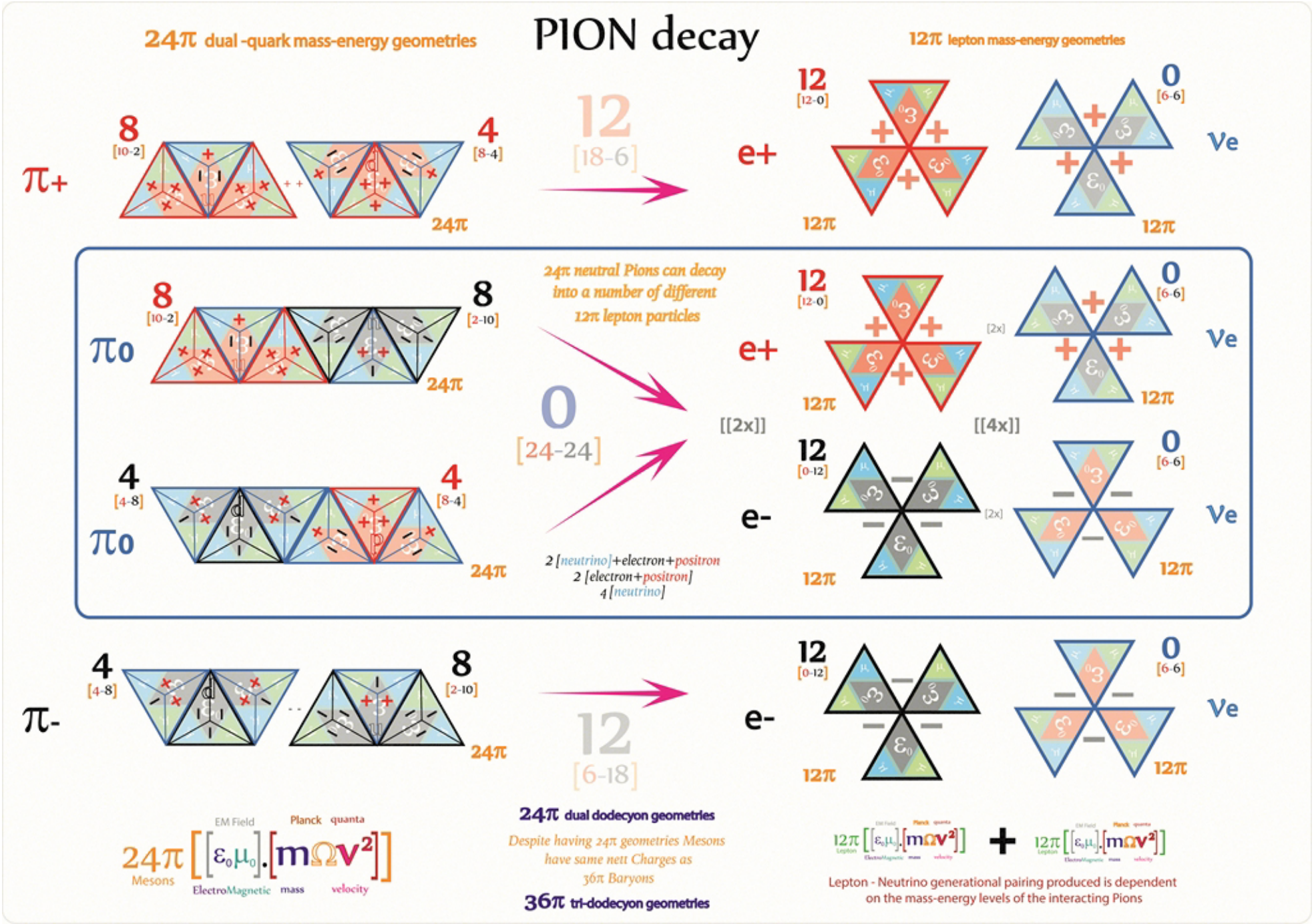


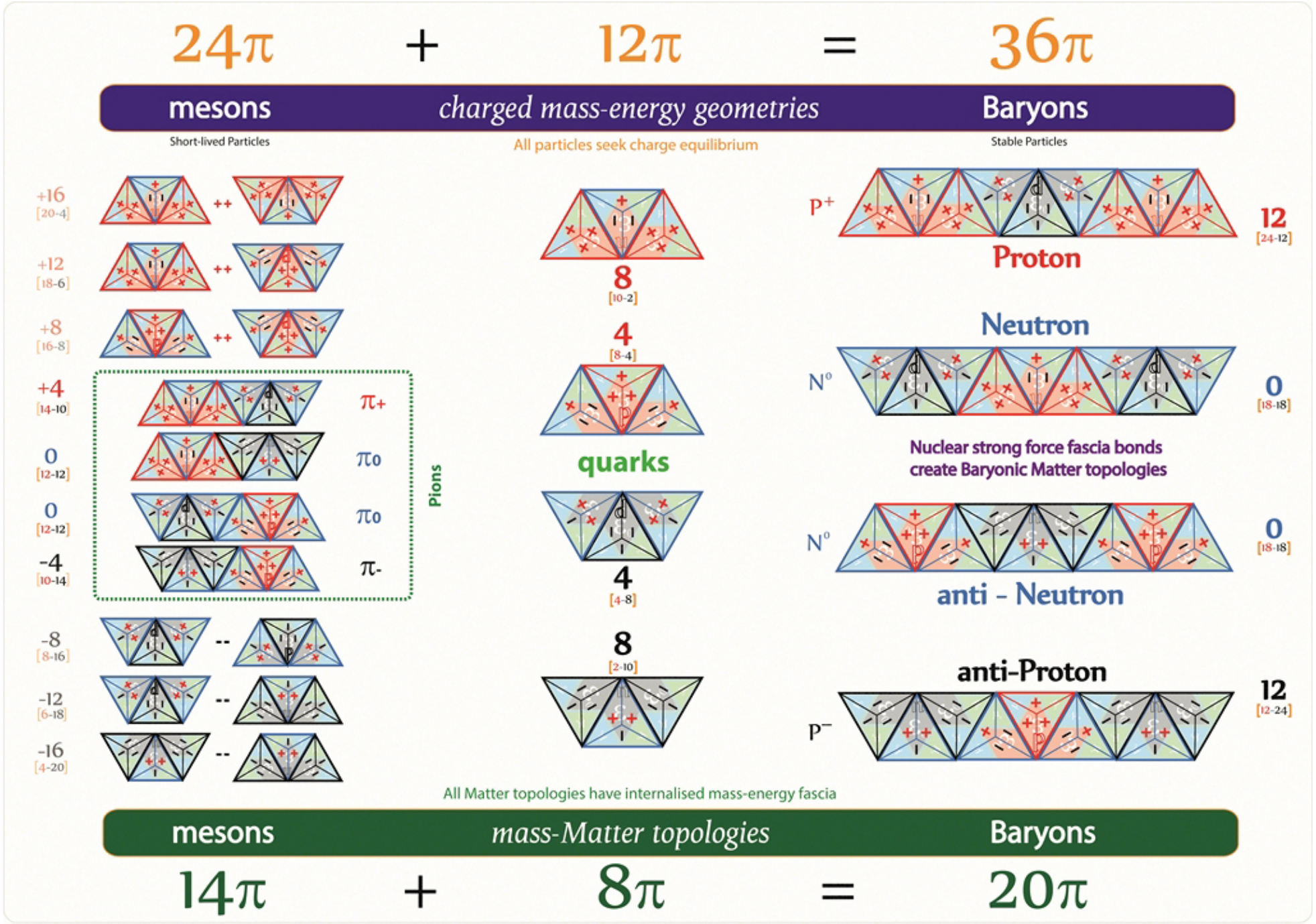
Short lived combinations

14π final mass-Matter topologies



prevented by strong repulives forces





Baryons

Baryons are 36π mass-energy geometries

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

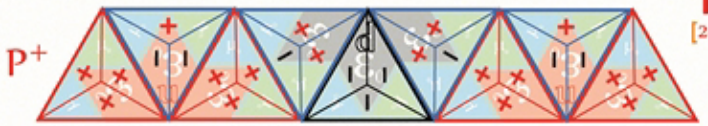
Baryons — ElectroMagnetic (EM Field) — mass — velocity (Planck quanta)

Double Charmed Xi

12
[24-12]

Charmed Sigma

Lambda



Proton

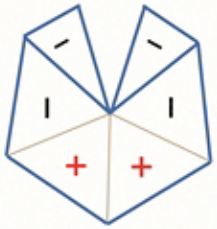
Double Bottom Xi

-1

Bottom Xi

Charmed Bottom Omega

Bottom Omega

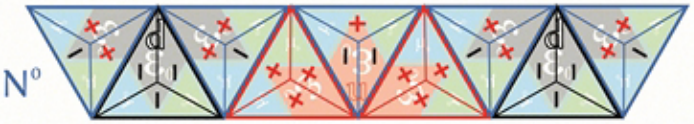


-2

+1

Bottom Lambda

Neutron



0
[18-18]

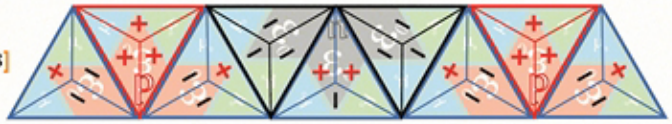
Bottom Sigma

Charmed Omega

+2

Charmed Bottom Omega Prime

0
[18-18]



Anti - Neutron

0

Charmed Xi Prime

Charmed Lambda

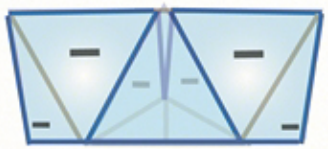
Double Charmed Omega

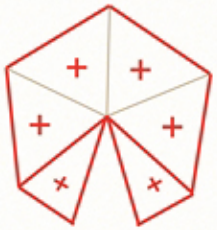
Xi

Bottom Xi Prime

Anti-Proton

12
[12-24]





Sigma

Double Bottom Omega

that result in 20π mass-Matter topologies

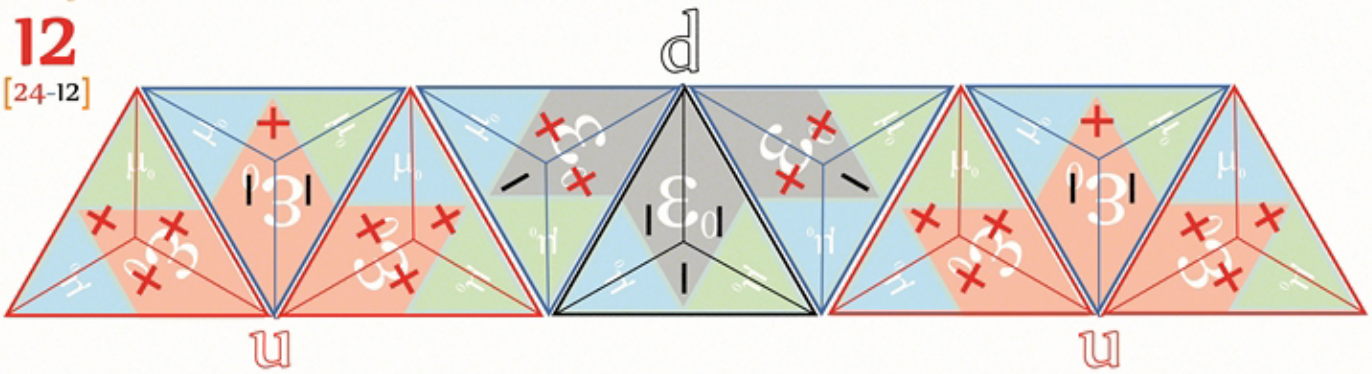
Proton

nett charge

12

[24-12]

P^+



charged mass-energy geometries

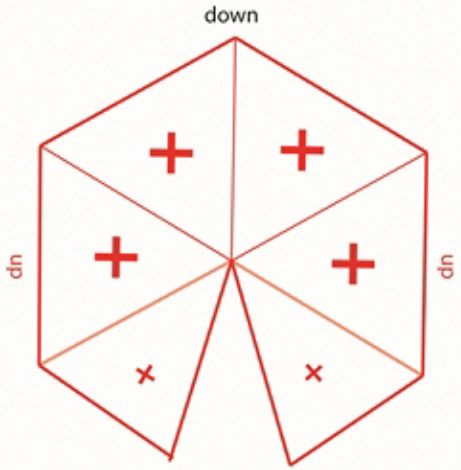
36π

Tri-quark mass-energy geometry

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

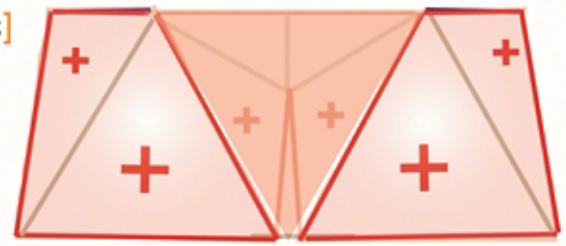
Baryons — EM Field: ElectroMagnetic — Planck quanta: mass, velocity

Baryon mass-Matter topology



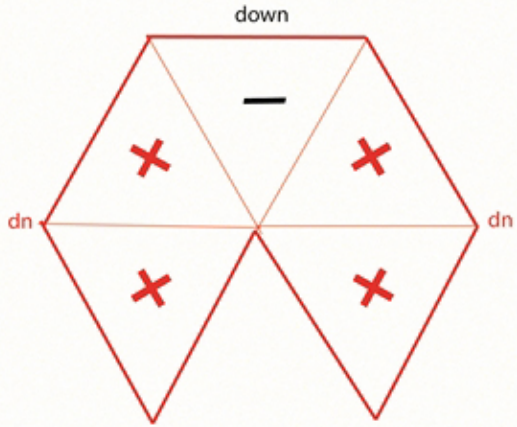
12

[24-12]



20π

charged mass-Matter topology



Proton

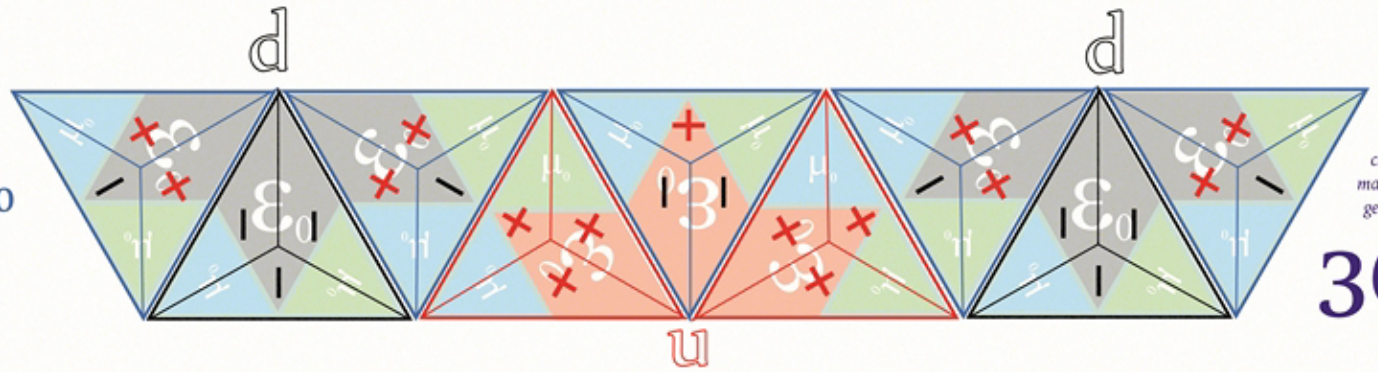
Neutron

nett charge

0

[18-18]

N°



charged mass-energy geometries

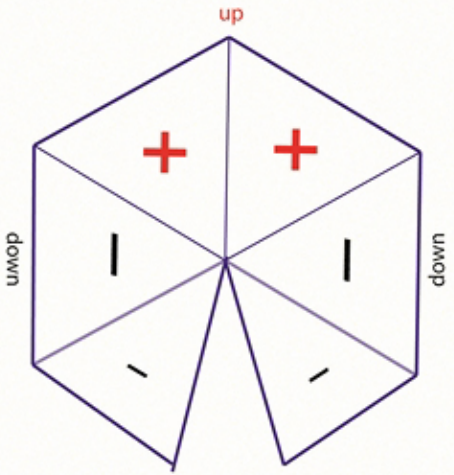
36π

Tri-quark mass-energy geometry

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

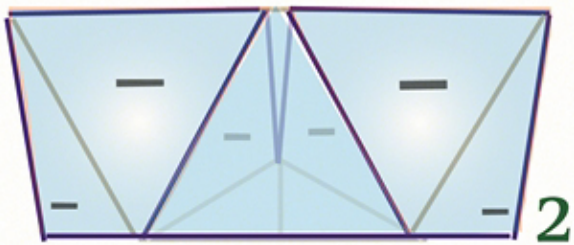
Baryons — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

Baryon mass-Matter topology



0

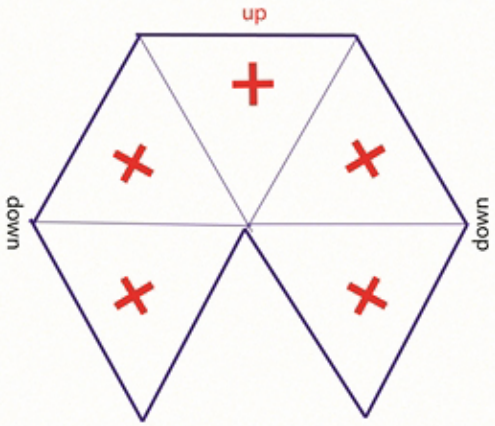
[18-18]



20π

Neutron

charged mass-Matter topology



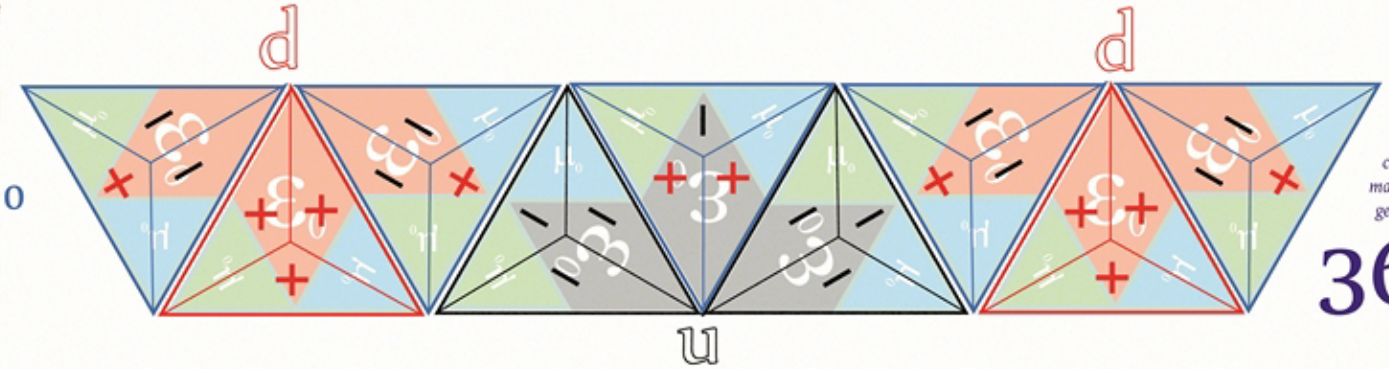
anti-Neutron

nett charge

0

[18-18]

N⁰



charged mass-energy geometries

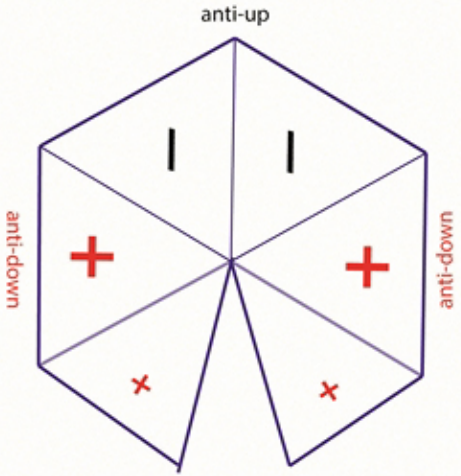
36π

Tri-quark mass-energy geometry

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

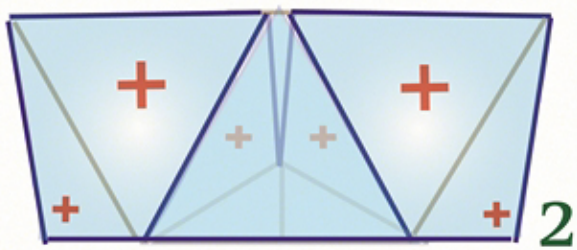
Baryons — EM Field — Planck quanta — ElectroMagnetic — mass — velocity

Baryon mass-Matter topology



0

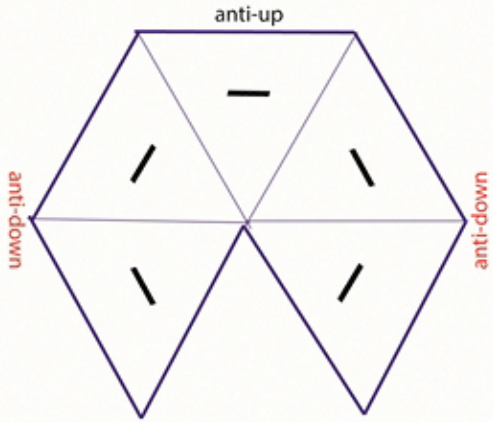
[18-18]



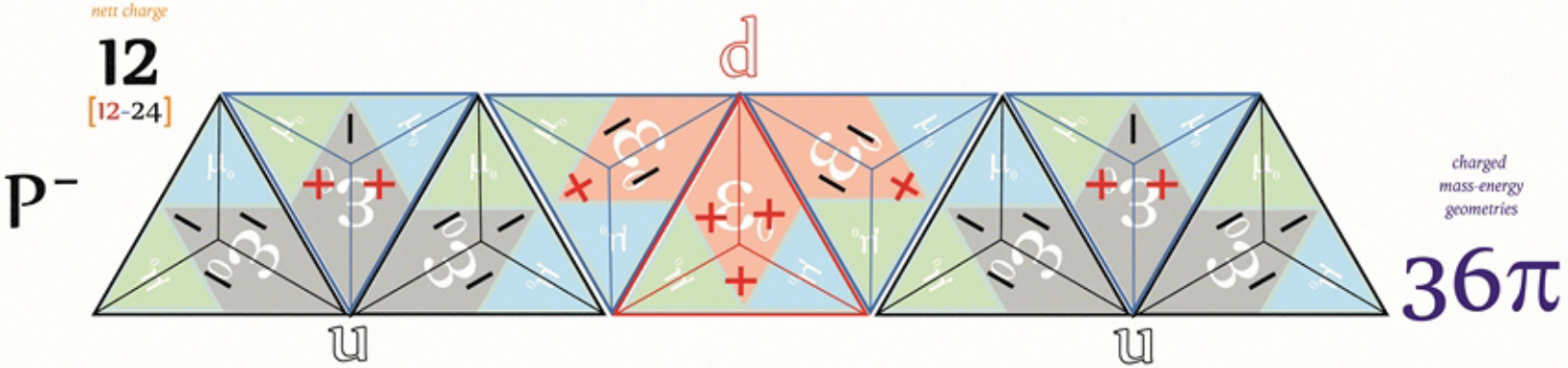
20π

charged mass-Matter topology

anti-Neutron



anti-Proton

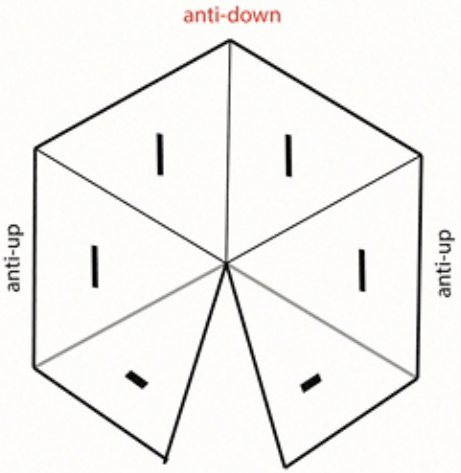


Tri-quark mass-energy geometry

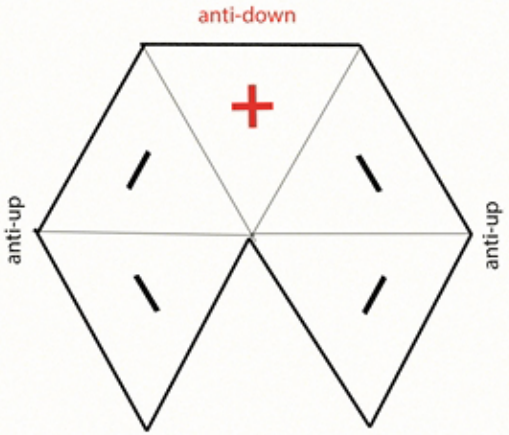
$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

Baryons · EM Field · ElectroMagnetic · Planck quanta · mass · velocity

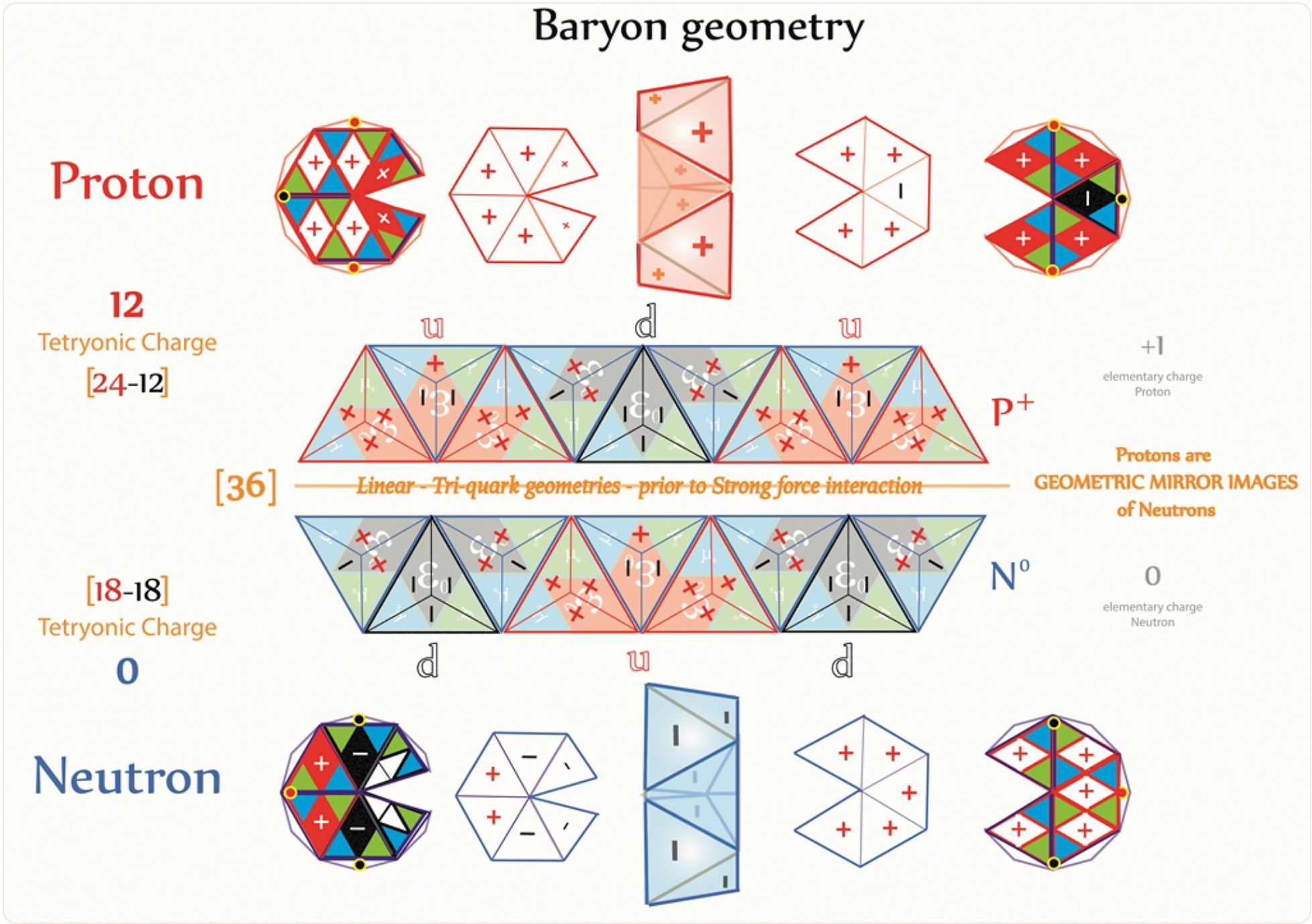
Baryon mass-Matter topology

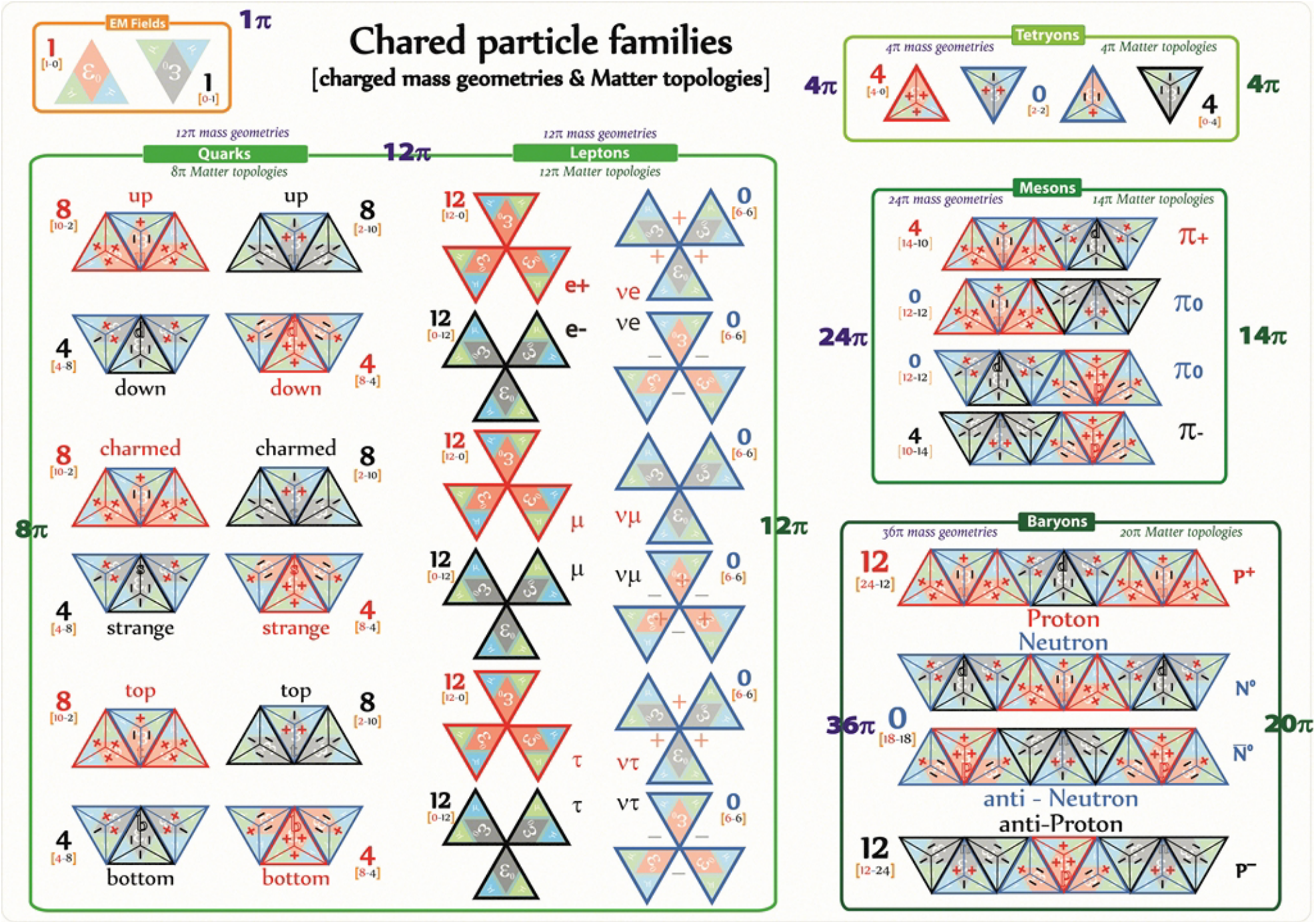


anti-Proton



Baryon geometry

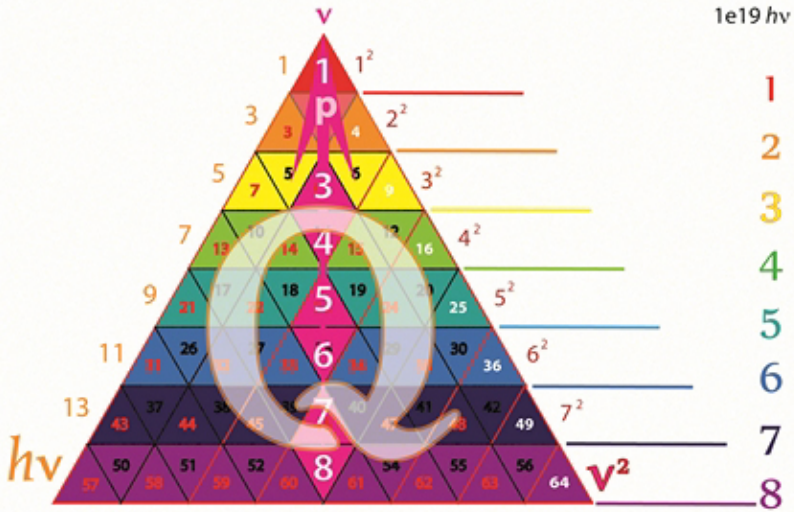




Tetryonic Energy levels

$$E = n\pi\left[\left[m\Omega v^2\right]\right]$$

Energy; Planck quanta; mass; velocity; momentum



Energy levels

n

1e19 hv = n

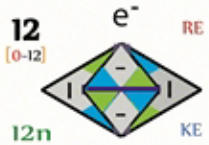
1 2 3 4 5 6 7 8

charged field quantisation

Every charged fascia of a Field or Particle holds squared energy levels
[equilateral EM mass-energy geometries & Matter topologies]

The Tetryonic KEM Colour code

As the energy levels of atomic nuclei increase/decrease
the KEM fields of leptons bound to them change accordingly



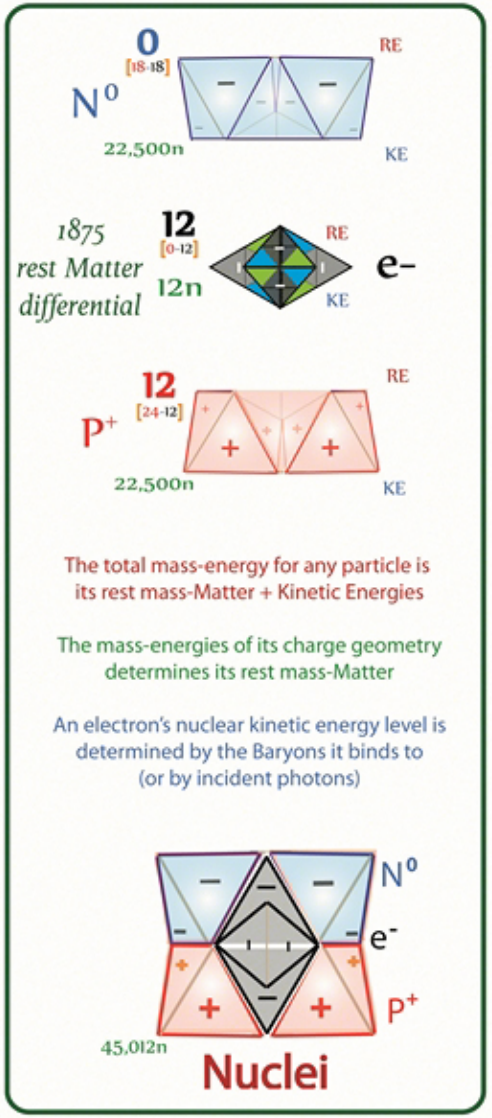
Electron

1 2 3 4 5 6 7 8

1 4 9 16 25 36 49 64

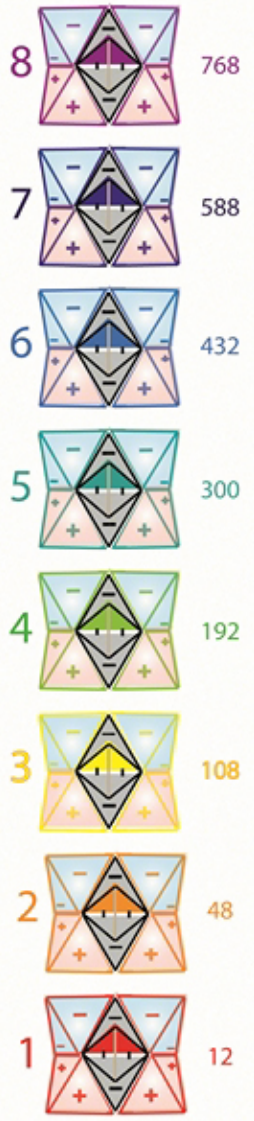
All energy levels are Tetryonic square number quantas
ie 1, 4 , 9, 16, 25 etc (1,2,3,4,5)

rest mass-Matter



Nuclear Quantum Level

electron Kinetic Energy Level

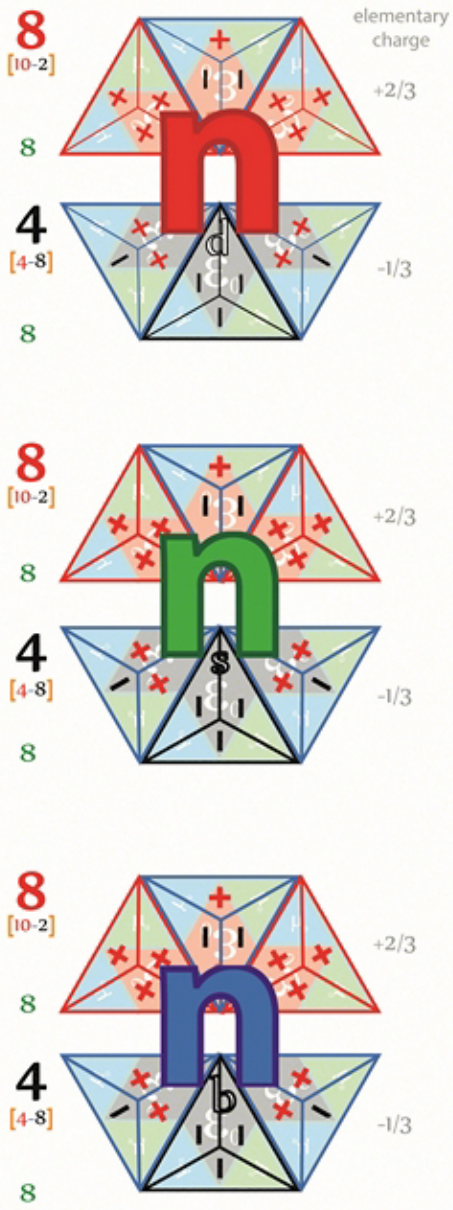


As the Nuclei quantum level increases - so does the electron's energy and tmomenta

$$KEM = 4\pi\left[\left[\varepsilon_o\mu_o\right].\left[m\Omega v^2\right]\right]$$

Kinetic energies; EM Field; ElectroMagnetic; Planck quanta; mass; velocity

tri-quark charged toplogy combinations



Quarks seek charge equilibrium by forming Baryonic Matter topologies as a result of charge interactions [STRONG nuclear Force]

UP	gen 1
DOWN	
CHARMED	gen 2
STRANGE	
TOP	gen 3
BOTTOM	

[+8 +8 +8] [10-2] [10-2] [10-2] **24** (+) 2 — 2/3 2/3 2/3

[+8 -4 +8] [10-2] [4-8] [10-2] **12** (+) 1 — 2/3 1/3 2/3

The particle Zoo is the result of tri-quark mass-energy topologies

[-4 +8 -4] [4-8] [10-2] [4-8] **0** (0) 0 — 1/3 2/3 1/3

[-4 -4 -4] [4-8] [4-8] [4-8] **12** (-) 1 — 1/3 1/3 1/3

Twice the number of combinations are possible with the inclusion of anti-matter topologies

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

Baryons; EM Field: ElectroMagnetic; Planck quanta: mass, velocity

Any combinations of inter-generational quarks results in differing final mass-energies in the created Baryonic Matter due to energy equalisation

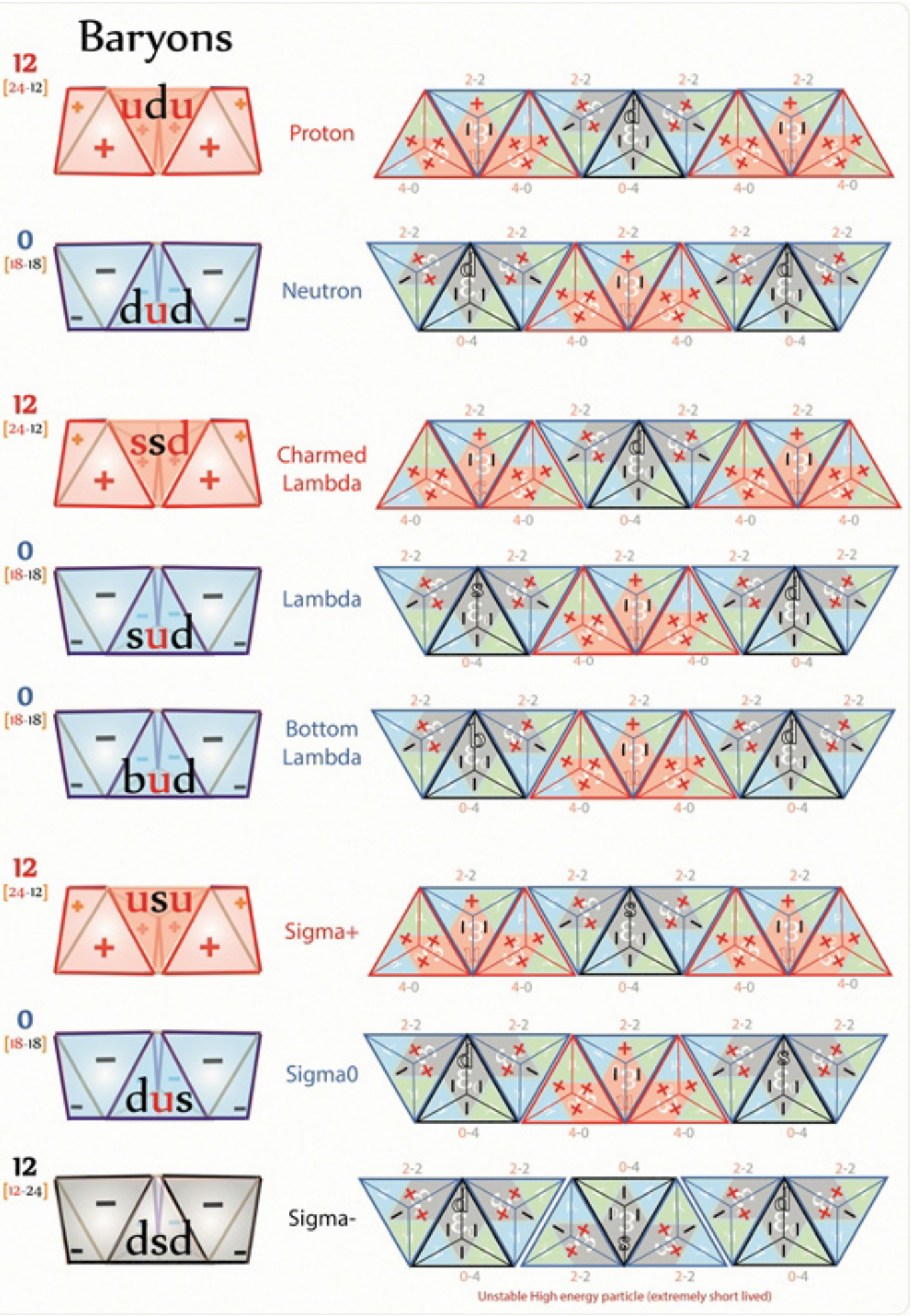
The Particle Zoo

uuu	udu	ucu	usu	utu	ubu	suu	sdu	scu	ssu	stu	sbu
uud	udd	ucd	usd	utd	ubd	sud	sdd	scd	ssd	std	sbd
uuc	udc	ucc	usc	utc	ubc	suc	sdc	scc	ssc	stc	sbc
uus	uds	ucs	uss	uts	ubs	sus	sds	scs	sss	sts	sbs
uut	udt	uct	ust	utt	ubt	sut	sdt	sct	sst	stt	sbt
uub	udb	ucb	usb	utb	ubb	sub	sdb	scb	ssb	stb	sbb
duu	ddu	dcu	dsu	dtu	dbu	tuu	tdu	tcu	tsu	ttu	tbu
dud	ddd	dcd	dsd	dtd	dbd	tud	tdd	tcd	tsd	ttd	tbd
duc	ddc	dcc	dsc	dtc	dbc	tuc	tdc	tcc	tsc	ttc	tbc
dus	dds	dcs	dss	dts	dbs	tus	tds	tcs	tss	tts	tbs
dut	ddt	dct	dst	dtt	dbt	tut	tdt	tct	tst	ttt	tbt
dub	ddb	dcb	dsb	dtb	dbb	tub	tdb	tcb	tsb	ttb	tbb
cuu	cdu	ccu	csu	ctu	cbu	buu	bdu	bcu	bsu	btu	bbu
cud	cdd	ccd	csd	ctd	cbd	bud	bdd	bcd	bsd	btd	bbd
cuc	cdc	ccc	csc	ctc	cbc	buc	bdc	bcc	bsc	btc	bbc
cus	uds	ucs	uss	uts	ubs	bus	bds	bcs	bss	bts	bbs
cut	cdt	cct	cst	ctt	cbt	but	bdt	bct	bst	btt	bbt
cub	cdb	ccb	csb	ctb	cbb	bub	bdb	bcb	bsb	btb	bbb

216 possible Baryon topologies [excluding anti-matter] with each combination producing differing Baryonic nett energy levels

Quarks always form symmetrical [udu] or [dud] charged Baryonic topologies
[same charges never combine except under high energy conditions]
ie. Proton is a [udu] not [uud] as is commonly stated

Baryons

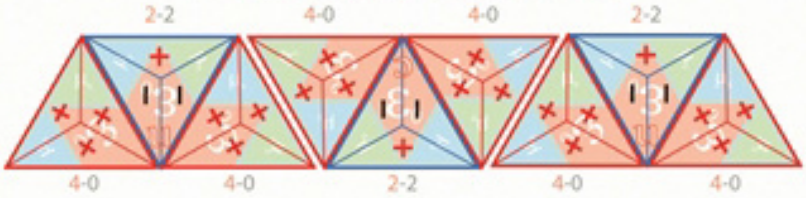


Baryons

24
[30-06]

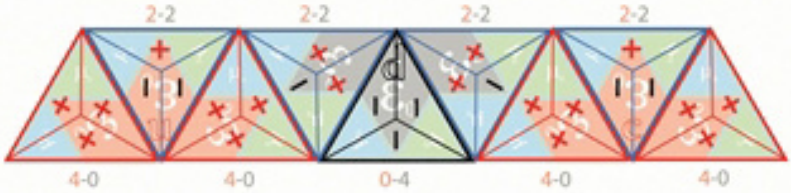
Charmed Sigma

Unstable High energy particle (extremely short lived)



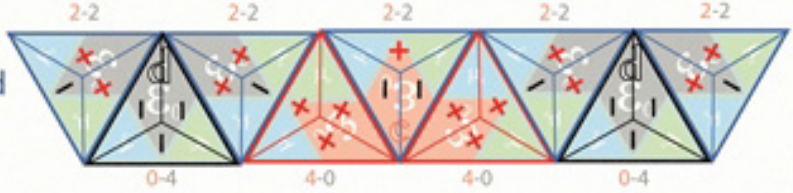
12
[24-12]

Charmed Sigma

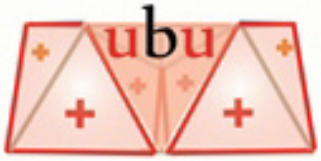


0
[18-18]

Charmed Sigma



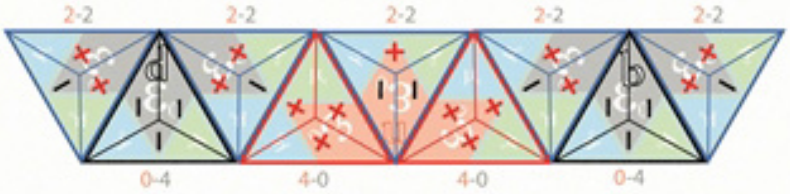
12
[24-12]



Bottom Sigma

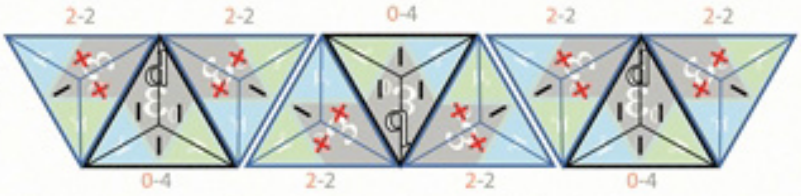
0
[18-18]

Bottom Sigma



12
[12-24]

Bottom Sigma

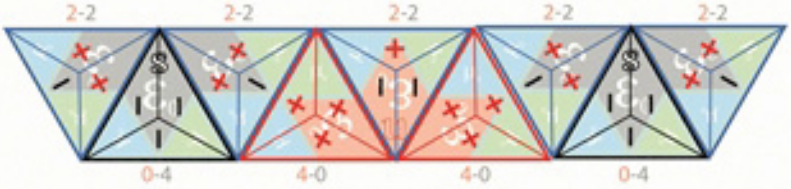


Unstable High energy particle (extremely short lived)

Baryons

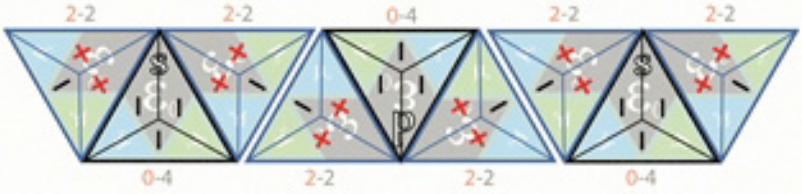
0
[18-18]

Xi



12
[12-24]

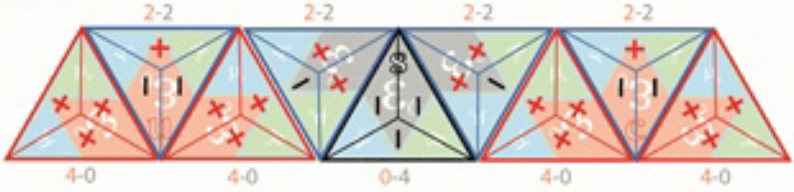
Xi



Unstable High energy particle (extremely short lived)

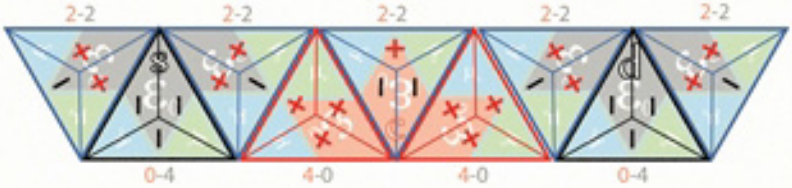
Charmed Xi Prime

12
[24-12]



Charmed Xi Prime

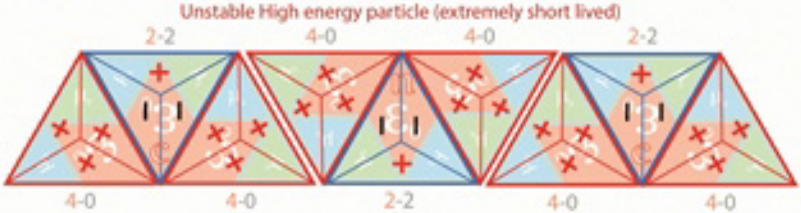
0
[18-18]



Double Charmed Xi

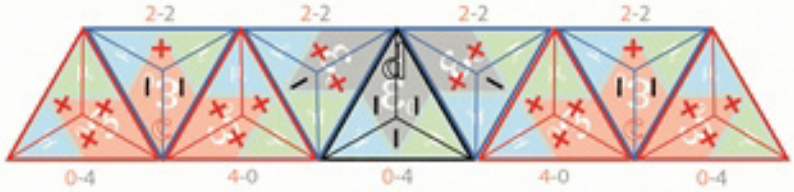
24
[30-06]

Unstable High energy particle (extremely short lived)



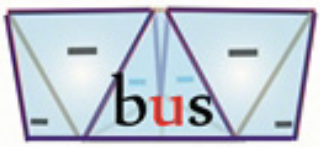
Double Charmed Xi

12
[24-12]

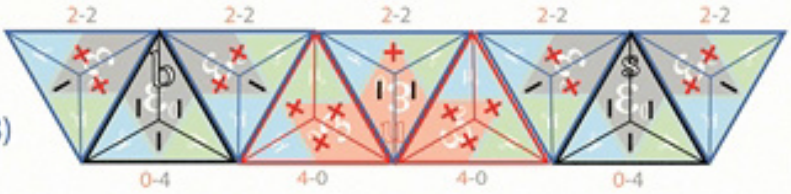


Baryons

0
[18-18]

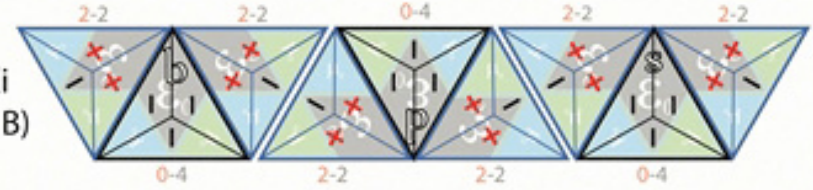


Bottom Xi
(Cascade B)



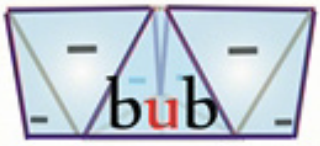
12
[12-24]

Bottom Xi
(Cascade B)

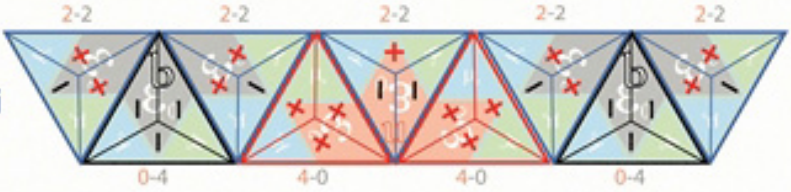


Unstable High energy particle (extremely short lived)

0
[18-18]

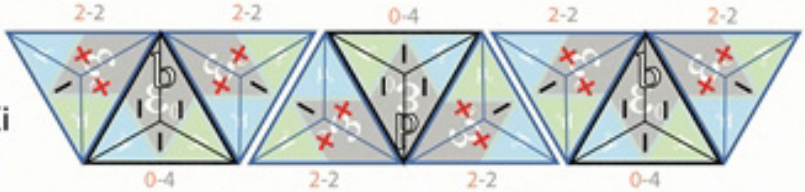


Double
Bottom Xi



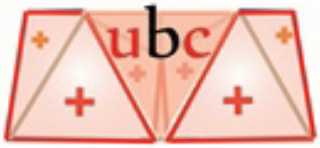
12
[12-24]

Double
Bottom Xi

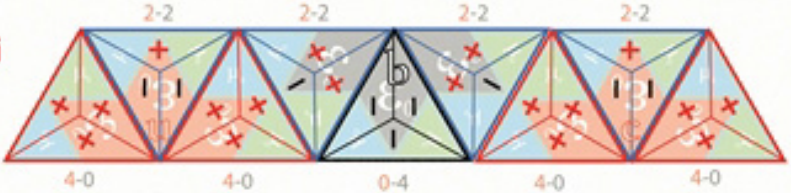


Unstable High energy particle (extremely short lived)

12
[24-12]

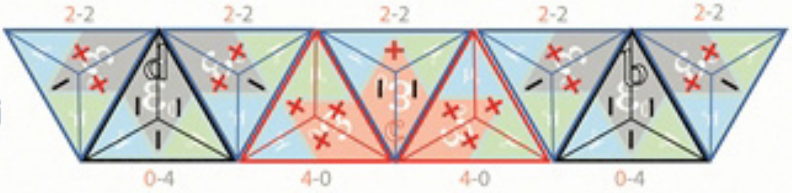


Charmed
Bottom Xi



0
[18-18]

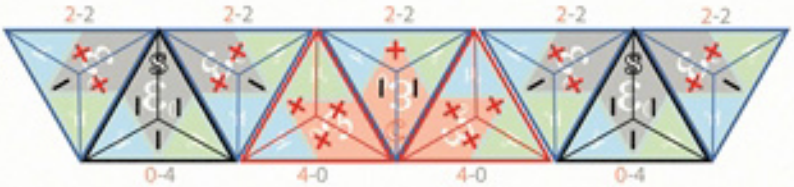
Charmed
Bottom Xi



Baryons

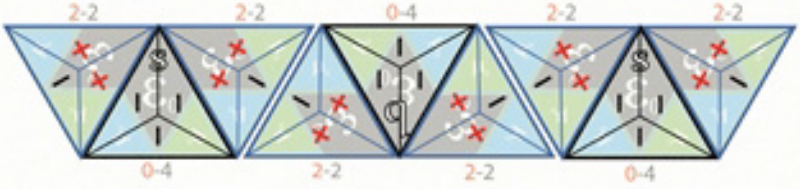
0 [18-18]

Charmed Omega



12 [12-24]

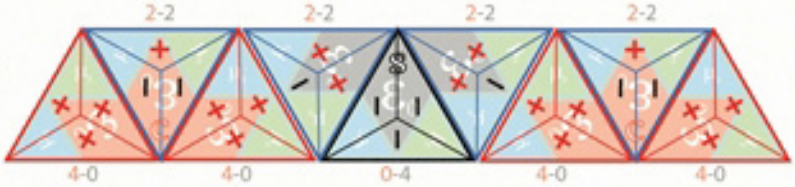
Bottom Omega



Unstable High energy particle (extremely short lived)

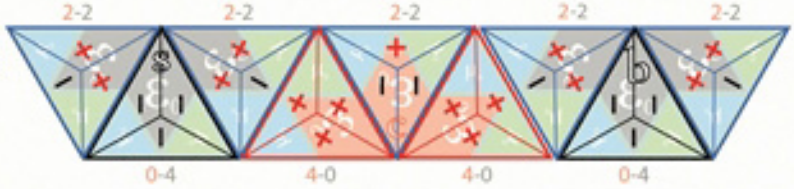
12 [24-12]

Double Charmed Omega



0 [18-18]

Charmed Bottom Omega

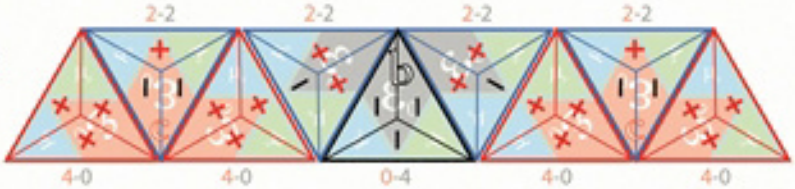


12 [12-24]

Double Bottom Omega

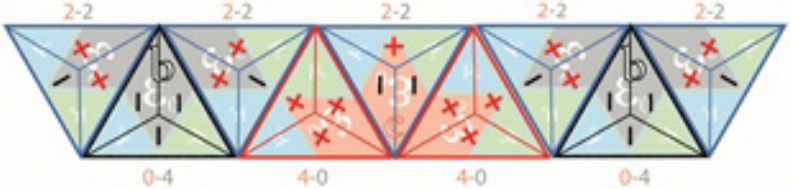
12 [24-12]

Double Charmed Bottom Omega



0 [18-18]

Charmed Double Bottom Omega



ZPF

Photons

Bosons

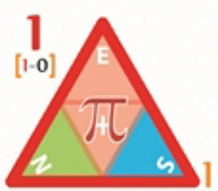
Tetryons

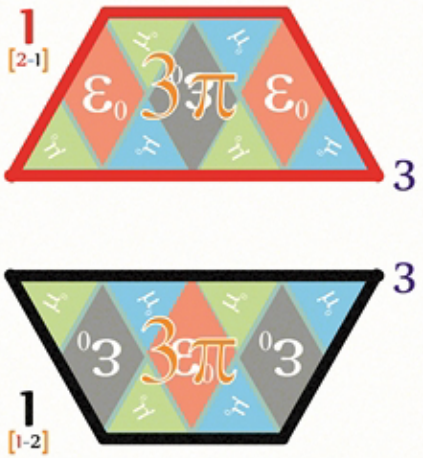
nπ charged mass-Energy-Matter geometries

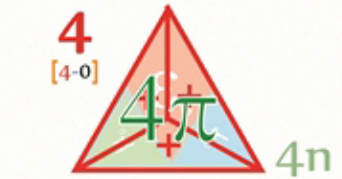
Ω

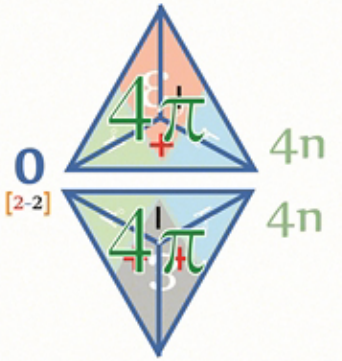
ZPFs are the quantum of Bosons

Q









All energies seek equilibrium

Q

Energy momenta

$$n\pi_{\text{Energy}}\left[\left[m\Omega v\right]^{2}\right]$$

EM mass-Energies

$$\text{EVEN}\pi_{\text{mass-energy}}\left[\left[\varepsilon_0\mu_0\right]_{\text{ElectroMagnetic}}^{\text{EM Field}}.\left[m\Omega v^{2}\right]_{\text{mass}\quad\text{velocity}}^{\text{Planck quanta}}\right]$$

Charges

$$\text{ODD}\pi_{\text{Charge}}\left[\left[\varepsilon_0\mu_0\right]_{\text{ElectroMagnetic}}^{\text{EM Field}}.\left[m\Omega v^{2}\right]_{\text{mass}\quad\text{velocity}}^{\text{Planck quanta}}\right]$$

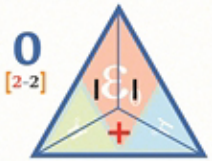
Matter

$$4n\pi_{\text{Matter}}\left[\left[\varepsilon_0\mu_0\right]_{\text{ElectroMagnetic}}^{\text{EM Field}}.\left[m\Omega v^{2}\right]_{\text{mass}\quad\text{velocity}}^{\text{Planck quanta}}\right]$$

Gluons

The gluon can be considered to be the fundamental exchange particle facilitating the strong interaction between protons and neutrons in a nucleus.

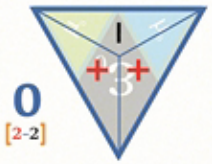
Gluons are the exchange particles for the 'colour' strong force between quarks, analogous to the exchange of photons in the electromagnetic force between two charged particles.

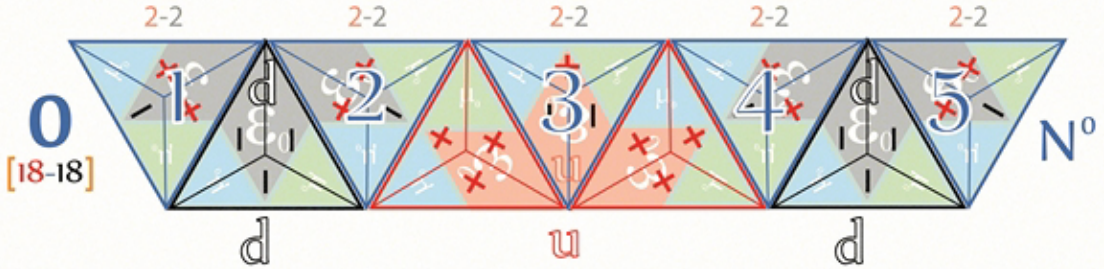


Ω

Gluons are considered to be bi-coloured, carrying a unit of colour and a unit of anti-colour

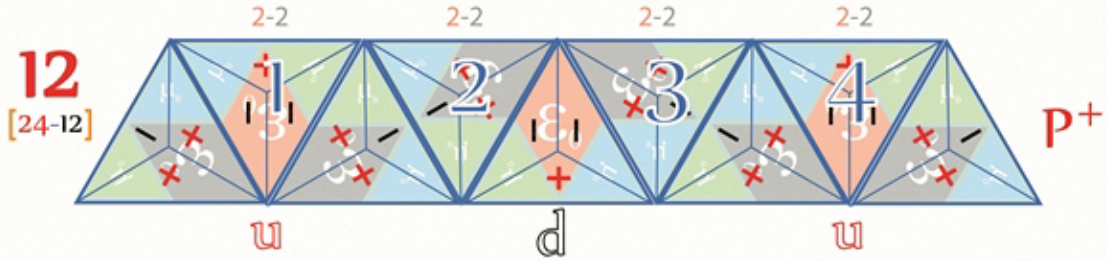
$\bar{\upsilon}$





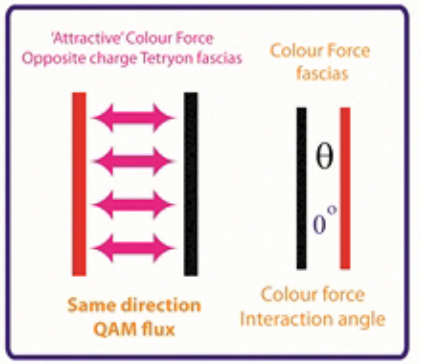
Q

Gluons are the neutral Tetryons inside all fermionic Matter topologies



They are the neutral charge [di-electric] Tetryons located between charged Tetryons in Matter topologies

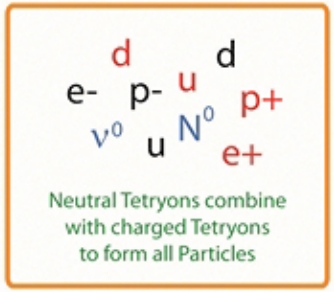
[attractive coulombic forces between their opposite charged fascia create the 'colour force]



The interaction between neutral Tetryons (Gluons) and all charged Tetryons is the Strong Colour force

nett charge of Gluons is same as a Neutron

Electrons contain no Gluons



Neutral Tetryons combine with charged Tetryons to form all Particles

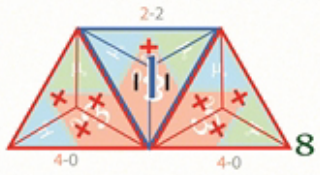
Gluons in Fermions

In the Standard model Gluons have no mass and no electric charge.
They carry a special 'colour charge' property that hold quarks together to form Baryons

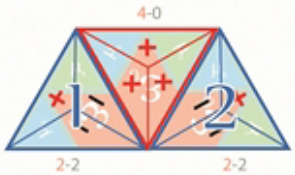
Tetryonics reveals that gluons are neutral charge tetryons comprised of equal positive & negative mass-energies & are elementary Matter particles

'Gluons' are neutral tetryons

u 8 [10-2] 8



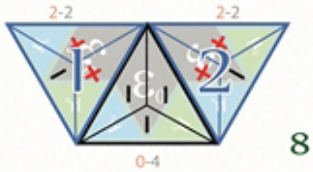
d 4 [8-4] 8



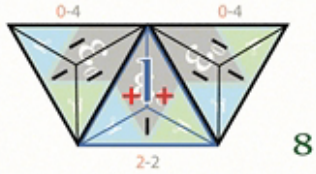
$4\pi_{\text{Gluons}}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

d 4 [4-8] 8



u 8 [2-10] 8



up Quarks have 1 Gluon [Neutral Tetryon]

anti-down Quarks have 2 Gluons [Neutral Tetryons]

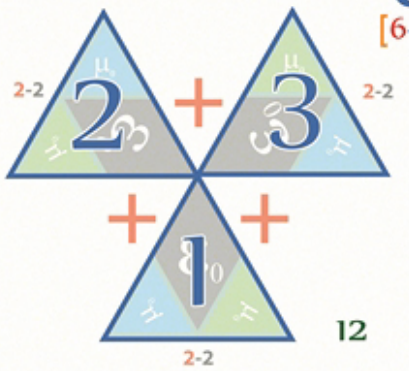
GLUONS
are the neutral tetryons in Matter topologies acting as a di-electric between charged tetryons

down Quarks have 2 Gluons [Neutral Tetryons]

anti-up Quarks have 1 Gluon [Neutral Tetryon]

Neutrinos are 3 Gluon sets

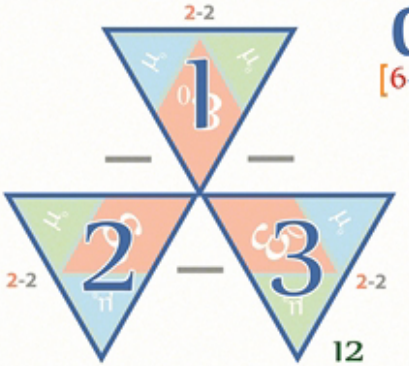
0 [6-6] ve 12



$12\pi_{\text{Glueballs}}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

0 [6-6] ve 12

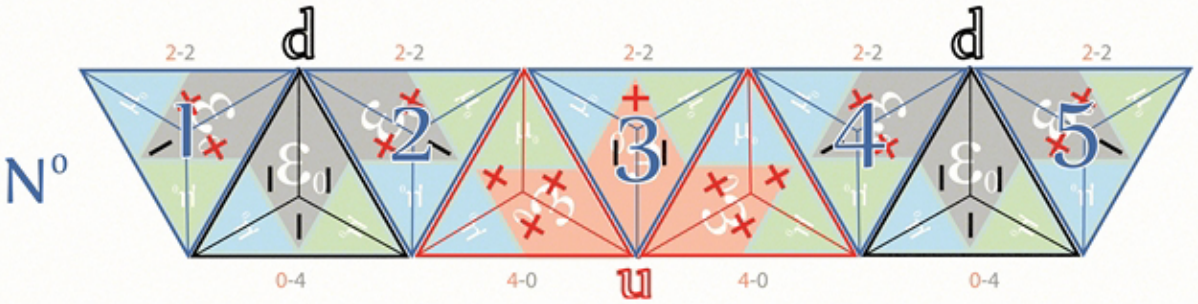


Baryonic Gluons

In 'the Standard Model', Gluons are vector gauge bosons that mediate strong interactions of quarks in quantum chromodynamics (QCD). Unlike the electrically neutral photon of quantum electrodynamics (QED), gluons themselves carry colour charge and therefore participate in the strong interaction in addition to mediating it, making QCD significantly harder to analyze than QED.

They are considered to be elementary particles which act as the exchange particles (or gauge bosons) for the colour force between quarks, analogous to the exchange of photons in the electromagnetic force between two charged particles

Tetryonics simplifies the current definition of Gluons and clearly identifies their geometric properties, along with their role in particle genesis



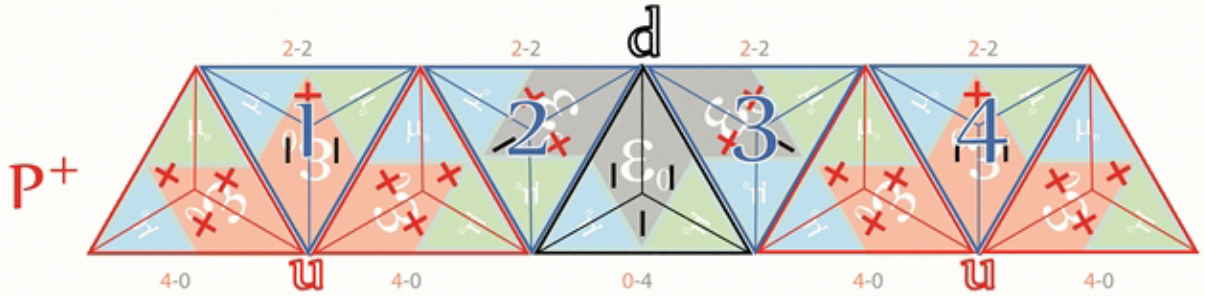
Neutrons have 5 Gluons

[Neutral Tetryons]

0

[18-18]

Deuterium nuclei (being the constituent quanta of all Elements) have 9 neutral Tetryons (Gluons) which in turn contribute to their gravitational mass along with the charged Tetryons



12

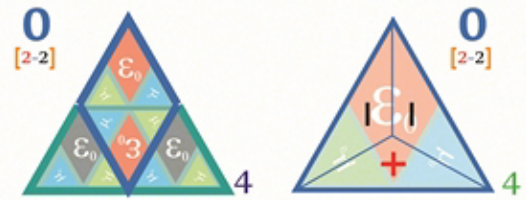
[24-12]

Protons have 4 Gluons

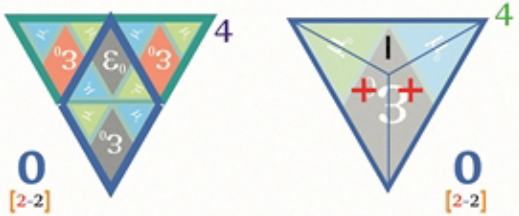
[Neutral Tetryons]

'Glueballs'

In particle physics, a glueball is a hypothetical composite particle. It solely consists of gluon particles, without valence quarks.



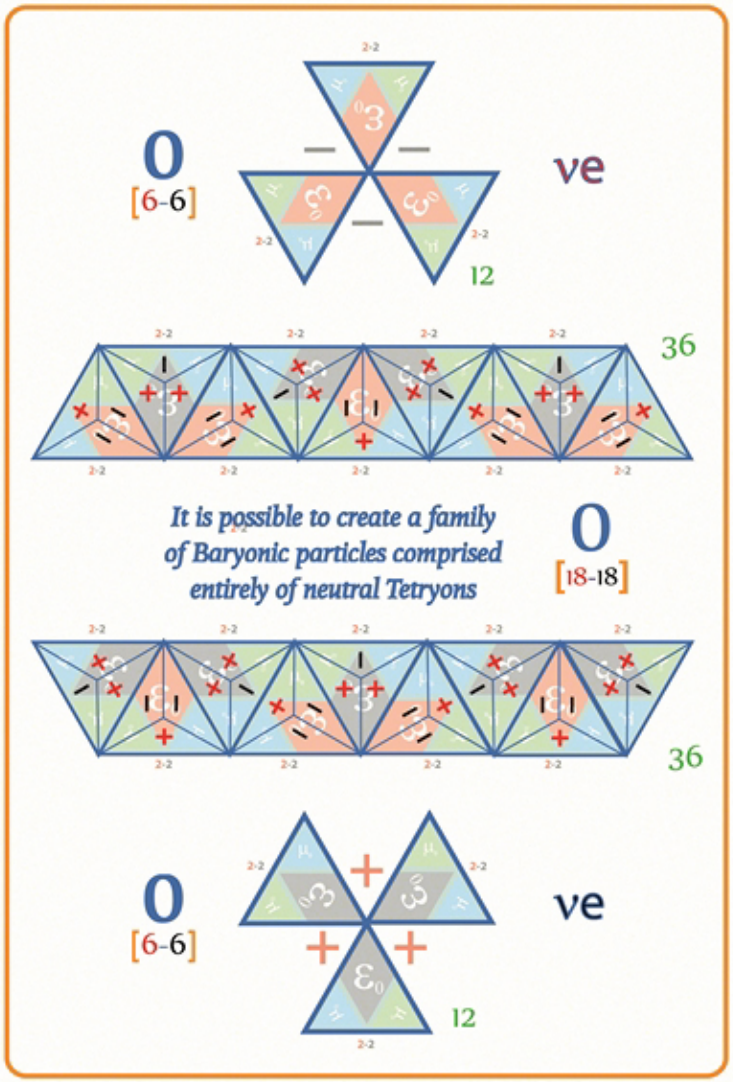
Neutral Tetryons
are the result of equal number
charged EM fields combining to form
neutral charge Tetryonic topologies



It is conceivable that given the right conditions (ie a cloud of neutral Tetryons), that in the absence of charged Tetryons to interact with, a Glueball topology can be formed entirely from neutral Tetryons

Note: Despite their total neutral charge Glueball topologies are polarised

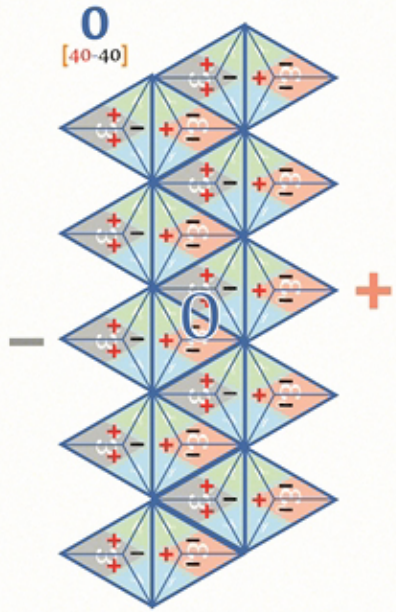
Neutrinos and some exotic neutral charge Baryons can be considered to be 'Gluon topologies'

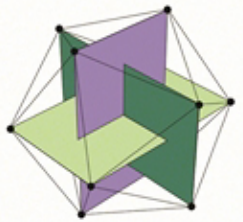


Neutrons are not considered to be Glueballs as they contain charged Tetryons

OMEGA Particle
Icosahedron Glueball

20 Neutral Teryons

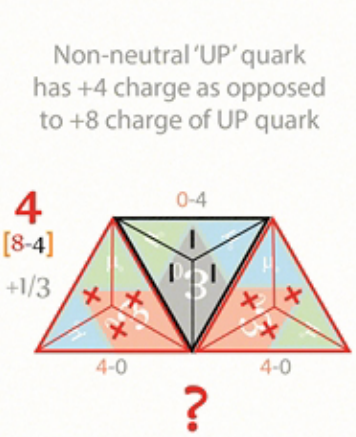


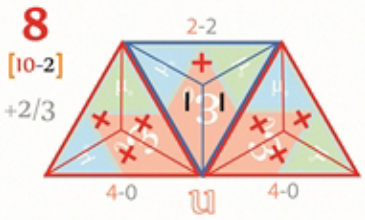


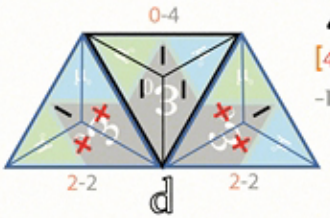
The 3 internalised planes formed by the external apex points correspond with the 3 spatial dimensions of Cartesian geometry

Non-gluonic Baryon formation

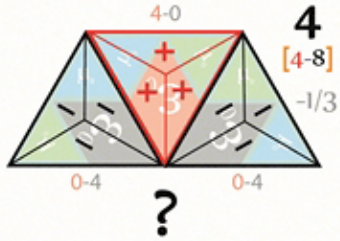
Non-neutral 'UP' quark has +4 charge as opposed to +8 charge of UP quark



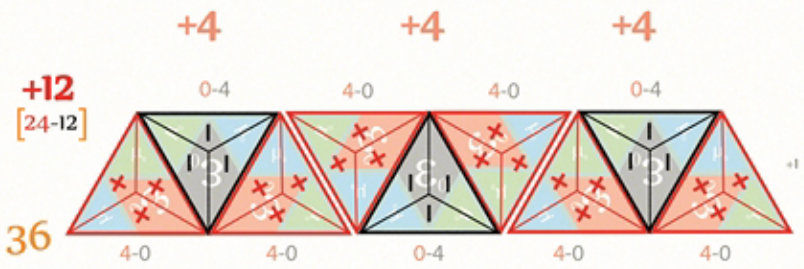


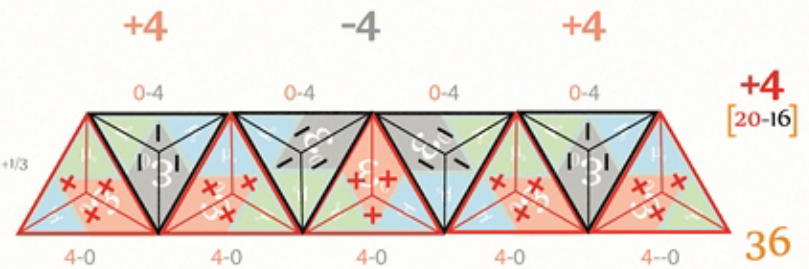


Non-neutral 'DOWN' quark has +4 charge as opposed to -4 charge of DOWN quark



Baryonic Particles can be formed with non-neutral dielectric Tetryons in lieu of the usual neutral Tetyrons [Gluons] - altering the nett charges of the quarks formed

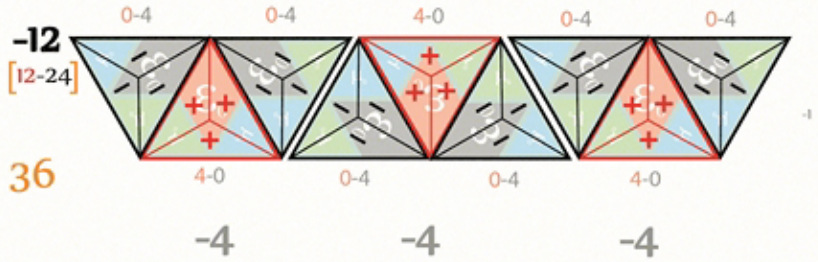




Resulting in another family of Baryons [CHARGEBALLS]

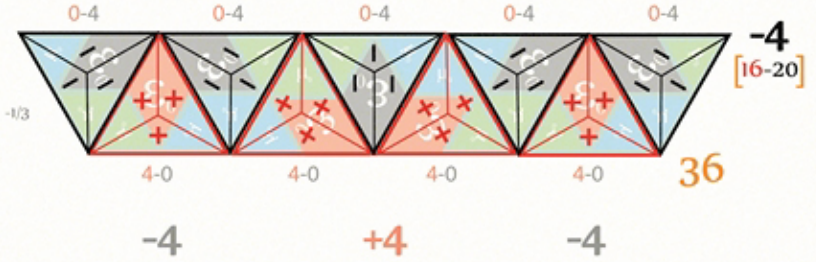
Un-stable form

[rapidly decays into constituent Quarks]



Stable Form

[possibly mistakenly viewed as Bottom Quarks]



Electro-Magnetic fields

Quantised Charge
is the nett geometry of mass-Energy-Matter formed by equilateral ElectroMagnetic fields and can be modelled with classical vector flux rotations

ε_0 The charge geometry of all EM fields determines their Electric Permittivity and Magnetic Permeability μ_0

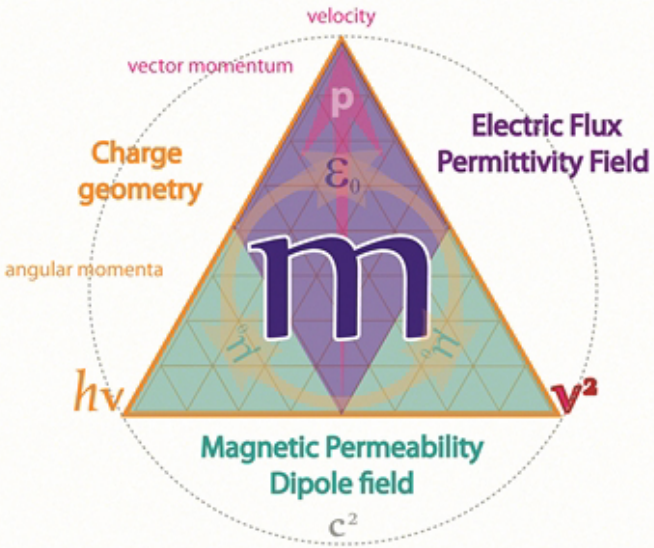
Photons
are the neutral quanta of EM waves
they are comprised of two opposite charge EM field quanta

Positive Charge ZPF

Magnetic Monopoles do NOT exist

Negative Charge ZPF

The 'zero point' field has scalar EM energies



Electro-Magnetic fields are the source of all physical Forces

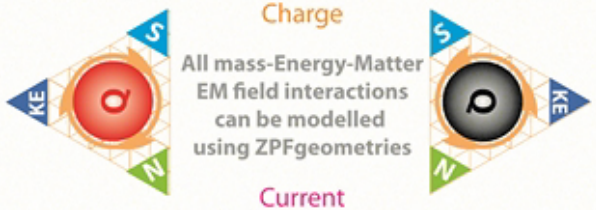
The EM field is a equilateral waveform with the Magnetic field always orthogonal to the Electric

The Magnetic fields propogate bi-directionally and the Electric field is responsible for producing linear momentum

The Electric field and Magnetic fields are equal to each other and directly proportional to the velocity of propagation

Zero Point fields are polarised and are the sources of

Electro-static and **Magneto-static** fields and particles

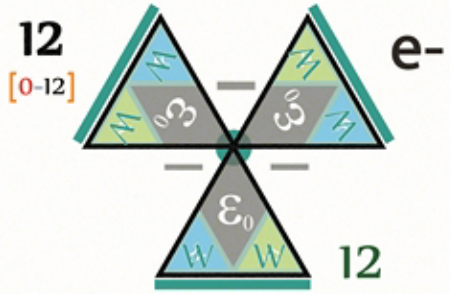


The Weak Force

Quantum Inductive loops

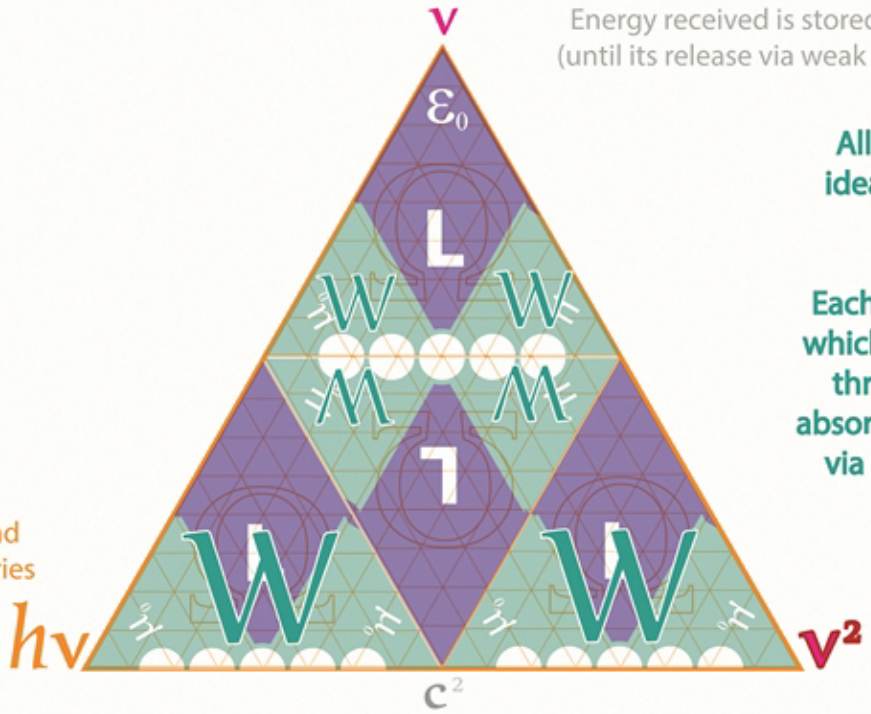
Quantum Tank circuit

Energy received is stored in quantum inductive loops
(until its release via weak interaction - Boson exchange)



6 Inductive 'Weak' edges
(3 internalised)
(3 externalised)

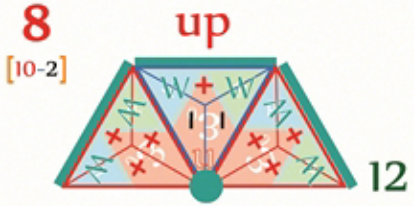
Quantum Energy is stored or released, and distributed throughout Tetryonic geometries in ODD number quanta [Bosons]



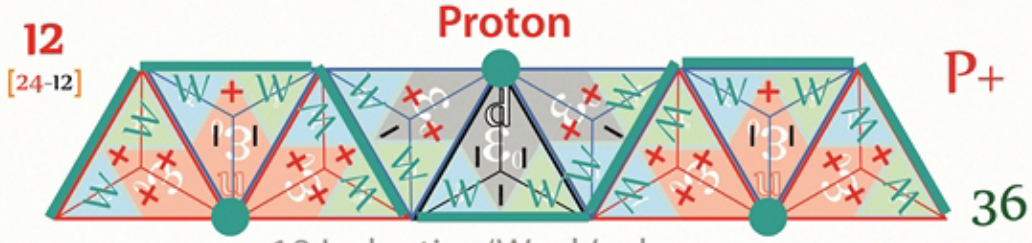
All ElectroMagnetic fields are ideal quantum inductive loops of EM energy momenta

Each has a Magnetic edge (base) which acts as a quantum inductor through which energy can be absorbed or released in EM quanta via electro**Magnetic** induction [exchange Bosons]

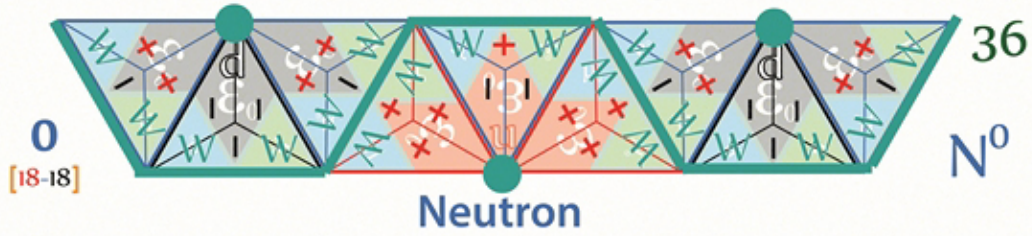
Leptons and Quarks
have the same Tetryonic numbers
but differing Matter topologies



6 Inductive 'Weak' edges



18 Inductive 'Weak' edges

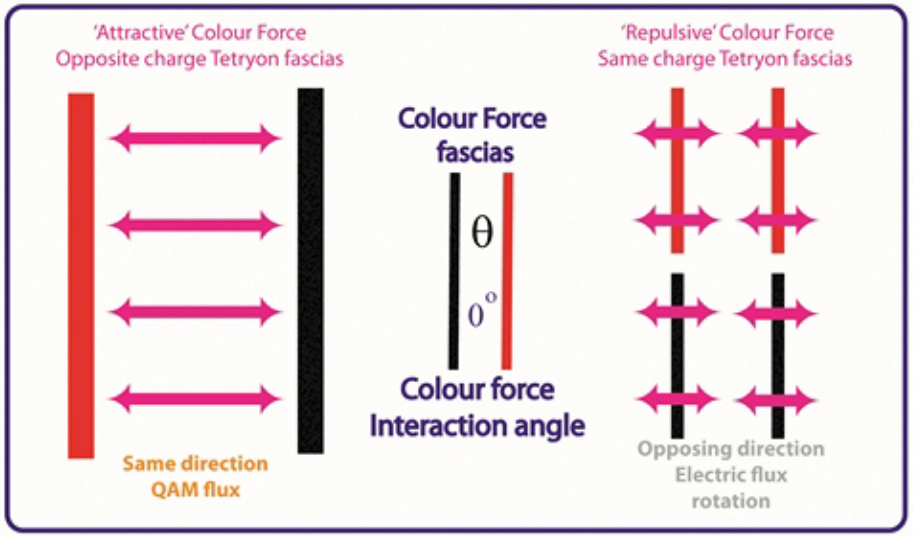


The Strong Force

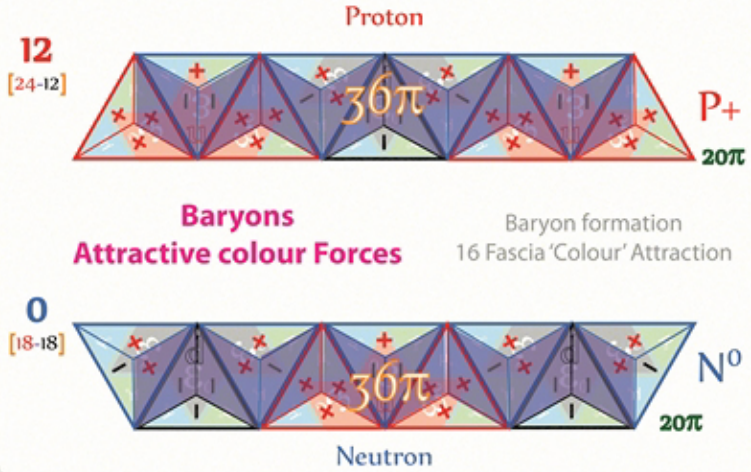
The force resulting from the interaction of 2 Tetryons along their parallel planar (Electric charge) surfaces

Leptons and Quarks result from the Strong 'colour' force interactions in dodeca-deltahedrons

(In Quarks the attractive strong force produces Octahedral topologies)
(In Leptons the repulsive strong force produces Dodecahedral topologies)

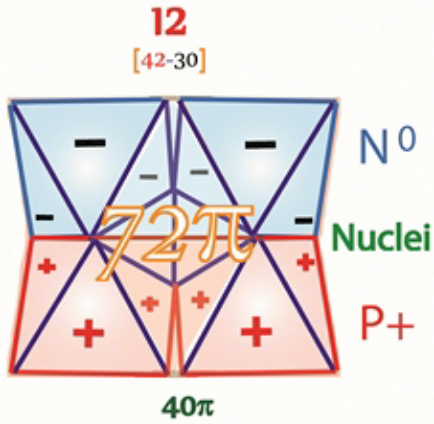


Strong Force strength is directly proportional to the nett mass-energy quanta involved
(Increases/decreases as total Tetryon mass-energy quanta increases/decreases)



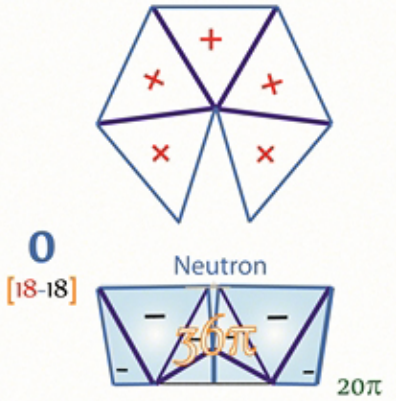
The Strong Colour Force is the binding force that holds Nuclei together

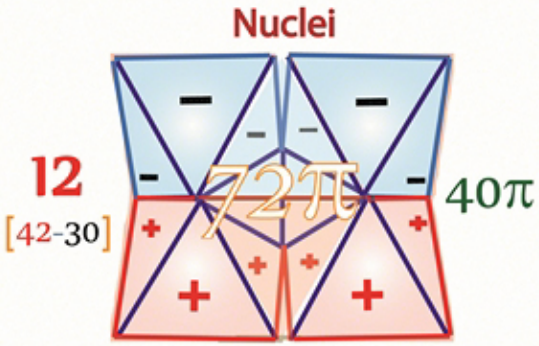
It interacts through oppositely charged Tetryon Fascias in contact with each other in all Matter (save Leptons)

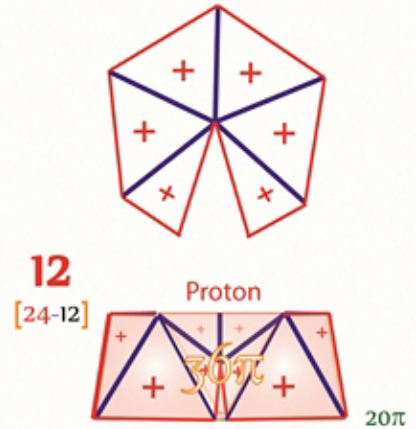


Strong Force Interaction

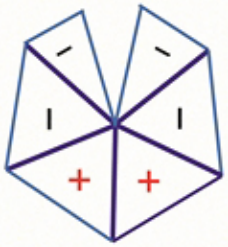
On the smallest scale (less than about 0.8 fm), it is the Electric force (mediated by gluons in nuclei) that holds Tetryons together in order to form Quarks, Protons and Neutrons

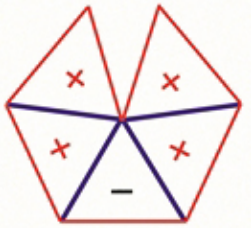






The residual Electric field force produced by the Strong Force is also facilitates the binding of Protons and Neutrons together to form the nucleus of an atom





Attractive Colour Charge Force holding Quarks and Nuclei together

Atomic Nucleus

36 charged mass-energy fascia geometries

12
[42-30]

creates an external Baryons topology with 20 charge fascia

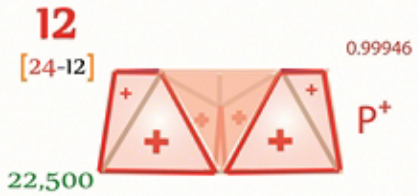
Proton Hydrogen ion

36

1 Proton	24-12
Total Charge	24-12 [+12]

H^+

P+ n=25



Proton - Hydrogen ion

The Proton is a Baryon with a Positive Tetryonic charge geometry of +12 [24-12] [and a final Matter topology of 20π]

It attracts electrons [0-12] and Neutrons [18-18] through their opposite charged facia in order to reach charge equilibrium

The Proton's opposite charge particle is the electron. If it binds with one or more Neutrons it will still attract electrons in order to acheive Tetryonic charge equilibrium.

As a Hydrogen nuclei it is highly reactive

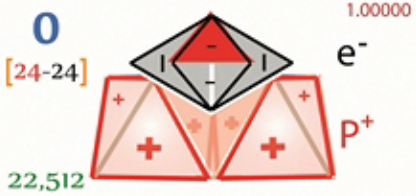
Neutral Hydrogen

48

1 Proton	24-12
1 electron	0-12
Total Charge	24-24 [0]

H^0

P+ n=25
e- n=1



Neutral Hydrogen

Hydrogen is the Second Neutral Tetryonic geometry [Baryon] formed in the creation of Matter

It is a [24-24] NEUTRAL [balanced] Tetryonic charge geometry

The Neutral Hydrogen Atom interacts with Deuterium and other Elements via its external nucleon fascia charges (residual EM Interactions)

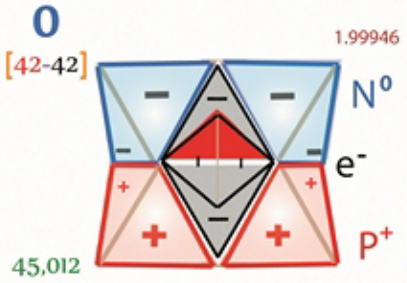
Deuterium

84

1 Proton	24-12
1 Neutron	18-18
1 electron	0-12
Total Charge	42-42 [0]

D^1

N° n=25
P+ n=25
e- n=1



Deuterium

Deuterium has the same nett charge as Neutral Hydrogen but has an increased Tetryonic mass- Matter topology

It has an additional 9 Tetryons in its nucleus (due to the Neutron) and consequently is larger than the Hydrogen nucleus

It has a [42-42] NEUTRAL Tetryonic charge geometry
Deuterium nuclei combine to form all other elements

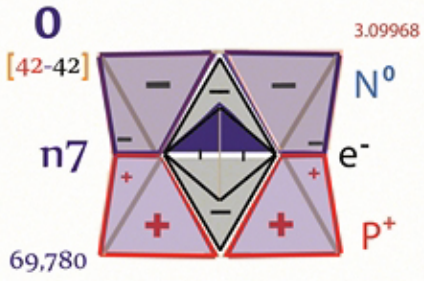
Tritium

84

1 Proton	24-12
1 Neutron	18-18
1 electron	0-12
Total Charge	42-42 [0]

D^7

N° n=31
P+ n=31
e- n=7
Radioactive Isotope



Tritium

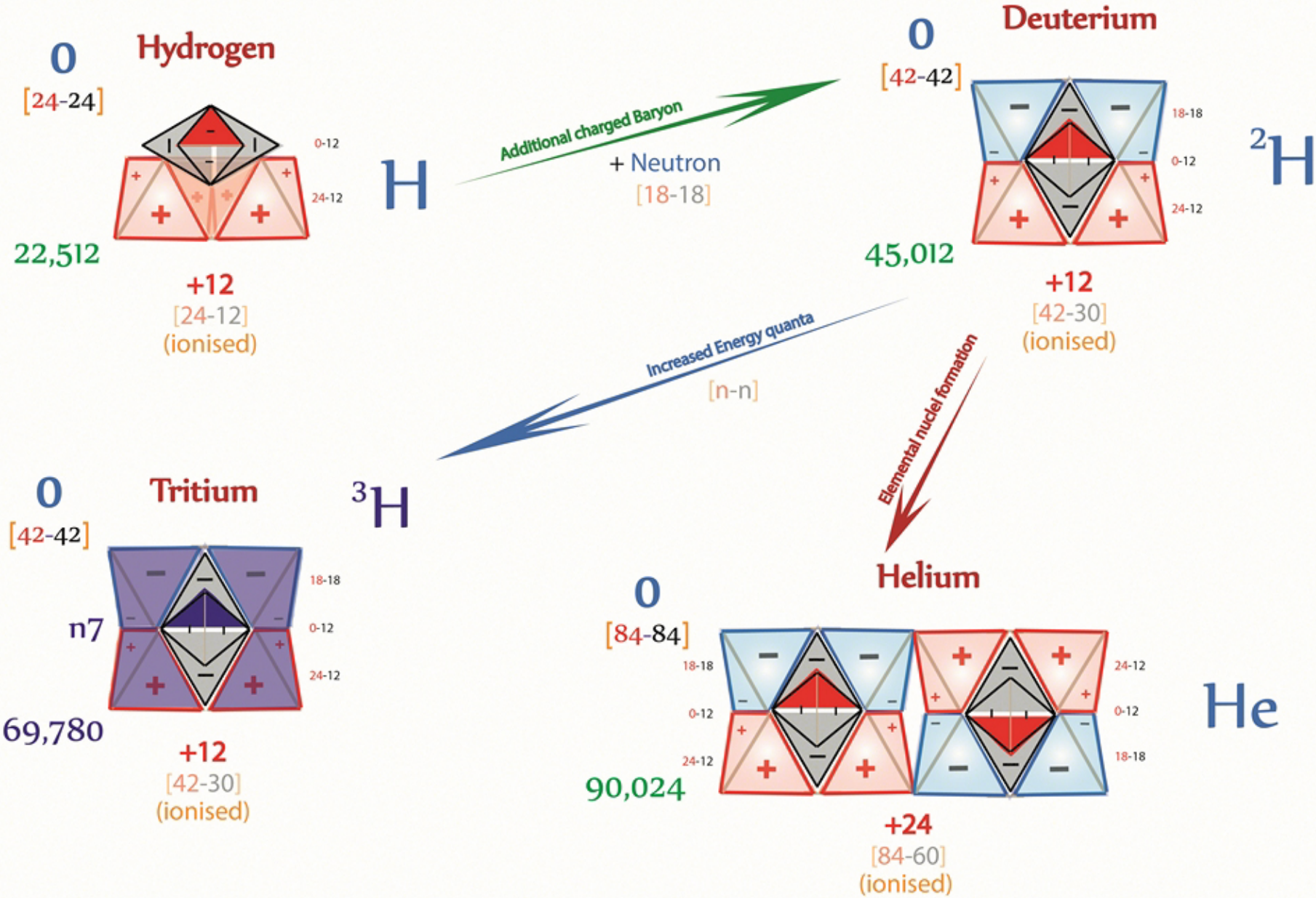
(Radioactive Deuterium)

Tritium has the same nett Tetryonic charge as Neutral Hydrogen and Deuterium (D) but due to its higher quantum energy levels it has additional mass-energy quanta in its charged geometry

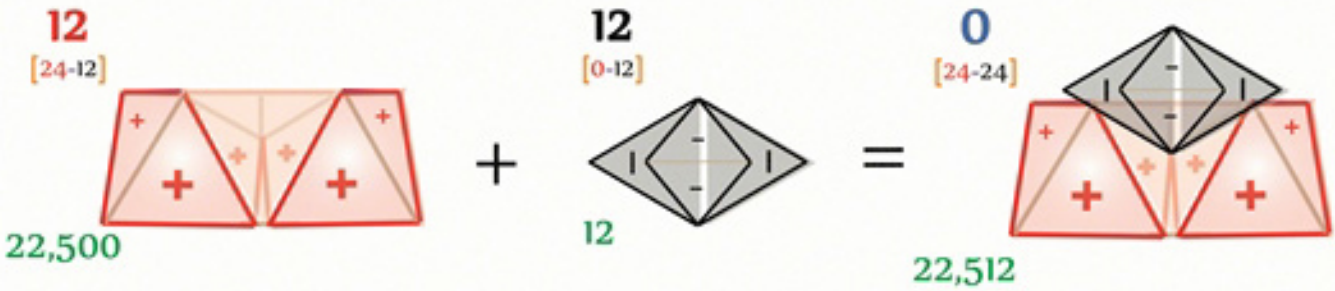
It has the same 84 charged fascia in its nucleus as Deuterium but its increased mass-energy is equivalent to that of 1 Neutron.

This extra nuclear energy is the source of its radioactivity and ongoing confusion in chemistry where it is released as a variety of decay particles over time

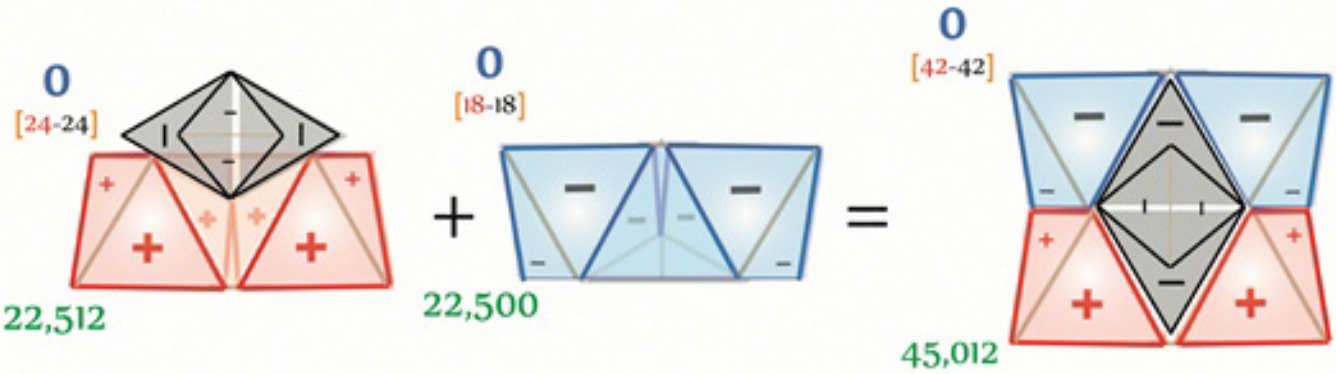
Hydrogen - Helium genesis



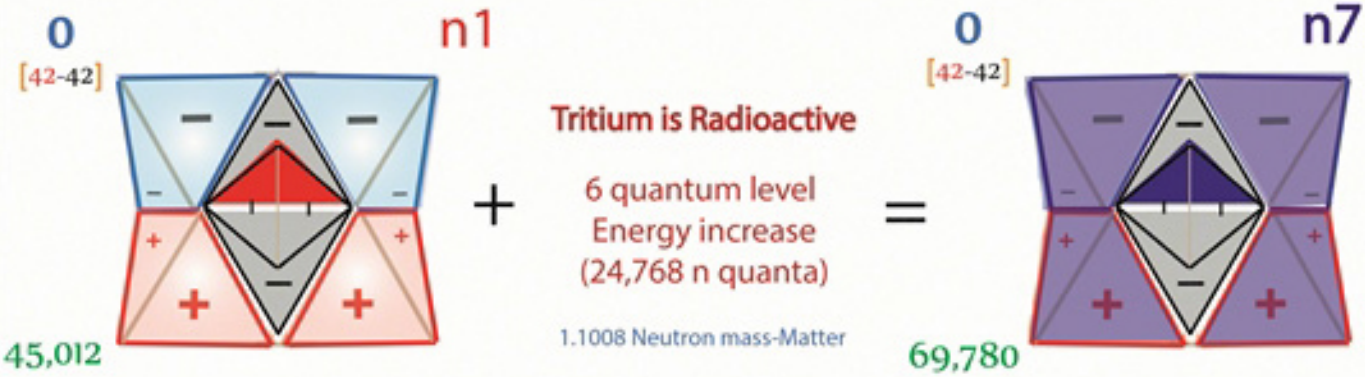
Hydrogen Family



Proton	electron	Hydrogen
36π	12π	48π



Hydrogen	Neutron	Deuterium
48π	36π	84π

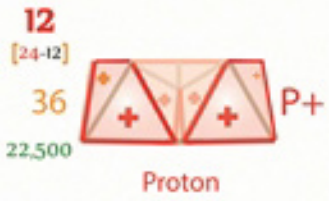


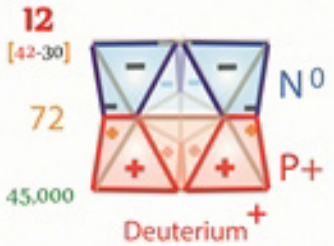
Deuterium	Tritium
84π	84π

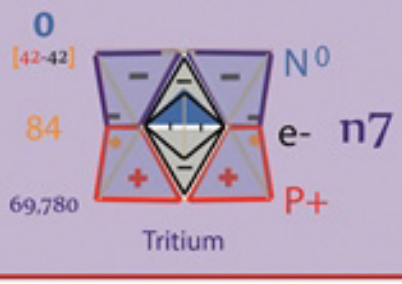
Hydrogen-Helium3 genesis

Elemental Form

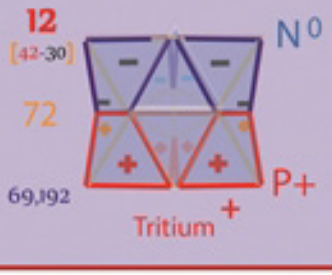
Positive Ions

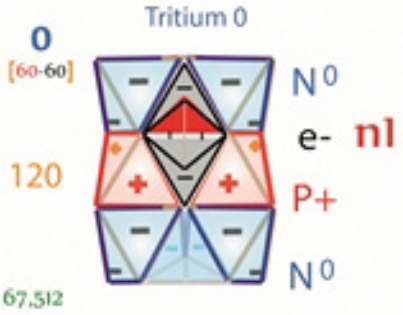


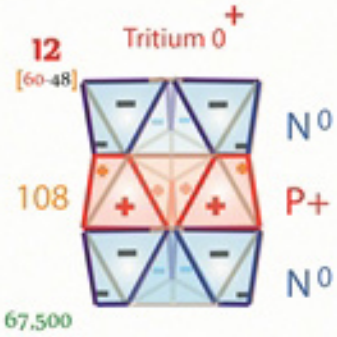




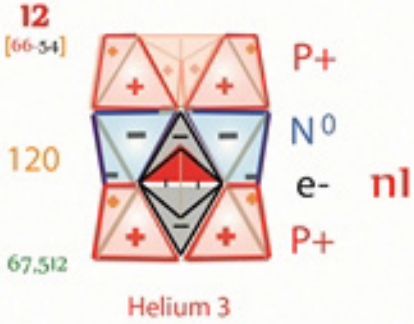
Radioactive

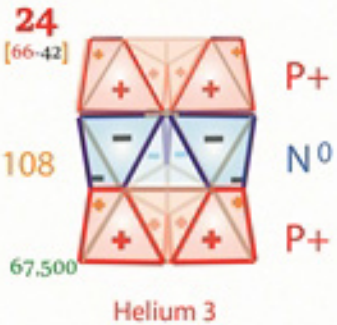






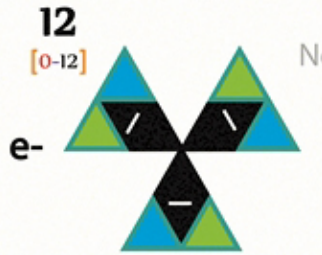
Tritium 0
is a non-radioactive allotrope of Tritium,
it has the same Tetryonic charge and mass-Energy as Helium 3
(but is ionically 1 elemental charge less than Helium 3)





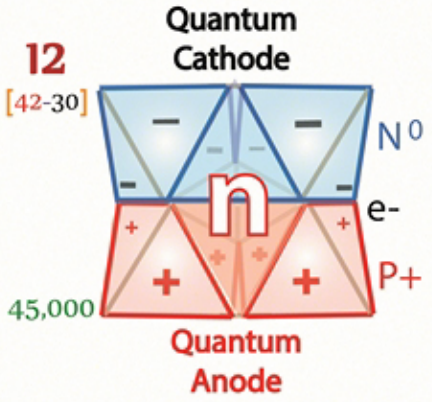
Quantum Batteries

Atomic nuclei can be easily scaled to non-quantum sizes to offer clean, safe and portable long term energy storage devices that can store energy indefinitely and release it on demand anywhere in the World



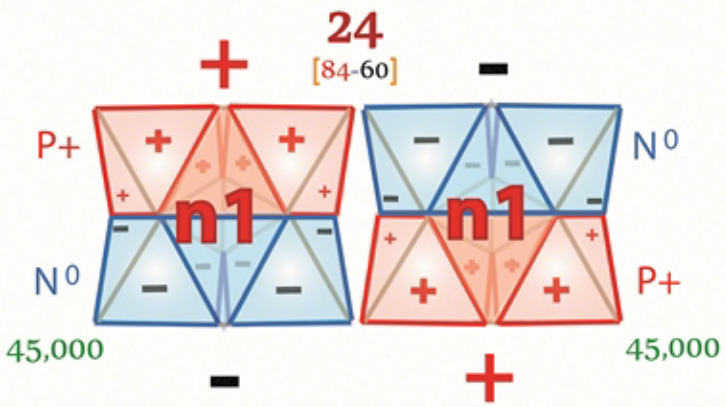
12 loop quantum inductive rotor

The quantum battery is unique in that in addition to storing energy indefinitely, when the nuclei combine with a lepton it has the ability to release specific energies [photons] by way of its synchronous quantum convertor topology



Energy stored in quantum batteries is measured as mass

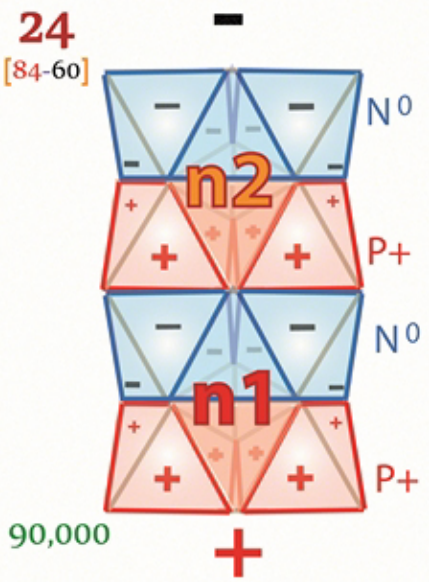
(Atomic Nuclei)



anti-Parallel Configuration

The non-neutral charge of atomic nuclei attract free leptons into 'bound' states within the various **n** levels of atomic shells releasing energy as spectral photons

Series Configuration



Quantum synchronous Converters

With the addition of a quantum rotor (lepton) a quantum battery can be converted from a storage device into a energy distribution device.

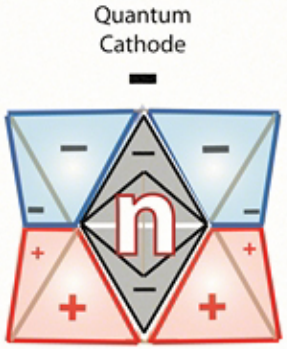
And just like the quantum battery, the quantum convertor can be scaled to any size in order to provide tailor-made energy efficient delivery devices

The electron can be viewed as a rotating inductor consisting of 3 negative Tetryons

$$12\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m \Omega v^2 \right] \right]^{n8}_{n1}$$

Leptons — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

The electron has a charged Matter topology that is electrically equivalent to a quantum 6 loop inductive rotor



$$72\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m \Omega v^2 \right] \right]^{n32}_{n25}$$

Nuclei — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

$$84\pi \left[\left[\varepsilon_0 \mu_0 \right] . \left[m \Omega v^2 \right] \right]^{n32}_{n25}$$

Deuterons — EM Field (ElectroMagnetic) — Planck quanta (mass, velocity)

Where varying levels and frequencies of Energy are transmitted long distances and need to be stored for later release on demand the 'ideal' mechanical device is the rotating (or synchronous) convertor

Changes in energy-momenta results in photon emission/absorption lines
photon emission/absorption produces changes in leptronic energy-QAM
and results in the quantum transition of electrons in atomic orbitals

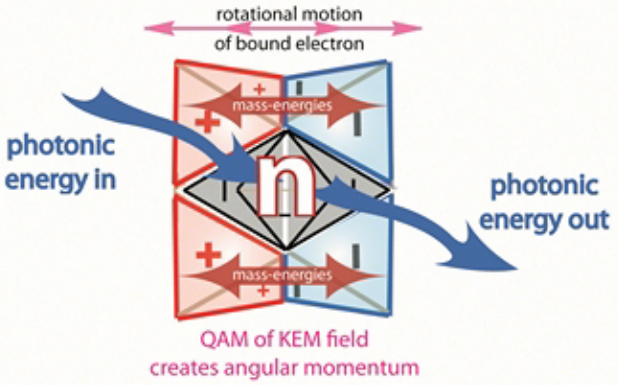
Changes in Baryonic energy levels induces a directly proportional change in electron energy levels

3 forms of mass-energy momenta are possessed by quantum convertors

Angular Momentum (motional energy)
linear momentum of Baryons & leptons

Photonic spectral energies (emission/absorption)
KEM fields geometries of photo-electrons

Nuclear mass-energies (stored energy quanta)
standing wave mass-energies of Matter topologies



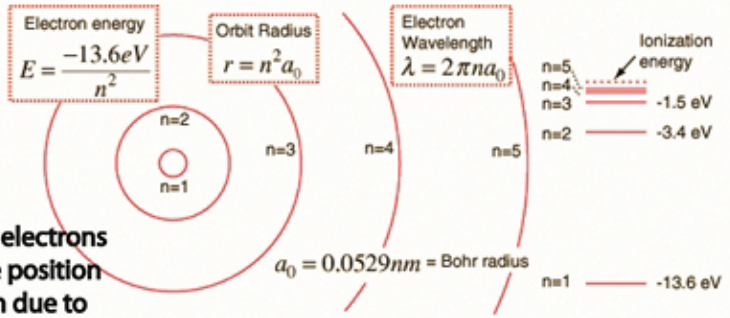
A change in any 1 of the 3 types of energy in a atom results in a proportional change in the other 2

External EM fields and incident photons can all affect the quantum energy levels of the atomic nuclei

$Mv^2 = KEM = hv^2$

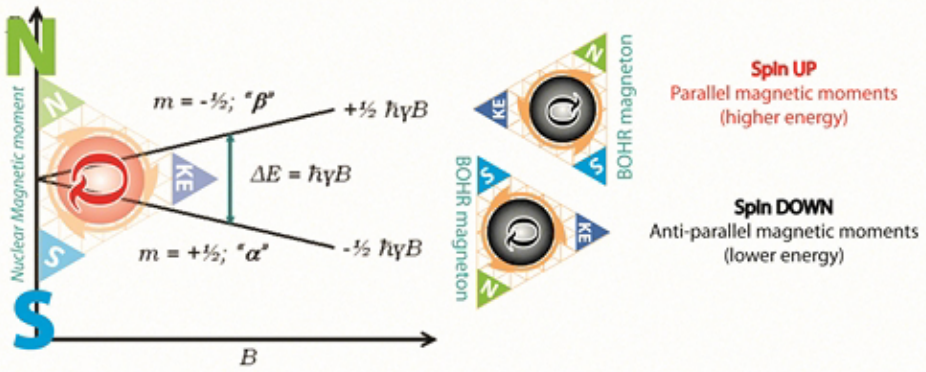
Hydrogen Ionisation Energies

The ionisation energy level for each quantum level is proportional to the square of the quantum number



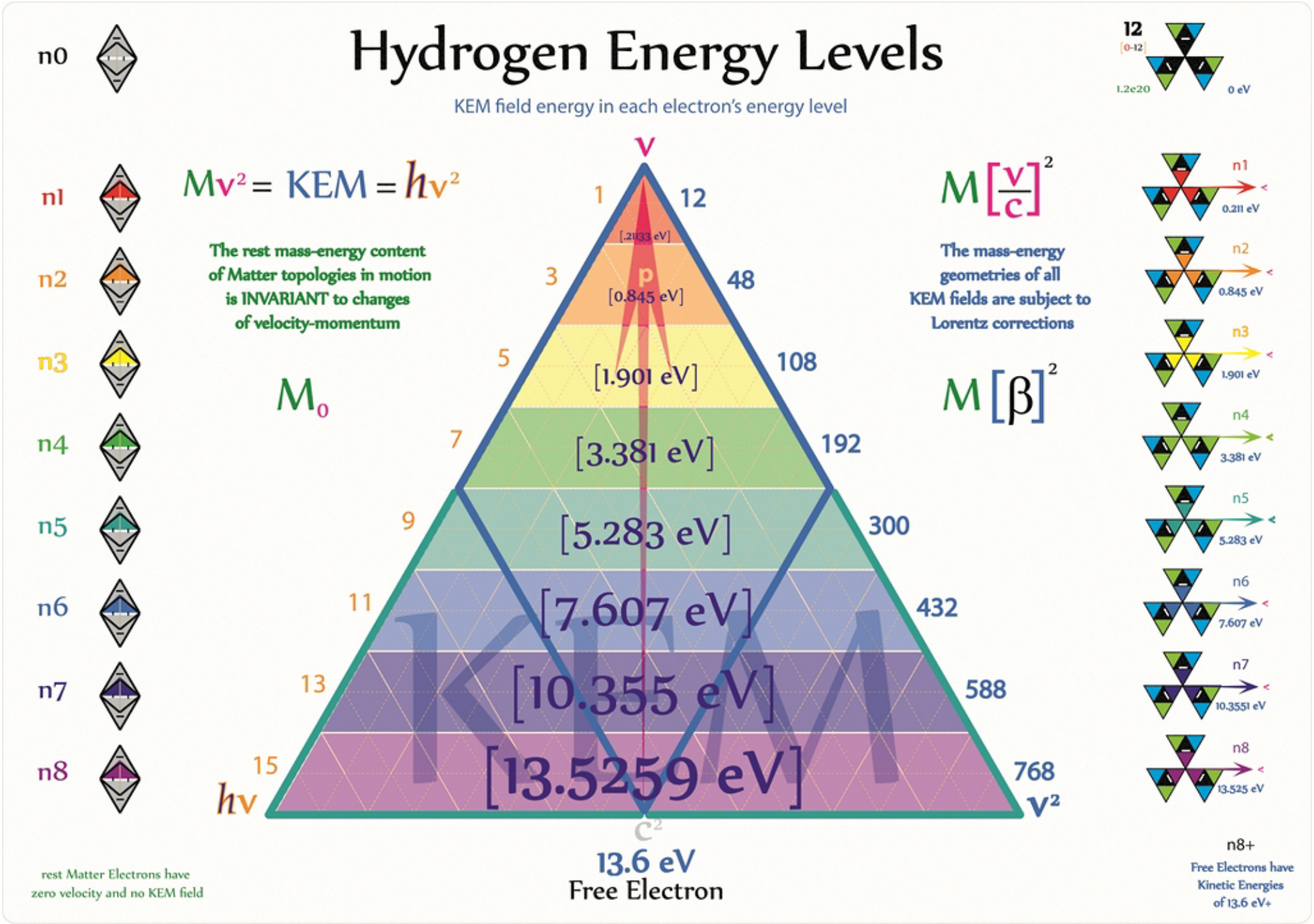
In Hydrogen nuclei electrons remain in the same position close to the Proton due to Coulombic attraction.

The established model of electron orbitals having circular radii of increasing size in proportion to their energies is incorrect



The intrinsic magnetic moment of the rotating electron couples wrt the nuclear magnetic moment to produce a split in the resulting spectral lines produced by quantum level transitions

The KEM Planck quanta required to ionise a photo-electron



Kinematics

An inertial frame of reference is one in which the motion of a particle not subject to forces and results in motion in a straight line at constant velocity

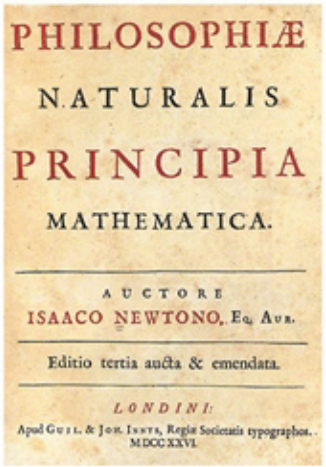
Deceleration

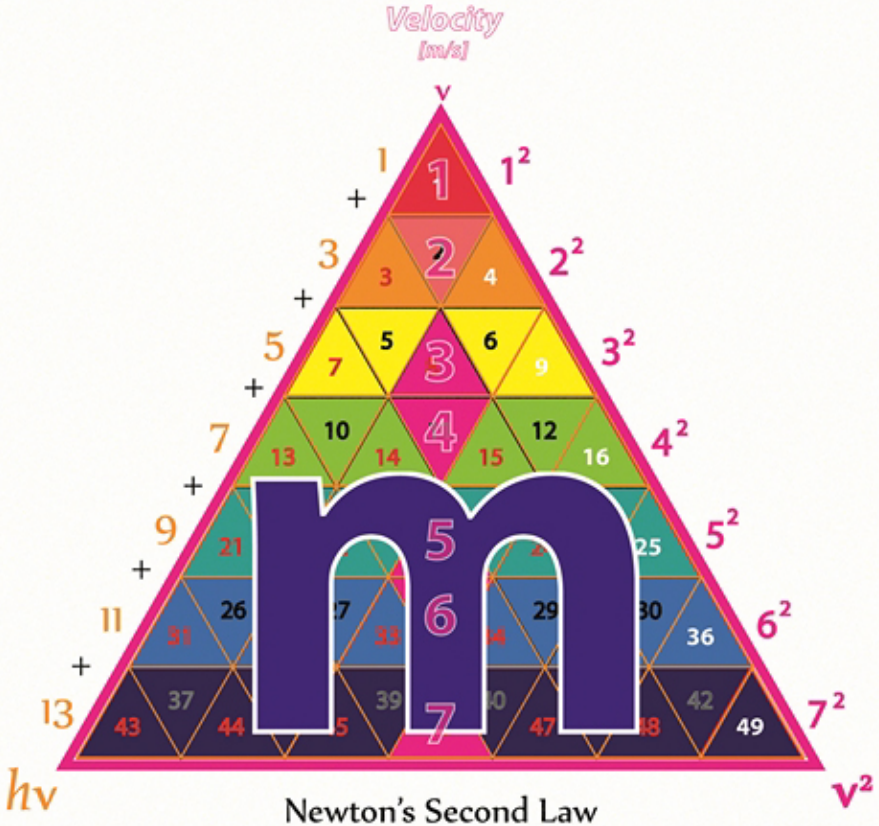
[Inertial Frame MINUS odd quanta]

Newton's First Law

$$\sum \mathbf{F} = 0 \Rightarrow \frac{d\mathbf{v}}{dt} = 0$$

Every body persists in its state of being at rest or of moving uniformly straight forward, except insofar as it is compelled to change its state by force impressed


PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA.
AUCTORE
ISAACO NEWTONO, Eq. Aur.
Editio tertia aucta & emendata.
LONDINI:
Apud Guil. & Jon. Innys, Regiæ Societatis typographos.
MDCCXXVI.



Newton's Second Law

$$\sum \mathbf{F} = \frac{\mathrm{d}\mathbf{p}}{\mathrm{d}t} = m\frac{\mathrm{d}\mathbf{v}_{cm}}{\mathrm{d}t} = m\mathbf{a}_{cm}$$

Force creates a change in Momentum over Time

A body of [m]ass subject to a net [F]orce undergoes an [a]cceleration that has the same direction as the force and a magnitude that is directly proportional to the force and inversely proportional to the mass, i.e., F = ma.

Alternatively, the total force applied on a body is equal to the time derivative of linear momentum of the body.

Sir Issac Newton

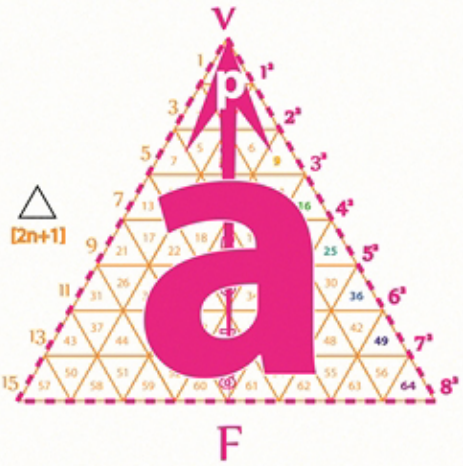
(25 December 1642 – 20 March 1727)

$$a = \frac{\Delta y}{\Delta x} = \frac{\Delta v}{\Delta t}.$$

$$\mathbf{F} = m\mathbf{a} \quad \rightarrow \quad \mathbf{a} = \mathbf{F}/m$$

Acceleration

[Inertial Frame PLUS odd quanta]



Inertia and Force

momentum

The classical definition of Momentum relates the mass of a material body at given velocity (v) to its Momentum (p); it is a proportionality factor in the formula

$$p = mv$$

Any change to the energy-momenta content of a closed inductive loop requires a proportional change to the loop's energy density

linear quanta forces

divergent ↑ [v – v] ↓ convergent

Force

This meaning of a body's inertia therefore is altered from the classsical definition of "a tendency to maintain momentum" to a description of the measure of how difficult it is to change the momentum of a body

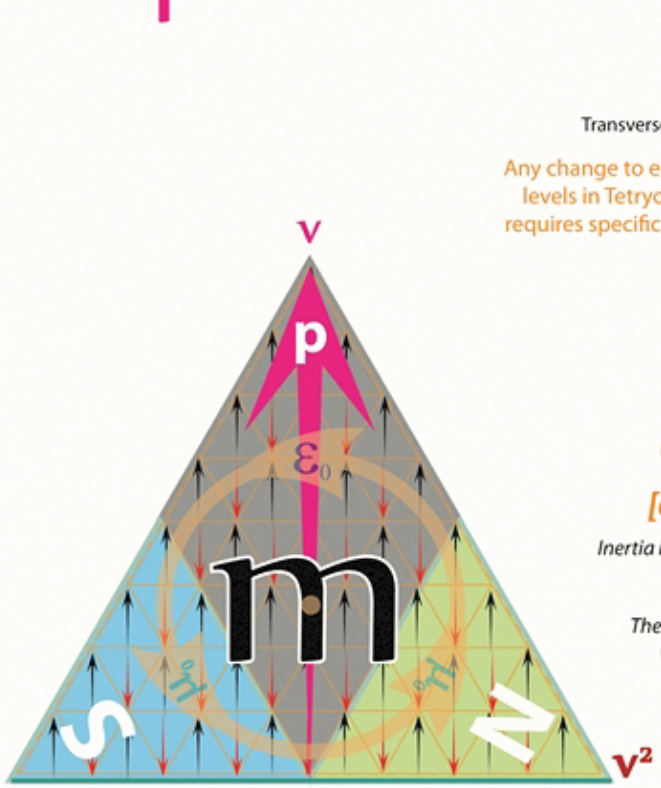
$$F = ma$$

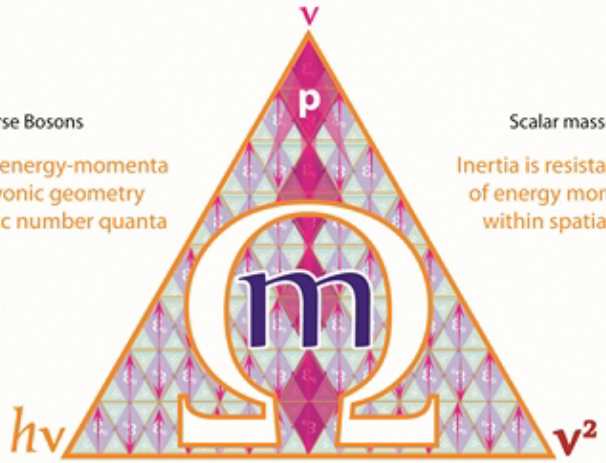
Transverse Bosons

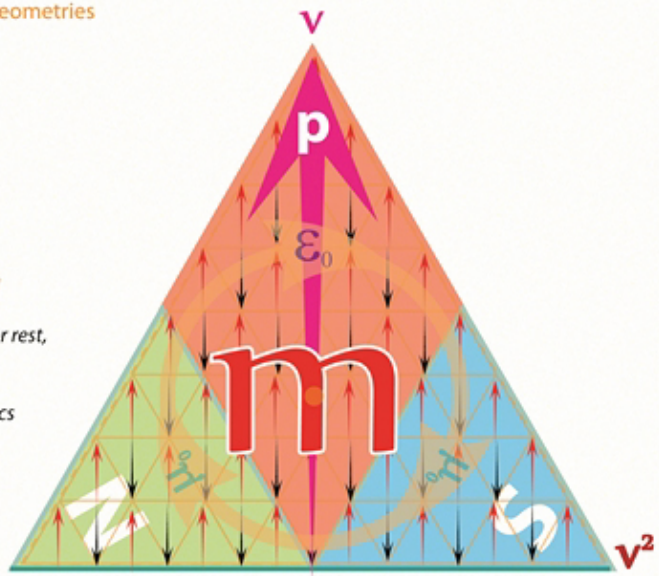
Any change to energy-momenta levels in Tetryonic geometry requires specific number quanta

Scalar mass-energy

Inertia is resistance to change of energy momenta vectors within spatial geometries







[all inductive loops resist changes to their energy levels]

Inertia is the resistance of any physical object to a change in its state of motion or rest, or the tendency of an object to resist any change in its motion.

The principle of inertia is one of the fundamental principles of classical physics which is used to describe the motion of matter and how it is affected by applied forces

Linear momentum is the nett square root of mass-energy quanta

p

$$E = mv^2$$

Any change in the energy-momenta content of a body of mass-Matter results in a proportional change in its momentum-velocity

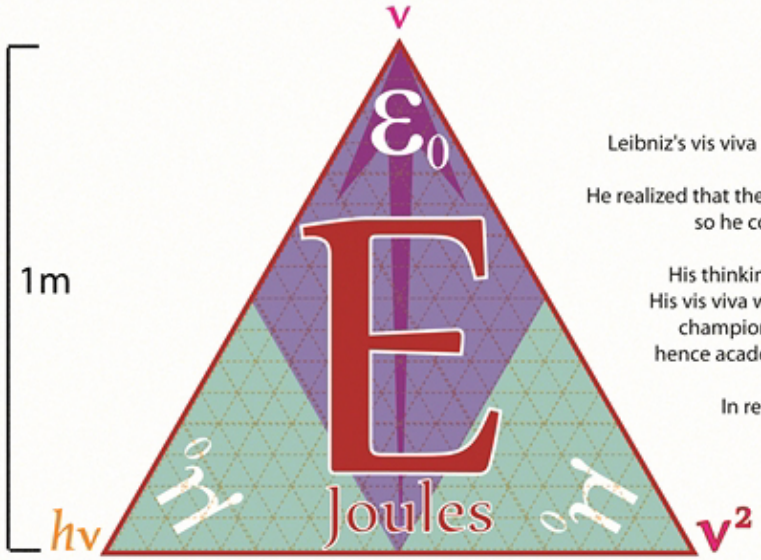
Force is the sum of the linear mass-energy momenta quanta

F

Scalar Energy

Gottfried Wilhelm von Leibniz

(July 1, 1646 – November 14, 1716)



Leibniz's vis viva (Latin for living force) is mv^2, twice the modern kinetic energy.

He realized that the total energy would be conserved in certain mechanical systems, so he considered it an innate motive characteristic of Matter.

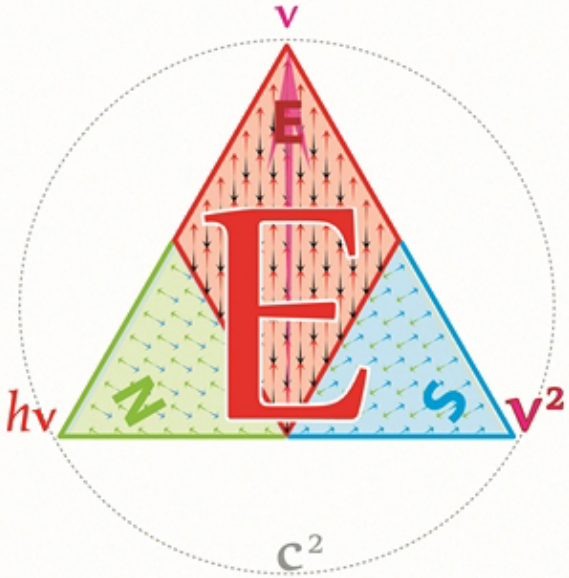
His thinking gave rise to another regrettable nationalistic dispute. His vis viva was seen as rivaling the conservation of linear momentum championed by Newton in England and by Descartes in France; hence academics in those countries tended to neglect Leibniz's idea.

In reality, both energy and momentum are conserved, so the two approaches are equally valid.

Newtons

of force

The nett direction of Force within energy geometry is UNIDIRECTIONAL
ie the force exerted is the result of the nett linear momenta irrespective of charge



[Joule seconds] per second

mass x velocity squared $kg.\left[\frac{m}{s}\right]^2$

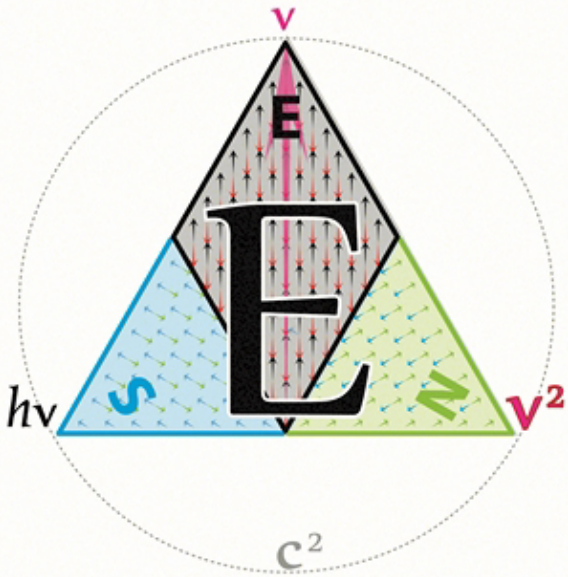
Energy $kg.\frac{m^2}{s^2}$

$$J = \frac{kg \cdot m^2}{s^2} = N \cdot m = Pa \cdot m^3 = W \cdot s$$

A Joule is equal to the energy expended (or work done) in applying a force of one newton through a distance of one metre (1 newton metre or N·m)

momentum x velocity $\left[kg.\frac{m}{s}\right].\frac{m}{s}$

Planck's quanta per second $\left[kg.\frac{m^2}{s}\right].s^{-1}$



[Joule seconds] per second

Linear Momentum

Linear momentum is the SQUARE ROOT of equilateral Planck mass-energy geometries and produces a undirectional vector force

The Energy-momentum relationship is a fundamental physical property used to determine the mass of a body

Using the formula for mass-Energy equivalence as it relates to Photons moving at 'c'

$$E = h\nu = \frac{hc}{\lambda} = mc^2$$

Noting that the rest mass in the case of EM fields (Bosons and Photons) is to equal Zero

we can derive a relationship for Momentum - Energy - Wavelength showing that

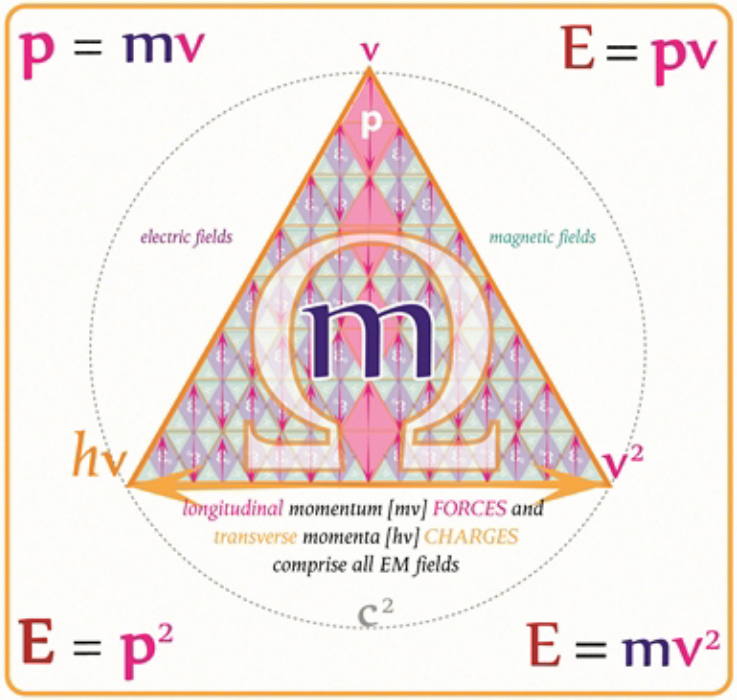
$$p = E/c$$

Thus momentum in Photons is directly related to the EM energy content of the photon and the mass-energy content of any massive 3D body

$$p = \hbar k = \frac{h\nu}{c} = \frac{h}{\lambda}.$$

and momentum in Particles is related to the total EM Energies of an object, (its rest Matter + KE) and the wavelengths associated with those distinct energy levels

$$p = \frac{E}{c} = \frac{h\nu}{c} = \frac{h}{\lambda}$$



Longitudinal [linear] momentum

Energy

$$p = n\pi\left[\left[\underset{\text{mass}}{m}\Omega\underset{\text{velocity}}{v}\right]\right]$$

Planck quanta

momentum

Momentum is a conserved quantity, meaning that the total momentum of any closed system (one not affected by external forces) cannot change.

Linear Momentum is the intrinsic sqare root vector component of Force

$$p = mv$$

In classical mechanics, momentum is the product of the mass and velocity of an object.

$$\sum \mathbf{F} = \frac{d\mathbf{p}}{dt} = m\frac{d\mathbf{v}}{dt} + \mathbf{v}\frac{dm}{dt}$$

In relativistic mechanics, this quantity is multiplied by the Lorentz factor.

$$p = n\pi\frac{\left[\left[\underset{\text{mass}}{m}\Omega\underset{\text{velocity}}{v^2}\right]\right]}{v} = mv$$

Planck quanta

EM field momentum is a function of its energy density, and is directly proportional to the group velocity

$$\left[\sqrt{\left[\underset{\text{mass}}{m}\Omega\underset{\text{velocity}}{v}\right]^2}\right]$$

Planck quanta

Vector linear momentum

is the square root of the KEM field energies produced by Matter in motion

Energy

$$n\pi\,[[m\Omega v]]$$

momenta

Classical formulation

$$p = mv$$

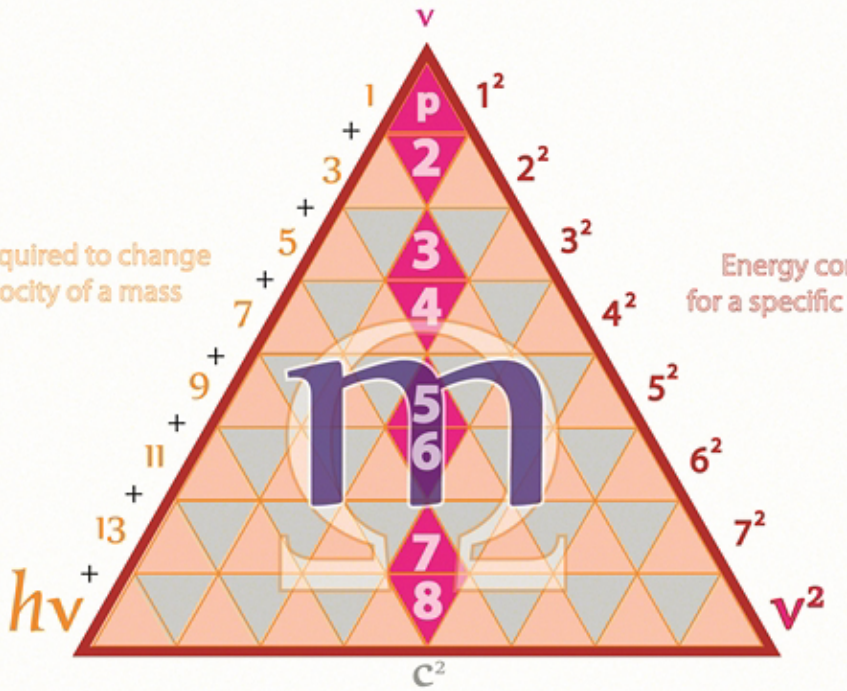
Linear Momentum
is the vector force of
mass times its velocity

Quantum formulation

$$p = \frac{E}{v}$$

Linear Momentum is
Energy divided by the
square root of its quanta

INERTIAL FRAME
[m/s]



Energy required to change
the velocity of a mass

Energy content
for a specific velocity

$$\mathbf{p} = \sum_{i=1}^{n} m_i \mathbf{v}_i = m_1\mathbf{v}_1 + m_2\mathbf{v}_2 + m_3\mathbf{v}_3 + \cdots + m_n\mathbf{v}_n\,,$$

The linear momentum of a EM field or system of particles is
the vector sum of the linear momenta in the KEM fields
of individual particles in any spatial co-ordinate system

$$\frac{E}{c^2}.v$$

$$\frac{hv^2}{v}$$

Kinetic Energy

is the Electric field energy of Matter in motion

$$1/2\left[4n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]\right]$$

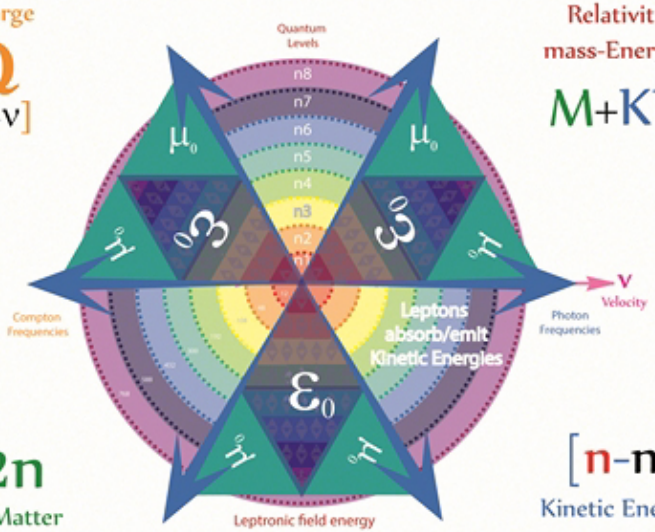
Matter · EM Field · ElectroMagnetic · mass · Planck quanta · velocity

Kinetic Energy is the diamond electric field extending from charged Matter topologies as a result of its motion, it follows Tetryonic omega geometry and is proportional to an object's mass-Matter and its vector velocity

Charge

$$Q$$

$$[\nu\text{-}\nu]$$



$$12n$$

rest Matter

Relativitic mass-Energies

$$M+KE$$

$$[n\text{-}n]$$

Kinetic Energies

Kinetic Energy is 1/2 of the secondary KEM field energies created when Matter particles are in motion

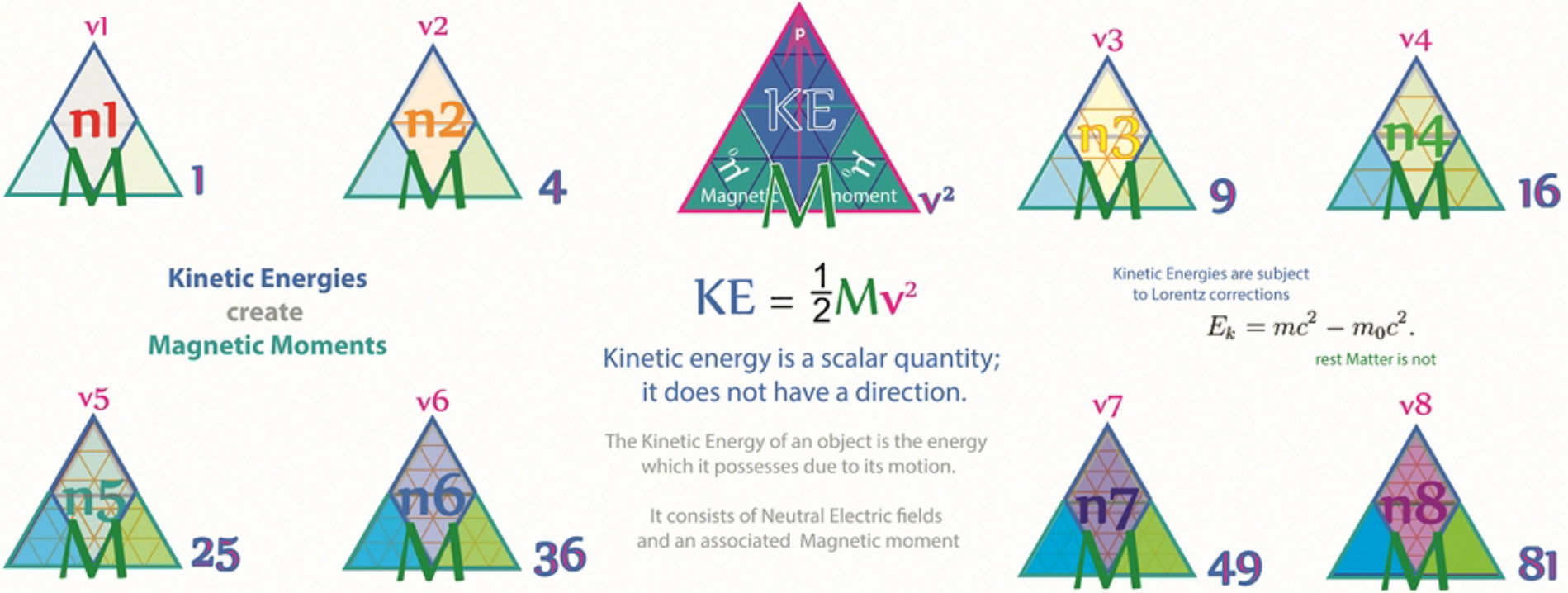
$$2\pi\left[\left[m\Omega v^2\right]\right]$$

mass · velocity

$$c^2$$

EM Field

and is shown to be subject to Lorentz corrections



Kinetic Energies
create
Magnetic Moments

$$KE = \frac{1}{2}Mv^2$$

Kinetic energy is a scalar quantity; it does not have a direction.

The Kinetic Energy of an object is the energy which it possesses due to its motion.

It consists of Neutral Electric fields and an associated Magnetic moment

Kinetic Energies are subject to Lorentz corrections

$$E_k = mc^2 - m_0c^2.$$

rest Matter is not

Kinetic Energy and Magnetic moments

$$Mv^2 = KEM = p^2$$

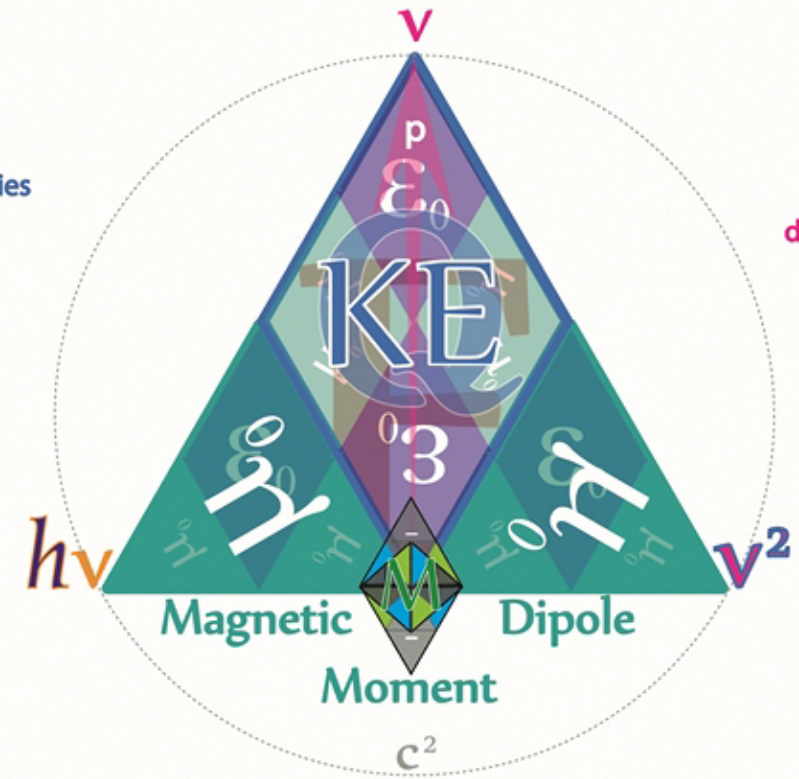
Unlike charged fields KEM fields have neutralised Electric Fields

$$KE = \tfrac{1}{2}Mv^2$$

KEM field geometry of positive charged Matter in motion

KEM field geometry of negative charged Matter in motion

Often noted as being two distinct EM energies [Kinetic Energy and Magnetic moments] are shown to be orthogonal aspects of the same KEM field of motion



As the velocity of a particle increases so does its Kinetic Energy and Magnetic moment creating Lorentz variable KEM fields

$$\mu_B = \tfrac{1}{2}Mv^2$$

$$\mu_B = \tfrac{1}{2}Mv^2$$

Types of Momentum

There are 3 forms of momenta in physics

equilateral charge geometry

h

[kg·m²/s]

$m\Omega$

Ω

quantised angular momenta

[m²/s]

The quantised 'angular momentum' of each Planck mass-energy geometry, gives rise to the two quantum Charges

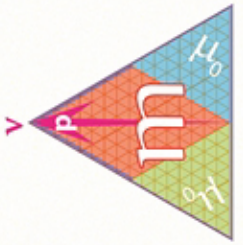
p

Linear momentum

[kg·m/s]

The square root (v) of each Planck quanta's mass-energy geometry (v^2) is vector Linear Momentum

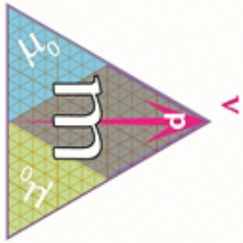
vector momentum



mv

[kg·m/s]

$\mathbf{p}$



ℓ

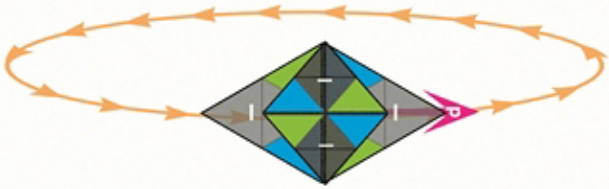
Angular momentum

[kg·m²/s]

The orbital angular momentum of electrons in atoms associated with a given quantum state

• • • [n-1] [n] [n+1] • • •

vector rotation about a point



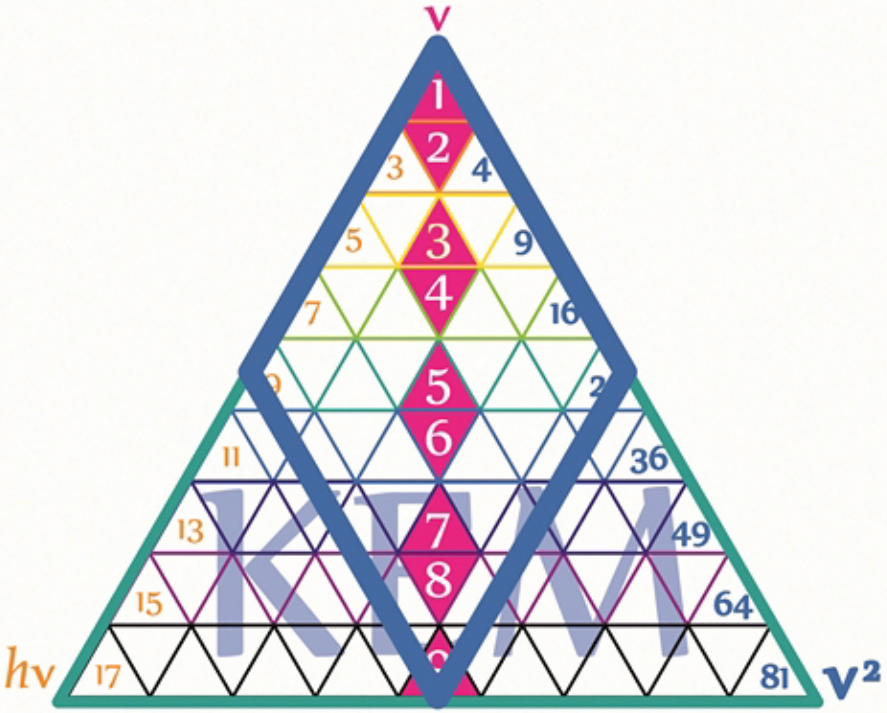
$$L^2 = L_x^2 + L_y^2 + L_z^2$$

Kinetic Energy vs Momentum

An important difference is that Kinetic energy is a scalar quantity - it has no direction in space
momentum is a vector quantity - it has a direction in space, momenta combine like forces do.

$$p = Mv$$

$$KE = 1/2[Mv^2]$$



$$p = \sqrt{E}$$

$$KEM = Mv^2$$

In Tetryonic geometry, the square root maps the linear momenta [mv] of a field to its ENERGY

$$\frac{p^2}{2m} = KE$$

In Tetryonic geometry, E-field geometry maps the kinetic energy [1/2 mv] of a field to its ENERGY

Linear momentum has a different geometric ENERGY relationship to that of Electric fields

mass-Energy-momentum

v

$p=mv$
[vector force]

$m=\frac{F}{a}$
[inertial mass]

Like velocity, linear momentum is a vector quantity, possessing a direction as well as a magnitude

The intrinsic mass-Energy of a massive body is a result of its nett Energy per unit of Time

$KEM=mv^2$
[Kinetic Energy & magnetic moment]

$KE=\frac{1}{2}mv^2$
[scalar E-field]

The Energy of a system is the square of its linear momentum

The Kinetic energy of Matter in motion is directly related to its velocity

$E=mv^2$
[scalar KEM field energies of Matter in motion]

$E=p^2$
[Energy momenta]

Planck quanta
$[m\Omega v]$
mass velocity

acceleration results in changes to momenta

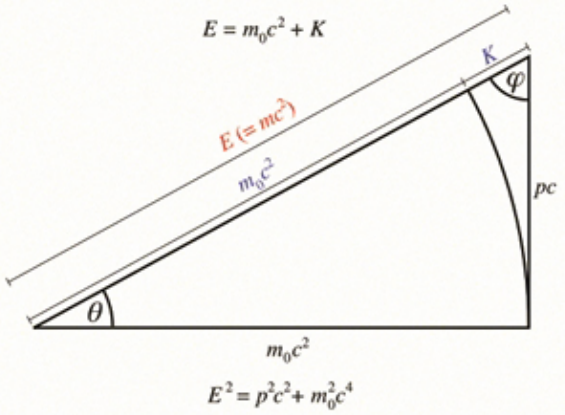
$F=ma$

Newton's Second law of Motion

Linear momentum is the square root of the Energy of a system.

It is the nett linear Force resulting from Matter in motion and was used by Newton as the foundation for his Laws of motion

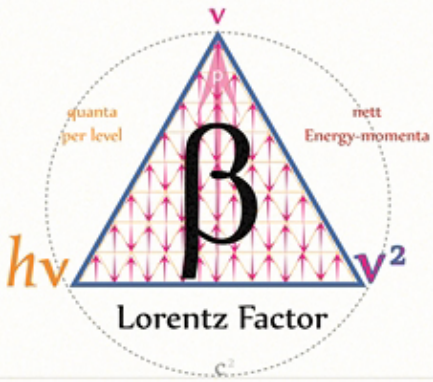
Linear momentum is also a conserved quantity, meaning that if a closed system is not affected by external forces, its total linear momentum cannot change. Although originally expressed in Newton's second law, the conservation of linear momentum also holds in special relativity and, with appropriate definitions, a (generalized) linear momentum conservation law holds in electrodynamics, quantum mechanics, quantum field theory, and general relativity. In relativistic mechanics, non-relativistic linear momentum is further multiplied by the Lorentz factor



Often generalised as having the geometry of right angled triangles the mass-energy momenta relationship is fully revealed using Equilateral geometry

E^2

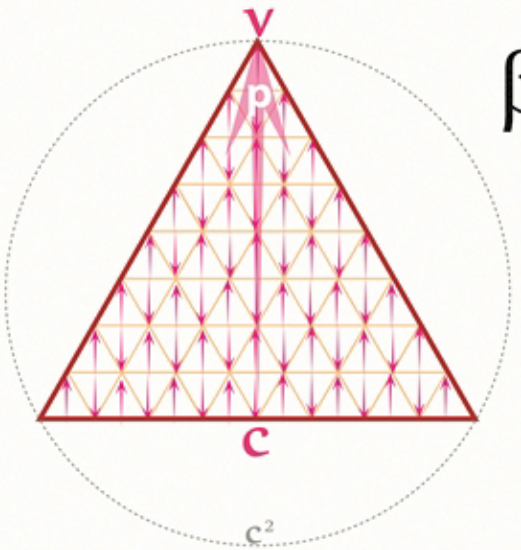
is the energy content of a superpositioned EM field



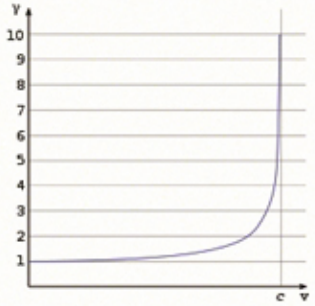
Lorentz velocity correction Factor

The Lorentz factor or Lorentz term is an expression which appears in several equations in special relativity. It arises from deriving the Lorentz transformations. The name originates from its earlier appearance in Lorentzian electrodynamics - named after the Dutch physicist Hendrik Lorentz.

Wavelength, momentum

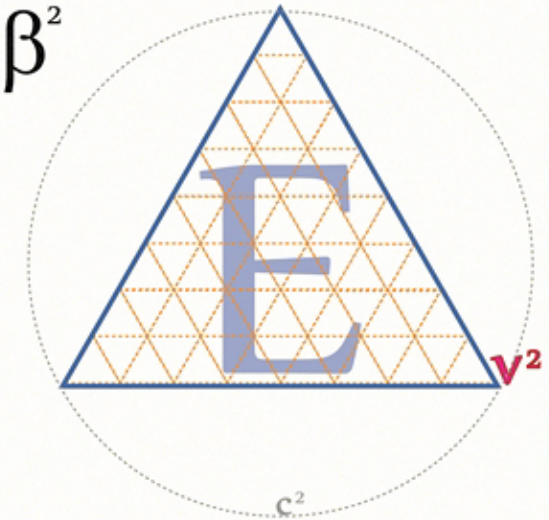


$$\beta = \left[\frac{v}{c}\right]$$

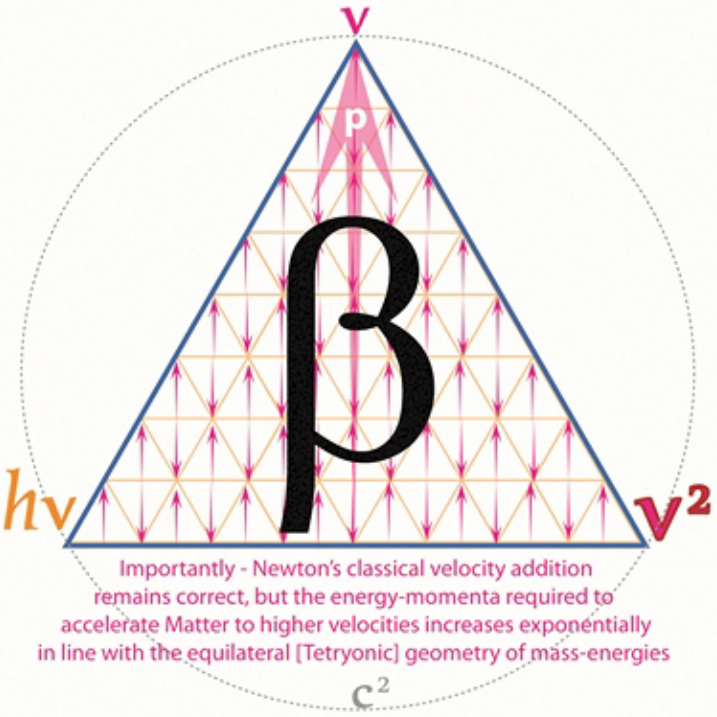


$$\left[\frac{v^2}{c^2}\right] = \beta^2$$

mass-ENERGY



Classically modelled as an infinite series approaching c
Tetryonics reveals it to be a physical property
of equilateral energy-momenta geometries



A vector measure of the Energy content of a waveform

$$\gamma \equiv \frac{c}{\sqrt{c^2 - v^2}} = \frac{1}{\sqrt{1 - \beta^2}} = \frac{\mathrm{d}t}{\mathrm{d}\tau}$$

γ

Importantly - Newton's classical velocity addition remains correct, but the energy-momenta required to accelerate Matter to higher velocities increases exponentially in line with the equilateral [Tetryonic] geometry of mass-energies

A scalar measure of a KEM waveform's energies

$$\gamma = 1/\sqrt{1 - v^2/c^2}$$

Γ

Unified Energy momenta geometry

$$m = n\pi \underset{\text{mass}}{} \left[\underset{\text{ElectroMagnetic}}{[\varepsilon_0 \mu_0]} . \underset{\text{mass}}{[m} \underset{\text{velocity}}{\Omega} \underset{\text{velocity}}{v^2}] \right]$$

$$p = n\pi \underset{\text{energy}}{} \left[\underset{\text{mass}}{m} \underset{\text{velocity}}{\Omega v} \right]$$

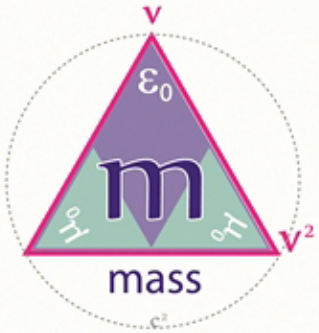
$$E = n\pi \left[\underset{\text{mass}}{[m} \underset{\text{velocity}}{\Omega v}]^2 \right]$$

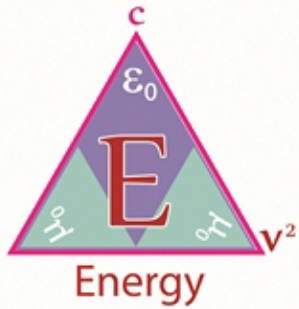
linear momentum

quantised angular momentum

linear momentum

quantised angular momentum





$$mv = p \qquad p^2 = E$$

$$\beta = \left[\frac{v}{c} \right]$$

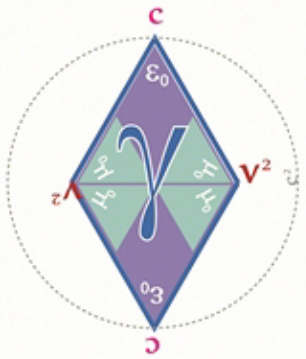
Linear

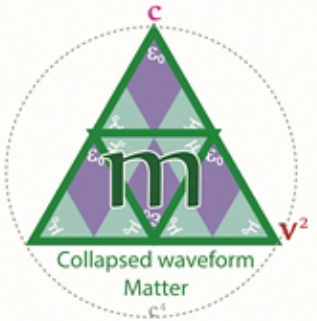
Lorentz factor

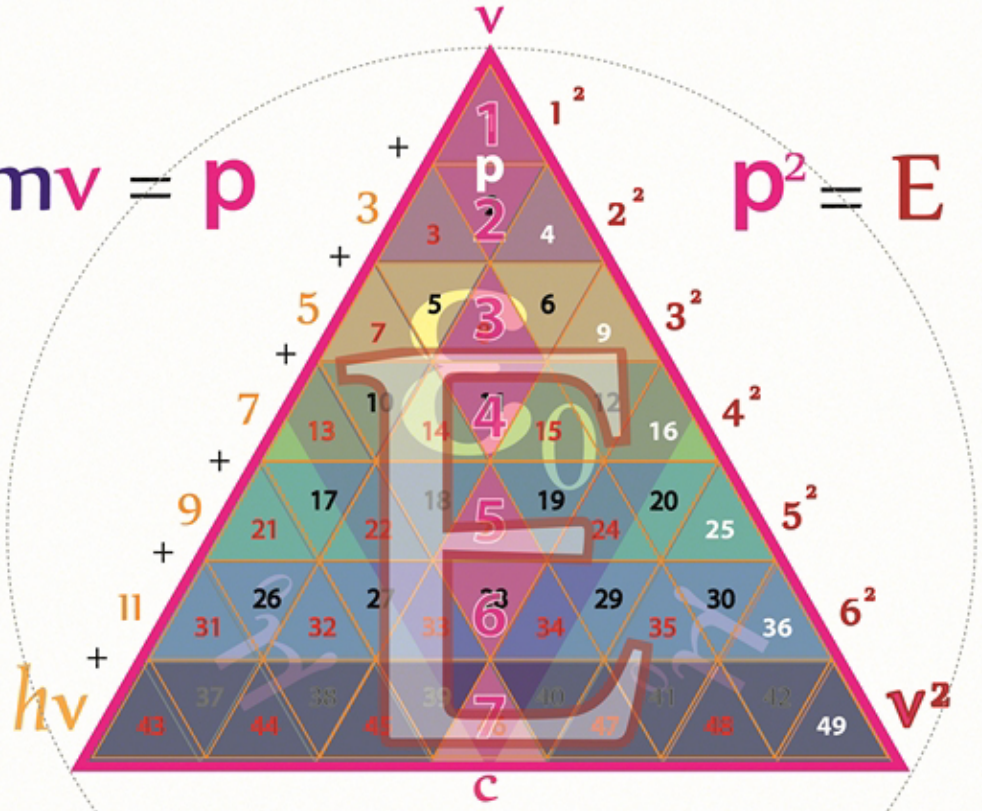
$$\beta^2 = \left[\frac{v^2}{c^2} \right]$$

Scalar

Lorentz factor







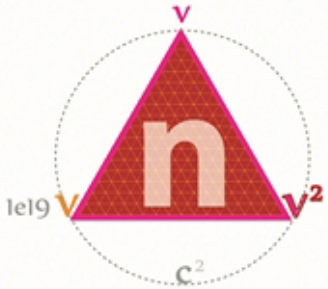
Tetryonic's equilateral geometries model
EM mass-ENERGY momenta
in all its forms

c^2

$$E_\gamma = 2\pi \underset{\text{Photons}}{} \left[\underset{\text{ElectroMagnetic}}{[\varepsilon_0 \mu_0]} . \underset{\text{mass}}{[m} \underset{\text{velocity}}{\Omega} \underset{\text{velocity}}{v^2}] \right]$$

$$m = 4n\pi \underset{\text{mass}}{} \left[\underset{\text{ElectroMagnetic}}{[\varepsilon_0 \mu_0]} . \underset{\text{mass}}{[m} \underset{\text{velocity}}{\Omega} \underset{\text{velocity}}{v^2}] \right]$$

Squared Energy distributions



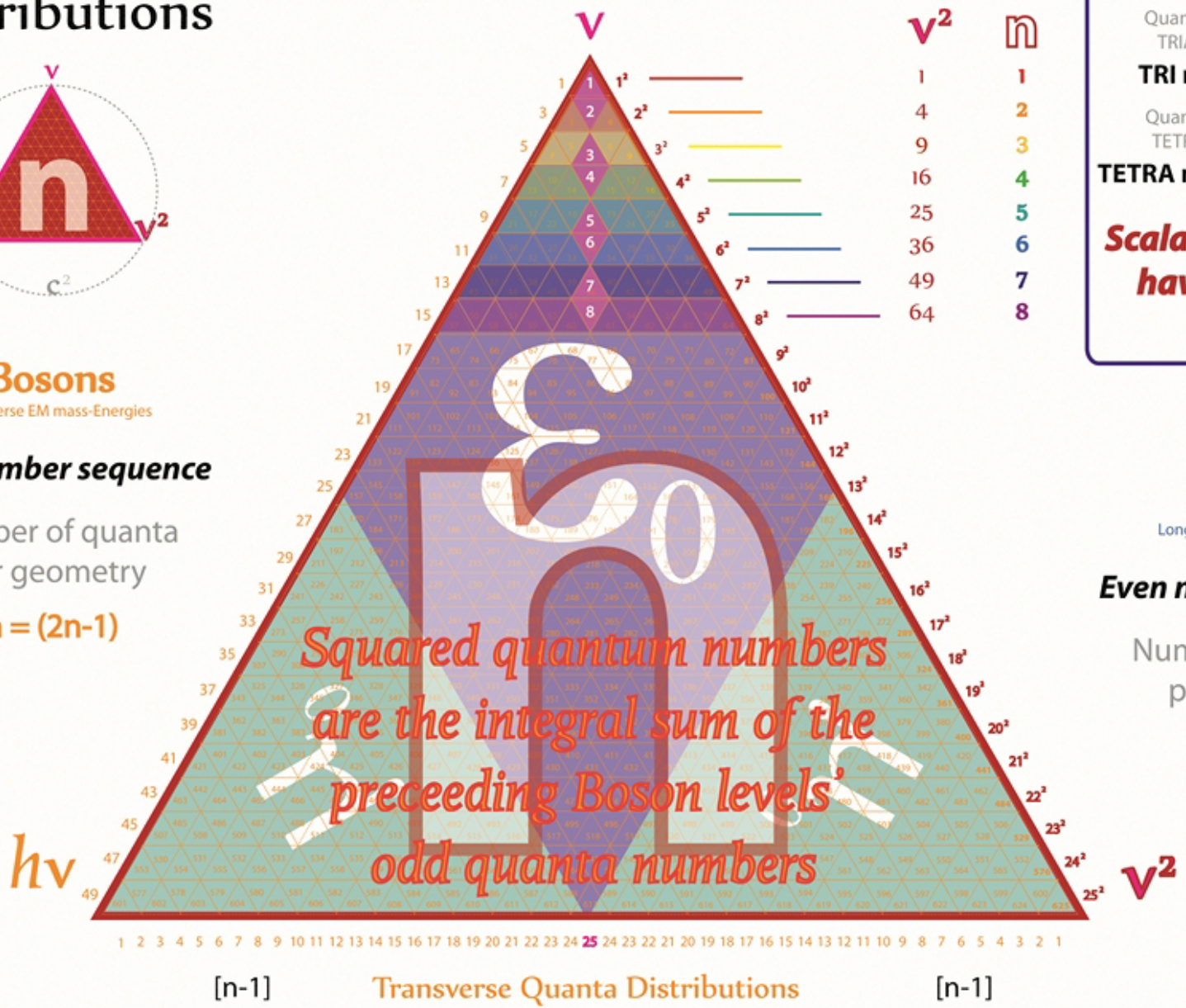
Bosons

Transverse EM mass-Energies

Odd number sequence

Number of quanta per geometry

n = (2n-1)



EM mass-energy

Quantum numbers are ***not*** TRIANGULAR NUMBERS

TRI n = (n/2) x (n+1)

Quantum numbers are ***not*** TETRAHEDRAL NUMBERS

TETRA n = (n/6) (n+1) (n+2)

Scalar energy levels have SQUARED quanta

Photons

Longitudinal EM mass-Energies

Even number sequence

Number of quanta per geometry

n = (2n)

Tetryonic Energy and Charge relationships

Quantised angular momenta is the geometric source of all mass-Energy-Matter relationships

Scalar energies
(are 'squared' numbers)

The Energy density of a particle's charged fascia geometry determines its mass

m

Charged mass-energy geometry & Matter topology determines a particle's physical characteristics (Type, Family, generation, mass etc)

M

Charge

-12

Opposite nett elementary charge geometries

+12

electron

12
[0-12]

1.2 e20

mass-Matter

e-

8.851486 e-31 KG

1875x
(differential)

differing Matter topologies

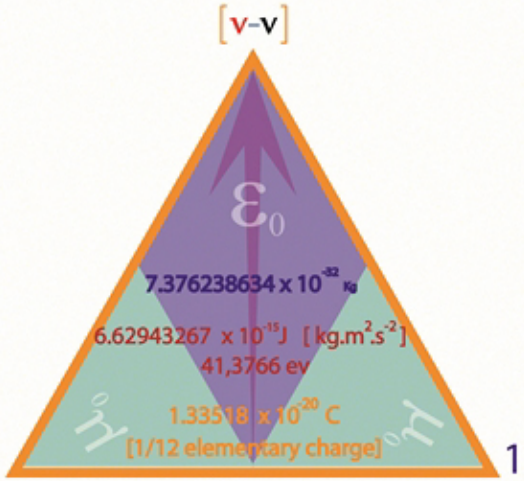
Proton

12
[24-12]

2.25 e23

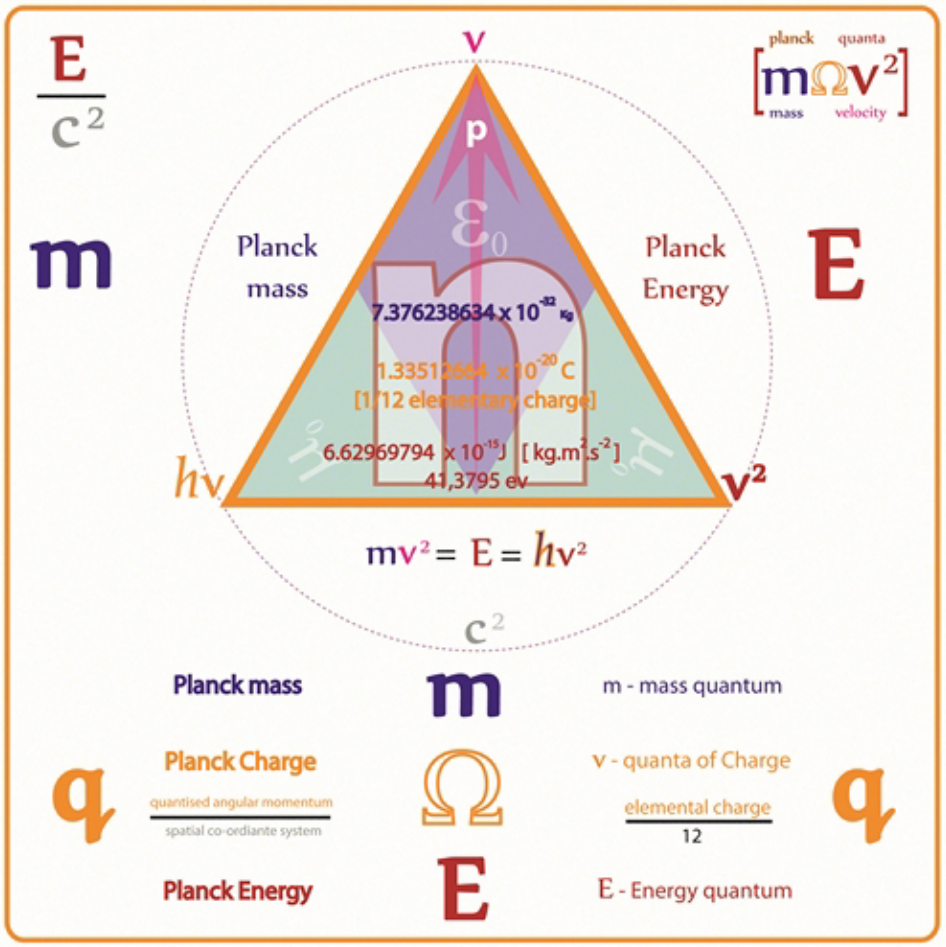
1.65965 e-27 KG

P+



Planck mass-energy

Planck's energy momenta quantum



Planck's constant is the equilateral geometry of rest mass-energy momenta in standing wave Matter topologies

Currently the Atomic masses are calculated using 1/12 of a Molar Carbon12 atom's mass as the reference mass.

Tq [Carbon] - [252-252] C [270,072] / 12
Tm [Carbon] - 270,072 12 22,506

If we calculated for the molar mass of C12 in 12 grams we would get
(.012/N/270072) 7.378205107 x 10⁻³² Kg/mol
this is in error by 1/2 of the mass of an electron

Tetryonic mass [Hydrogen] - 2.2512 e23 v

Using Tetryonic geometry we can solve for an exact Compton frequency of any mass-Matter topology and account exactly for all quantum energy contributions to the rest Matter of all electrons and Baryons in any element thus determining exact molar masses exclusive of blackbody radiation, kinetic energies and energies of measurement and avoiding 'weighted' masses

Defining [N] as the number of rest mass Hydrogen atoms in 1gram exactly and makes Avagadro's number the inverse of this number

$$\text{Molar mass} = \frac{H_1 \text{ Atomic mass}}{\text{Avagadro's No.}}$$

$$\text{mass } H_{mol}/Av = \frac{.001}{6.022141579 \times 10^{23}}$$

rest mass Hydrogen = $1.660538841 \times 10^{-27}$ g/mol

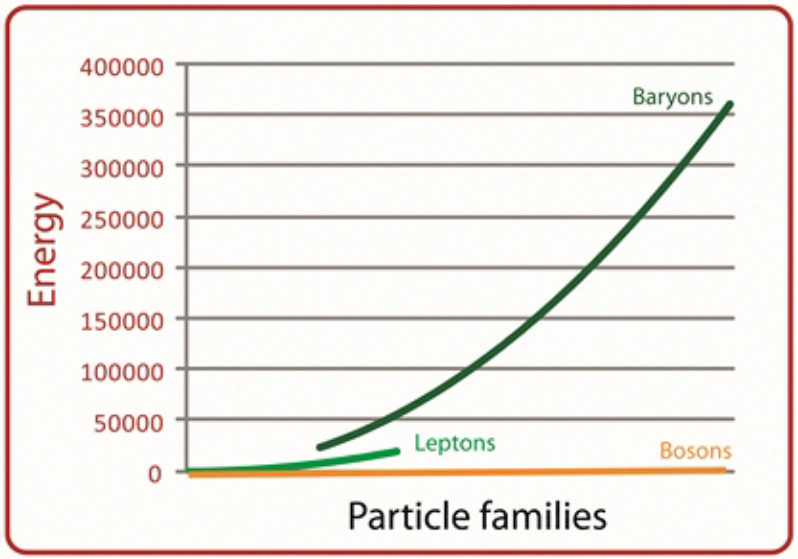
$$H_{mole}/m[H] = \frac{1.660738412 \times 10^{-27}}{22,512}$$

n Planck mass = $7.376238634 \times 10^{-32}$ Kg

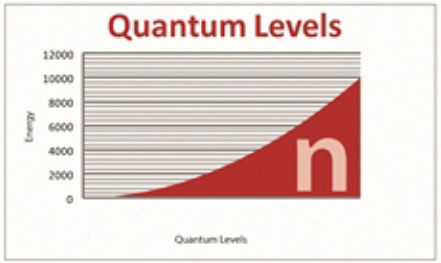
This is an exact Atomic rest mass as opposed to the current weighted molar Atomic mass estimates (which is incorrect by **1/2** the mass of an electron)

Planck's constant is the 'quantum of action' and also contributes to the mass-energies of radiant EM wave geometries

Nuclear Energy levels

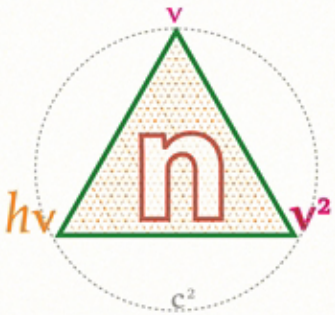


Exponential energy levels

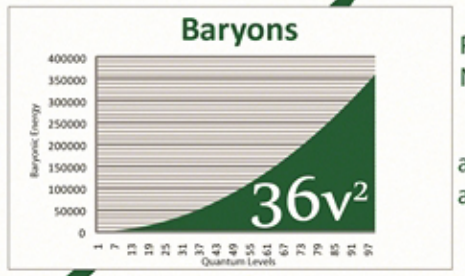


Radioactive Decays
follow exponential curves
determined by the Tetryonic
topology of the particle families

$1e19v = n = 5e18f$



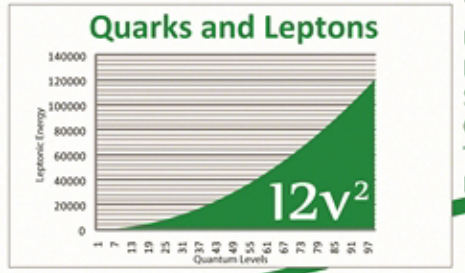
$T\pi\left[\left[m\Omega n\right]\right]$ Energy, mass QAM quanta



12 [24-12]
0 [18-18]
12 [12-24]

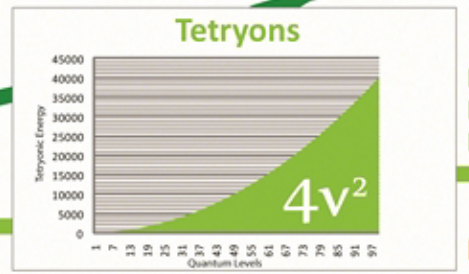
Proton
Neutron
antiNeutron
antiProton

Electron
Positron
Neutrino



12 [12-0]
12 [0-12]
0 [6-6]
8 [10-2]
4 [4-8]

Up
Down
Strange
Charmed
Top
Bottom



4 [4-0]
0 [2-2]
4 [0-4]

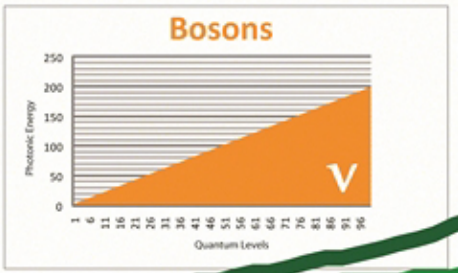
Positive
Negative
Neutral

Bosons

$ODD\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ Bosons; EM Field; Planck quanta; ElectroMagnetic; mass; velocity

$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ Photons; EM Field; Planck quanta; ElectroMagnetic; mass; velocity

Linear energy levels



1 [1-0]
0 [1-1]
1 [0-1]

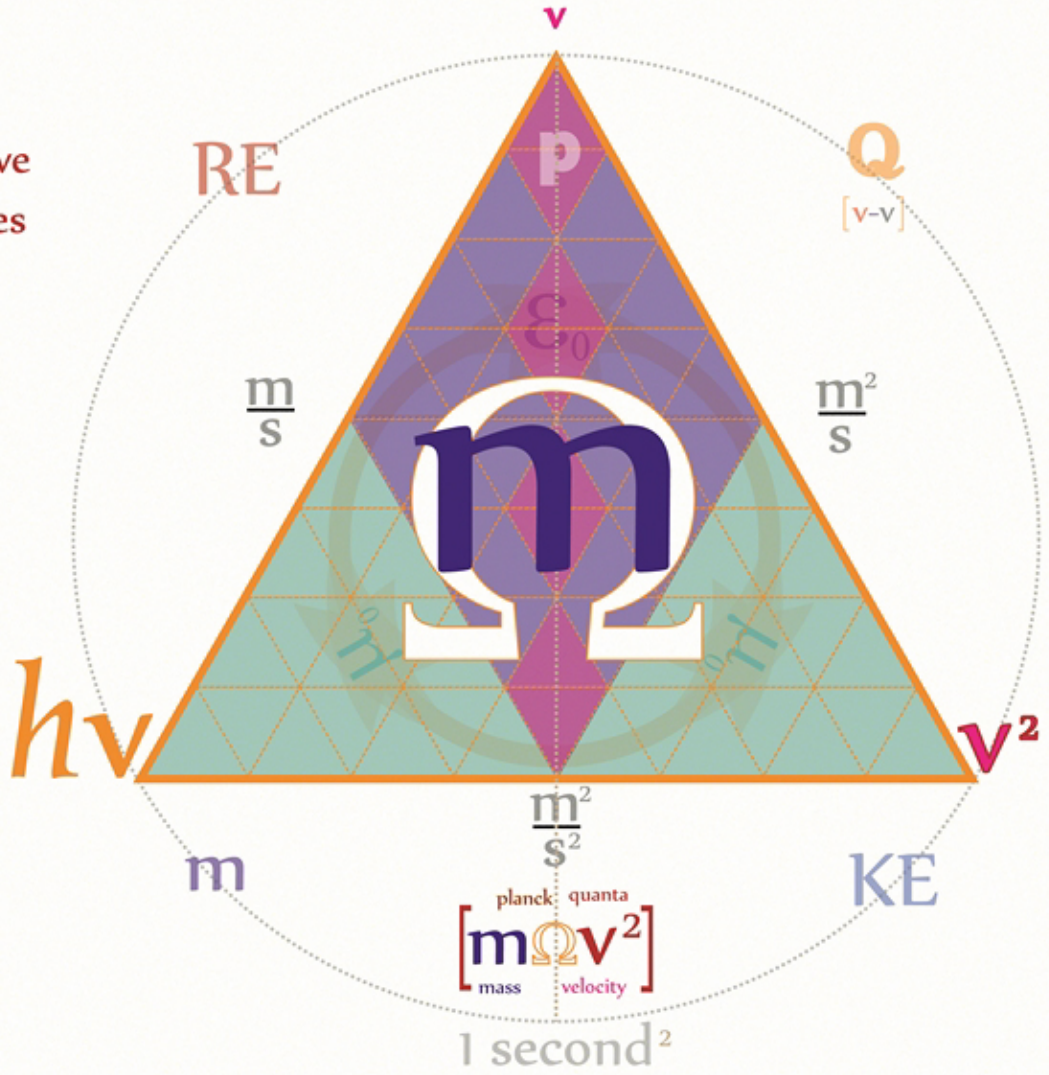
Emission and Absorption of Bosons
and Photons within
Atomic Nuclei

Increase and decrease in integer amounts
according to the Tetryonic geometries
and topologies of the particles involved

Energy momenta geometry

m

All mass-energies have equilateral geometries



Ω

Quantised angular momenta facilitates EM interactions

E

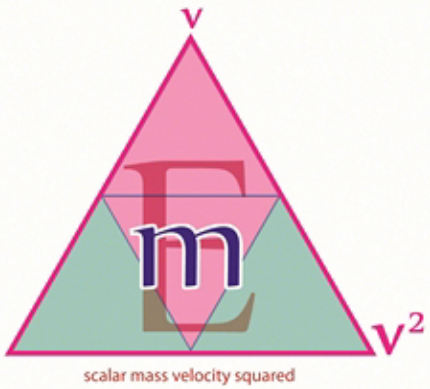
mass-Energy

$kg\frac{m^2}{s^2}$

h

Planck's Constant

$kg\frac{m^2}{s}$



scalar mass velocity squared

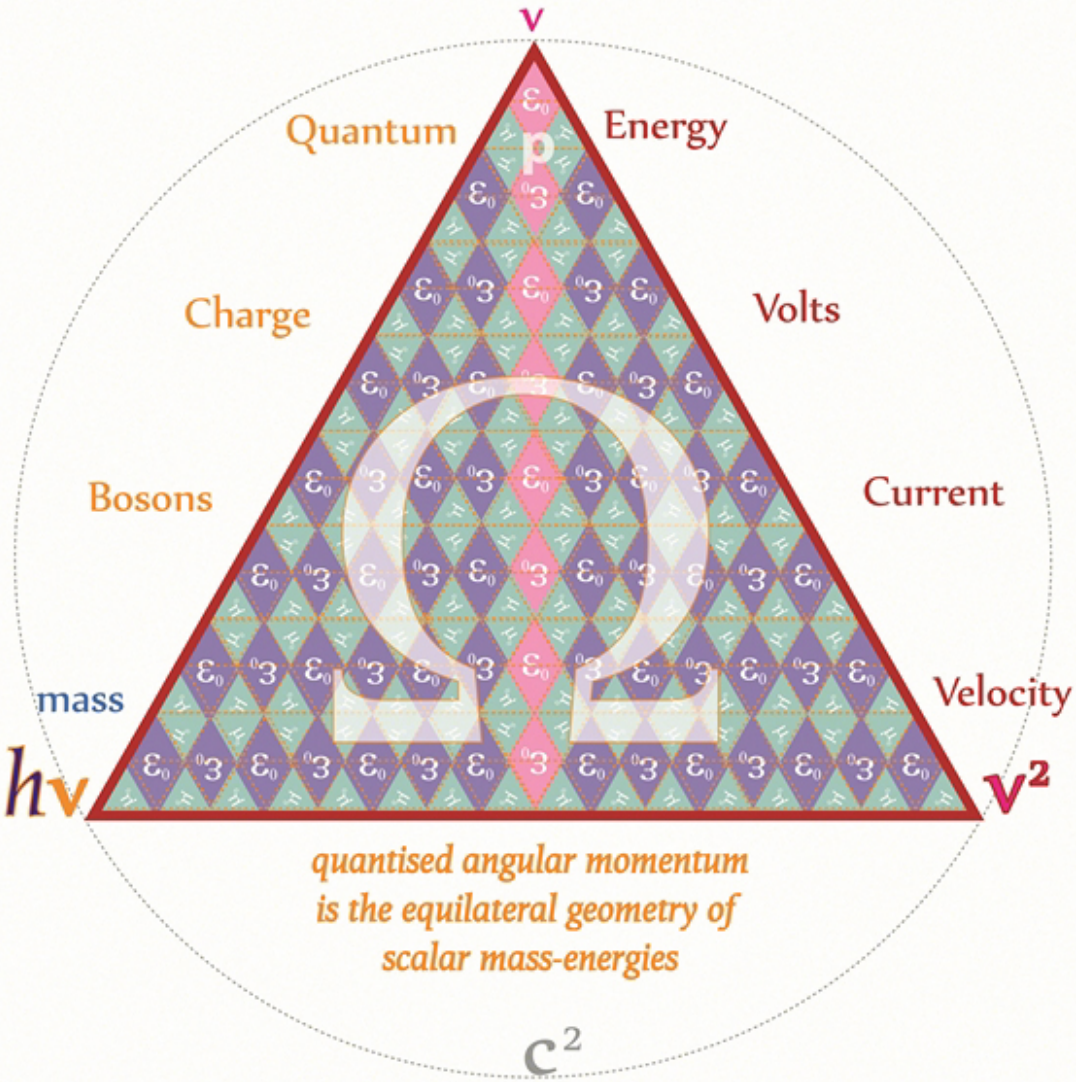
$$mv^2 = E = hv^2$$

quantised angular momenta per second

m
mass

E
Energy

Velocity **Square root** Momentum



Bosons are transverse EM masses

Photons are longitudinal EM masses

quantised angular momentum is the equilateral geometry of scalar mass-energies

mass is a measure of Energy per spatial co-ordinate system

mass-Energy momenta

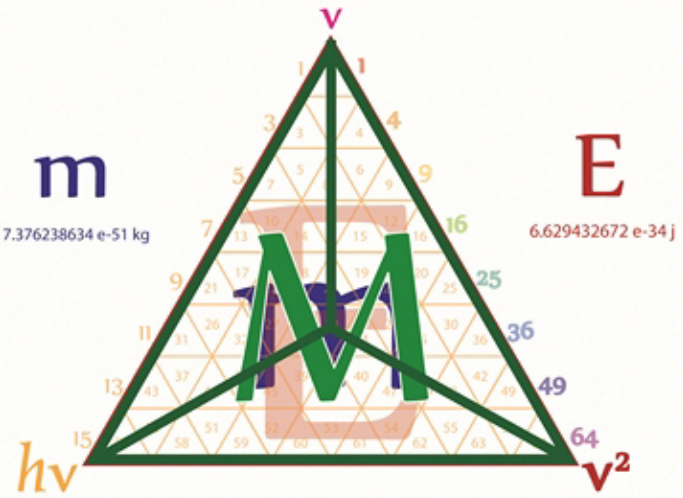
Electromagnetic energy is a scalar measurement of mass

Bosons are Transverse masses

Planck mass

$$\text{ODD}\pi\text{ Bosons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)



Photons are Longitudinal masses

Photons

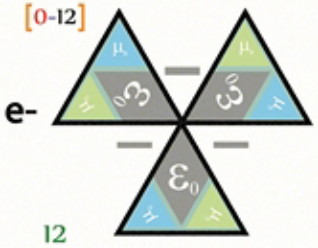
$$\text{EVEN}\pi\text{ Photons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

mass-ENERGY-Matter equivalence

LEPTONS

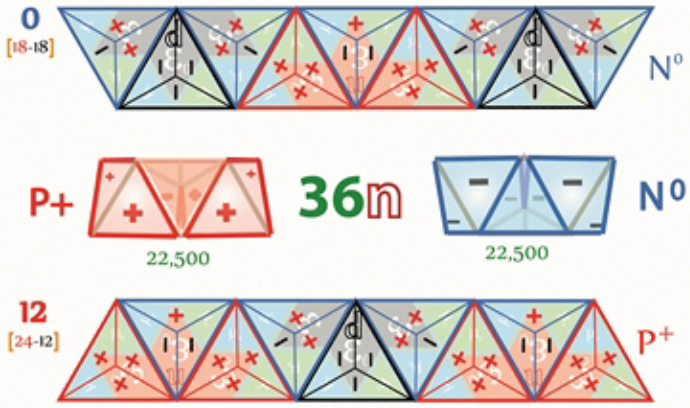
12
[0-12]



Tetryonic Matter of Electron - $8.851486361 \times 10^{-31}$ Kg
mass-Energy of Electron - $7.955319207 \times 10^{-14}$ J

$$12\pi\text{ Fermions}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

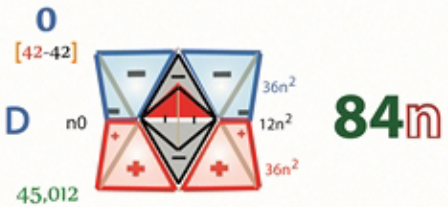


Tetryonic Matter of Proton - $1.659653693 \times 10^{-27}$ Kg
mass-Energy of Proton - $1.491622351 \times 10^{-10}$ J

$$36\pi\text{ Baryons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

ELEMENTS



Tetryonic Matter of Deuterium - $3.320192534 \times 10^{-27}$ Kg
mass-Energy of Deuterium - $2.984040234 \times 10^{-10}$ J

$$84\pi\text{ Deuterons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field (ElectroMagnetic) · Planck quanta (mass, velocity)

EM mass quanta in Matter

kg

q

KG

f

$$n\pi_{mass}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

mass

1

¼M

½M

v

ODDπ

EVENπ

v²

c⁴

$$ODD\pi_{Bosons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

$$EVEN\pi_{EM\ waves}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Q

3m

4m

M

4

Matter

$$4n\pi_{Matter}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Lorentz velocity corrections

[result from the measurement of EM mass-energy quanta in a planar spatial co-ordinate system]

$$\beta = m\left[\frac{v}{c}\right]$$

[Linear momentum corrections are linear]

$$\beta^2 = m\left[\frac{v^2}{c^2}\right]$$

[EM mass-Energy corrections are Scalar]

$$m \quad \frac{E}{c^2} = \frac{\overset{\text{Energy}}{[m\Omega v^2]}}{\underset{\text{EM Field}}{c^2}} = n\pi\underset{\text{mass}}{}\left[\underset{\text{ElectroMagnetic}}{[\varepsilon_0\mu_0]}.\overset{\text{planck quanta}}{[m\Omega v^2]}\right] \quad \left[\frac{1}{c^2}\right]E$$

$$p \quad mv = \left[\frac{E}{v^2}\right].v = n\pi\underset{\text{linear momentum}}{}\left[\overset{\text{EM Field}}{\underset{\text{ElectroMagnetic mass velocity}}{[\varepsilon_0\mu_0]}}.\overset{\text{Planck quanta}}{[mv]}\right] \quad \frac{E}{v}$$

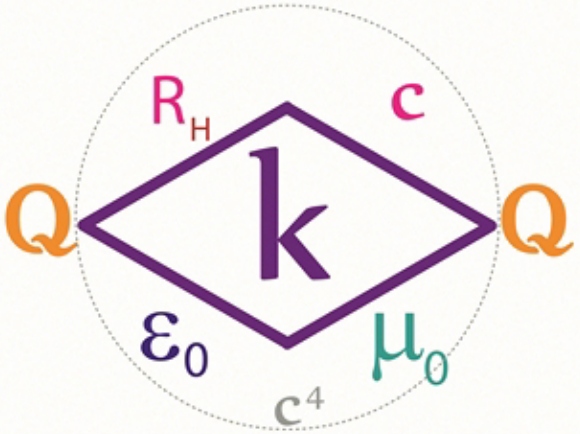
$$E \quad mv^2 = \frac{mv^2}{\underset{\text{EM Field}}{c^2}} = 4n\pi\underset{\text{Matter}}{}\left[\overset{\text{EM Field}}{\underset{\text{ElectroMagnetic mass velocity}}{[\varepsilon_0\mu_0]}}.\overset{\text{Energy}}{[mc^2]}\right] \quad m\left[\frac{c^2}{c^2}\right]$$

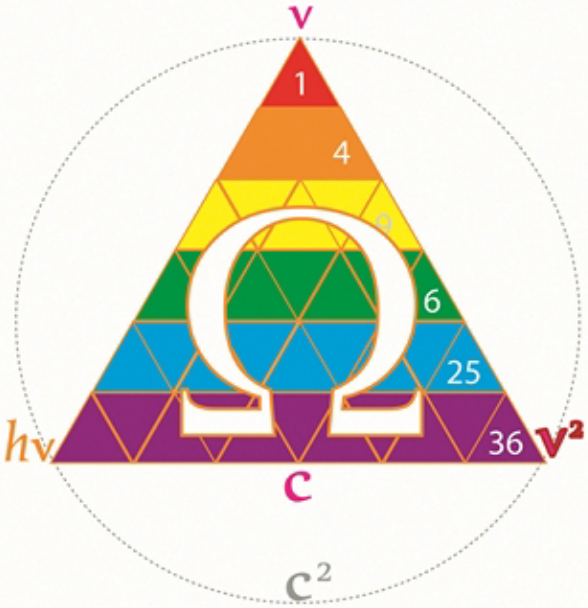
mass-energy in Matter propagates at c

$$KE \quad 1/2\,Mv^2 = 1/2\left[4\left[\frac{\overset{\text{Energy}}{[m\Omega v^2]}}{\underset{\text{EM Field}}{c^2}}\right]\right] = 2\pi\underset{\text{Photons}}{}\left[\underset{\text{ElectroMagnetic}}{[\varepsilon_0\mu_0]}.\overset{\text{planck quanta}}{[m\Omega v^2]}\right] \quad 2m\left[\frac{v^2}{c^2}\right]$$

The geometry of Constants

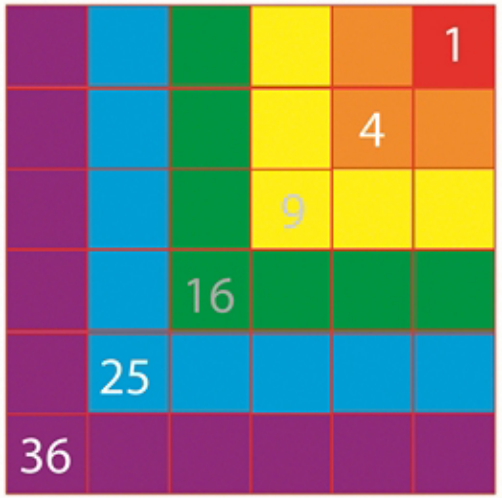
Quantised angular momentum is the source of all physical Constants

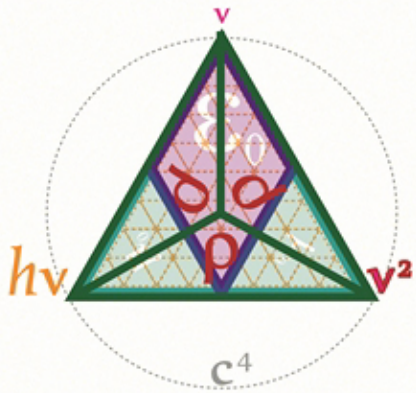


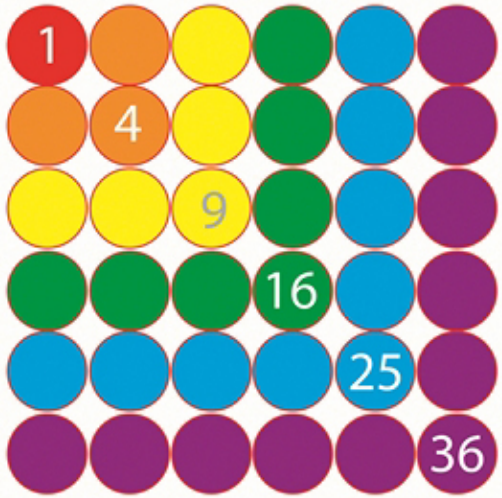


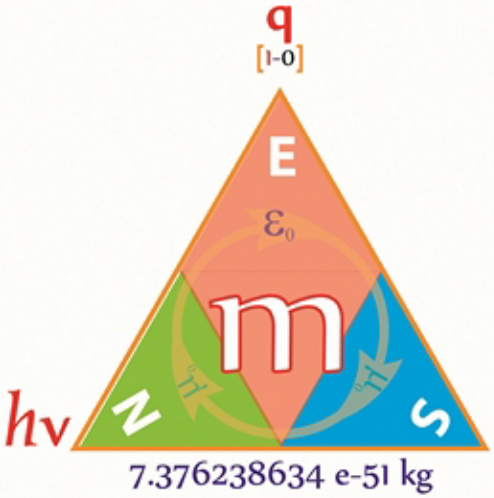
A physical constant is a physical quantity that is generally believed to be both universal in nature and constant in time.

It can be contrasted with a mathematical constant, which is a fixed numerical value but does not directly involve any physical measurement









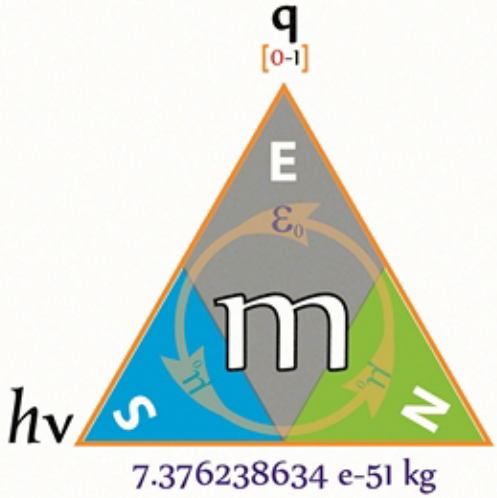
Max Planck

(April 23, 1858 – October 4, 1947)

"To interpret the vibrational energy of N oscillators not as a continuous, infinitely divisible quantity, but as a discrete quantity composed of an integral number of finite equal parts.

$$\varepsilon = nhv$$

"Let us call each such part of the energy element h "



Planck's Constant

[quantised mass-energy angular momenta]

N_A

1 mole of Hydrogen atoms has a rest-mass of 1 gram

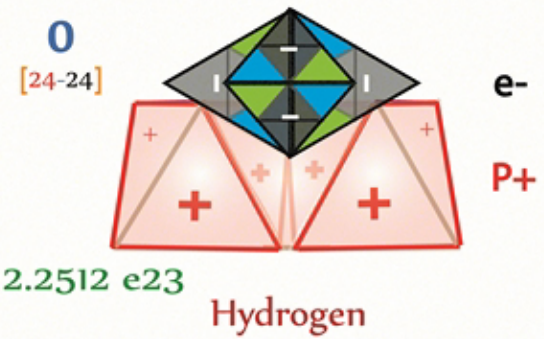
Solving for Planck's Constant using the inverse of Avogadros number & Tetryonic geometry we obtain an exact corrected value of :

$$\pm\ 6.629432672 \times 10^{-34}\ \text{J.s}$$

$4.137664546 \times 10^{-15}$ eV.s

$$mv^2 = E = hv^2$$

A rest mass Hydrogen atom has a Compton frequency of 2.2512 e23 Planck quanta



$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

Matter — EM Field — Planck quanta

ElectroMagnetic — mass — velocity

Planck's constant is the relationship between EM mass-energy and quantised angular momenta that provides the basis for EM charge in Tetryonic geometries

Amedeo Avogadro

(9 August 1776 – 9 July 1856)

Avogadro's Number

The number of rest mass Hydrogen atoms in 1 gram
(and the rest molar mass of any element or compound)
can be determined directly from tetryonic theory

[exclusive of any measurement, blackbody or kinetic energies]

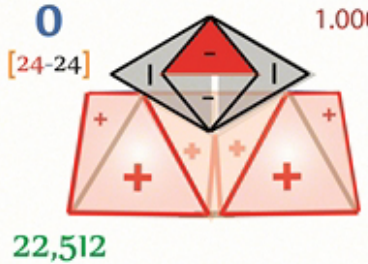
Using a Compton frequency of 2.2512 e23 Planck quanta
for a rest mass-Matter Hydrogen atom

atomic mass unit

$$1\ \mathrm{u} = \frac{M_\mathrm{u}}{N_\mathrm{A}} = 1.660\,538\,782(83) \times 10^{-24}\ \mathrm{g}$$

Avogadro N = 6.022141579 x 10^23

$$N^{-1} = \begin{matrix} 2.2512\ e23\ v \\ \text{[Hydrogen mass]} \\ 1.660538841 \times 10^{-24}\ \mathrm{g} \end{matrix}$$



n0 *1 mol = 1 g*

Hydrogen = 1.660538841 x 10^-27 Kg

n1 *1 mol = 1.000533 g*

n0 *1 mol = 11.996801 g*

Carbon 12 = 1.99211552 x 10^-26 Kg

n1 *1 mol = 12 g*

Hydrogen's rest Tetryonic mass
is 22,512 n Planck quanta
[Proton - 22,500n + electron 12n]

$$\left[22{,}512\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]\right]^{-1}$$

EM Field — Planck quanta
ElectroMagnetic — mass — velocity

The inverse mass of Hydrogen is
equal to Avogadro's number

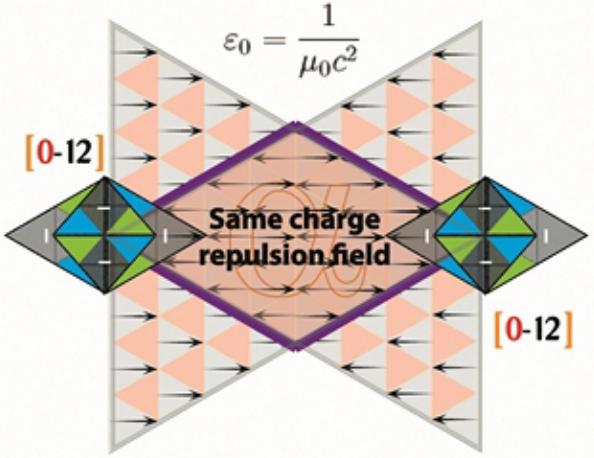
Coulomb's Constant

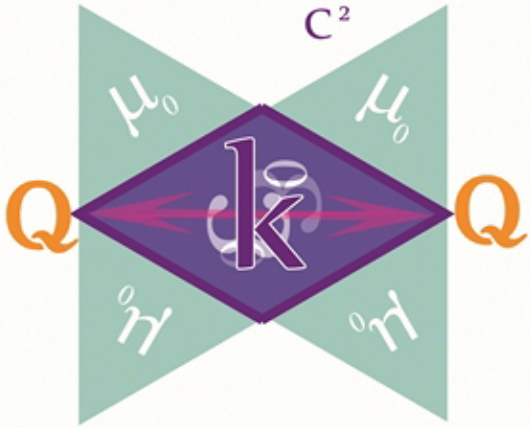
$$k = \frac{1}{4\pi\varepsilon_0}$$

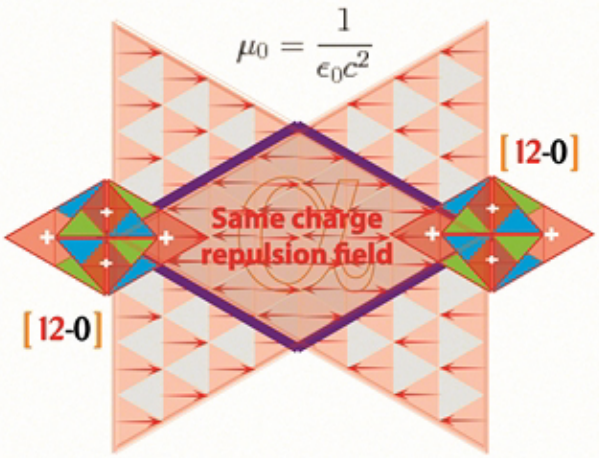
The proportionality constant ke, called the Coulomb constant (sometimes called the Coulomb force constant), is related to defined properties of EM Energy-momenta and is used to define Electric field forces

$$c = \frac{1}{\sqrt{\mu_0\varepsilon_0}}$$

$$8.987\ e9\ \frac{Nm^2}{C^2}$$







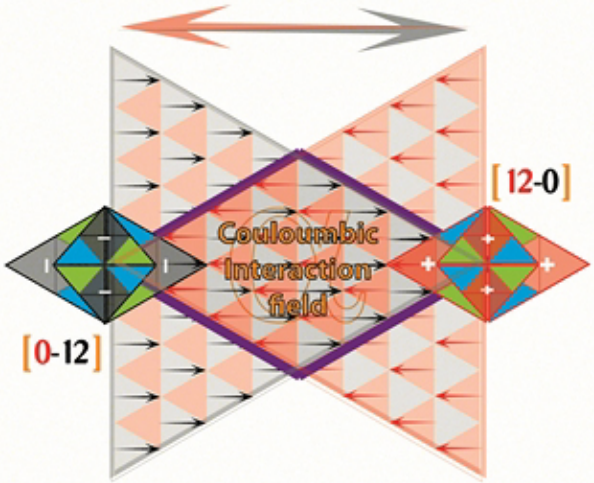
Similars repel

Linear Coulombic force interactions are a result of charged E field linear momenta

$$\mathbf{E} = \frac{\mathbf{F}}{q_t}$$

The Electric field can be defined as the longitudinal Force exerted by charged masses

Opposites attract



It is a measure of the interactive force produced by the Electric field energy-momenta of two superpositioned charge KEM fields

Similars repel

Longitudinal E field forces between Charged particles are mediated by Photons

$$\mathbf{E} = \frac{1}{4\pi\varepsilon_0}\frac{Q}{r^2}\hat{\mathbf{r}}$$

The Electric field can also be derived from Coulomb's Law

The Speed of ElectroMagnetic energies

c

Celeritas is a Latin word for "swiftness" or "speed". It is often given as the origin of the symbol c, the universal notation for the speed of light in a vacuum

The classical behaviour of the electromagnetic field is described by Maxwell's equations, which predict that the speed c with which electromagnetic waves (such as light) propagate through the vacuum is related to the electric constant ε0 and the magnetic constant μ0 by the equation $c = 1/\sqrt{\varepsilon_0 \mu_0}$.

The speed of EM energies in a vacuum is defined as 299,792,458 meters per second (1,079,252,848.8 km/h).

$$\frac{K_E}{K_M} = 9e16 \ \frac{\frac{N\,m^2}{c^2}}{\frac{N\,s^2}{c^2}}$$

$$c^2 = 9e16 \ \frac{m^2}{s^2}$$

$$c = 299{,}792{,}458 \ \frac{m}{s}$$

The natural velocity of EM energies can be calculated from the field's EM permittivity & permeability and is affected by the medium it is propagating through

EM

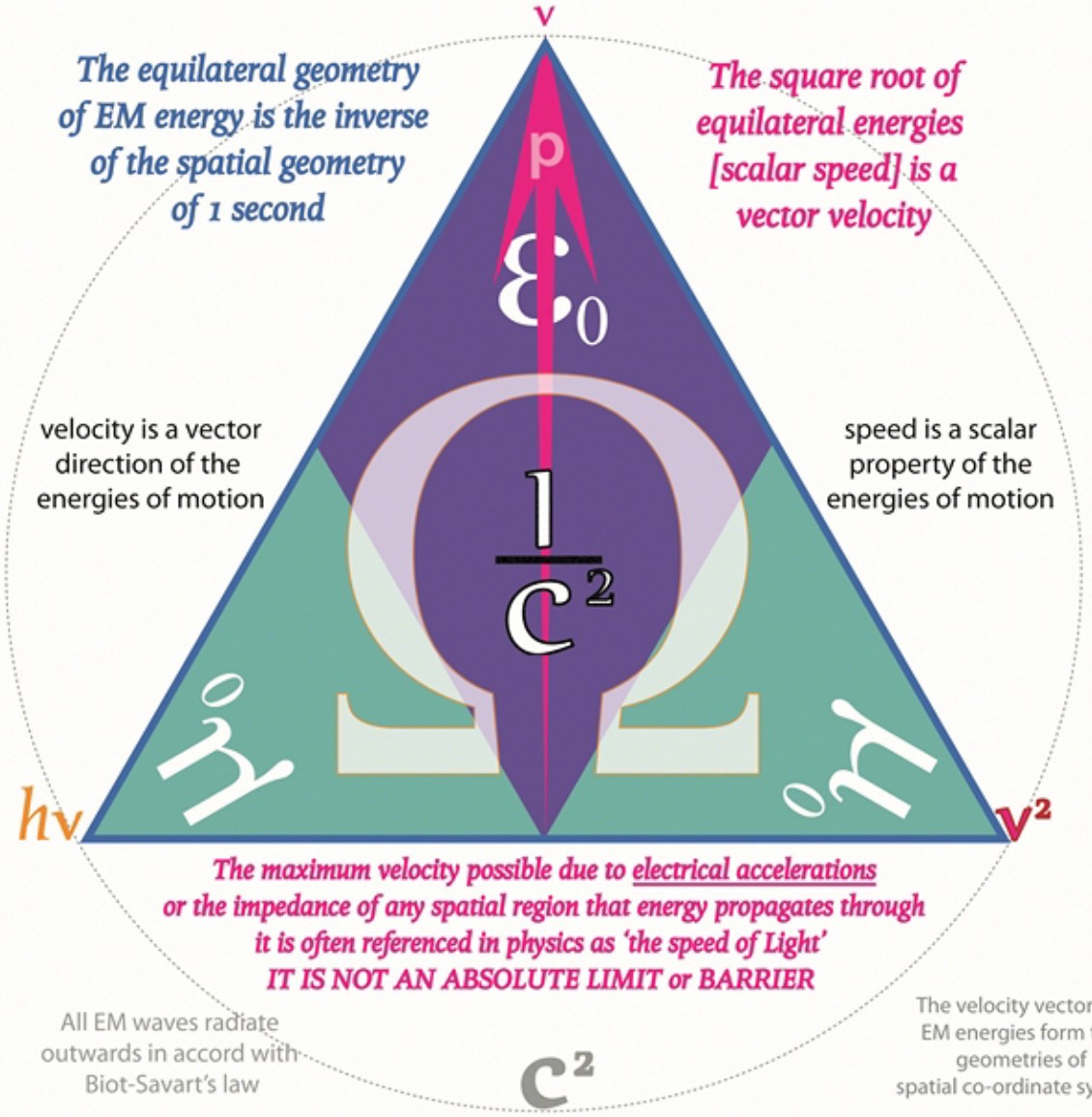
The distance energy travels in 1 second from its source

The equilateral geometry of EM energy is the inverse of the spatial geometry of 1 second

The square root of equilateral energies [scalar speed] is a vector velocity

velocity is a vector direction of the energies of motion

speed is a scalar property of the energies of motion



The maximum velocity possible due to electrical accelerations or the impedance of any spatial region that energy propagates through it is often referenced in physics as 'the speed of Light' IT IS NOT AN ABSOLUTE LIMIT or BARRIER

EM waves and energy momenta can be measured as either Transverse or Longitudinal waveforms with respect to their velocity vector

All EM waves and energy are symmetrical waveforms whose quanta contain ElectroMagnetic mass-energy and momenta

All EM waves radiate outwards in accord with Biot-Savart's law

The velocity vectors of EM energies form the geometries of spatial co-ordinate systems

EM waveforms are bidirectional radiant emissions of 2D energy

with velocity [Lorentz] variable energy contents

Quantum masses

$$h\nu^2 = E = m\nu^2$$

$$\text{kg}\,\frac{\text{m}^2}{\text{s}}\,\frac{1}{\text{s}} \qquad \text{kg}\,\frac{\text{m}^2}{\text{s}^2} \qquad \text{kg}\,\frac{\text{m}^2}{\text{s}^2}$$

The quantum of mass-energy can be derived with several methodolgies using Tetryonic Geometry

mass quanta

EM mass-energy quanta

Matter is a KEM standing wave propagating at c

EM Field: $[\varepsilon_0\mu_0]$ 1.112650056 e-17 s2 m-2

planck quanta: $[m\Omega v^2]$ mass velocity 6.629432672 e-34 kg m2 s-2

Permittivity x Energy density

$$\frac{E}{c^2} = m$$

mass = 7.376238634 x 10^{-51} Kg

Planck-Einstein

Planck mass-energy geometries

quantised energy momenta

$$h$$

$$\text{kg}\,\frac{\text{m}^2}{\text{s}}$$

6.629432672 e-34 J

Planck quanta $[m\Omega v^2]$ mass velocity

7.376238634 e-51 kg

$$\text{kg}\,\frac{\text{m}^2}{\text{s}^2}$$

$$m$$

scalar mass-energy

Charged mass-Matter topologies

The mass of Matter $T\pi$ EM Field $[[\varepsilon_0\mu_0].[m\Omega v^2]]$ Planck quanta

ElectroMagnetic mass velocity

Matter Quanta

Tetryonic molar mass [Hydrogen] - 1 g

$$\text{Molar mass} = \frac{H_1 \text{ Atomic mass}}{\text{Avagadro's No.}}$$

$$\text{mass } H_{mol}/Av = \frac{.001}{6.022141579 \times 10^{23}}$$

$$= 1.660538841 \times 10^{-27} \text{ g/mol}$$

$$H_{mole} / m[H] = \frac{1.660538841 \times 10^{-27}}{22{,}512}$$

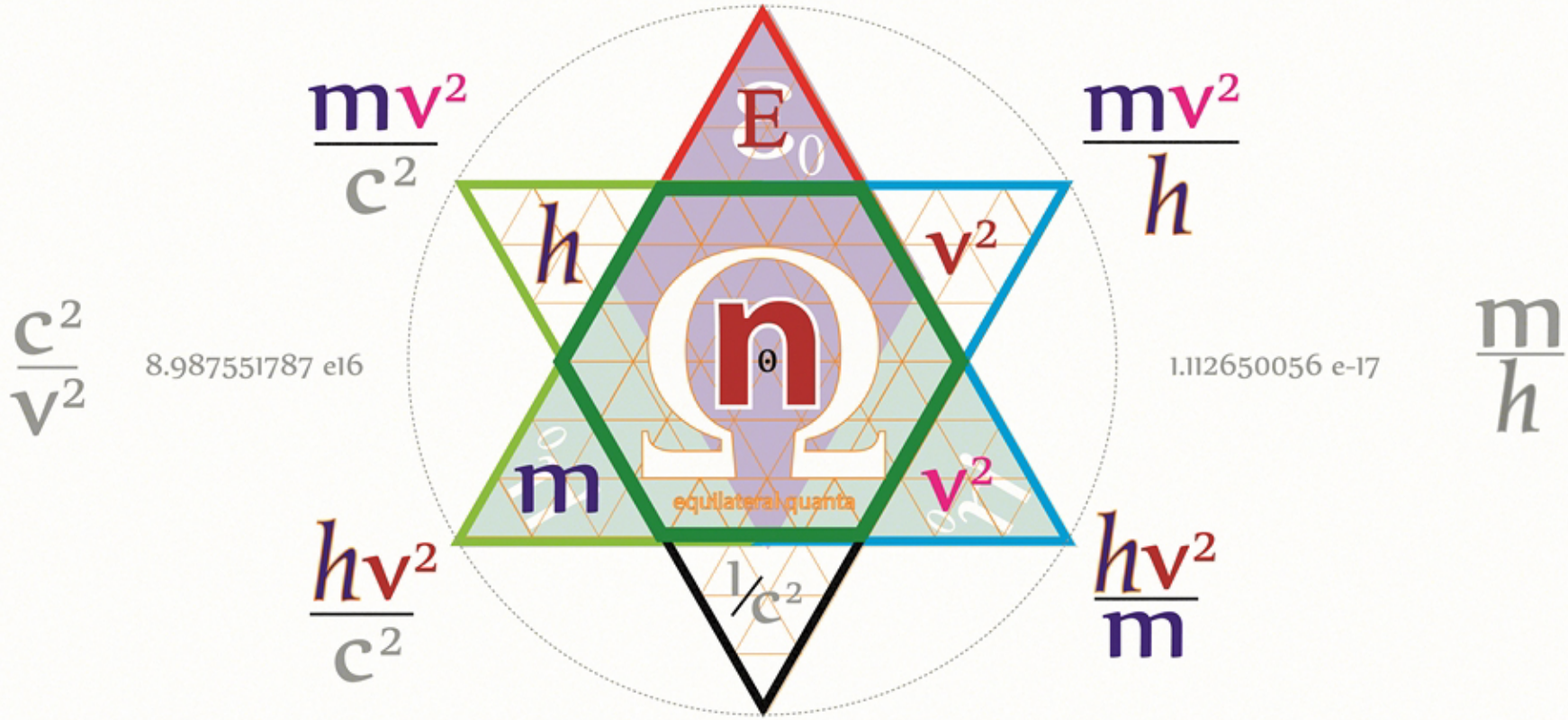
mass = 7.376238634 x 10^{-32} KG

Avogadro - Mandeleev

2D mass-Energy equivalence

'The Speed of Light' is the Natural velocity of Energy propagation

Energy $mv^2 = hv^2$ **EM mass**



Photons **Matter**

Zero Point Fields

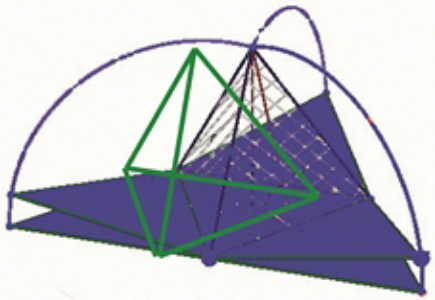
$n\pi$ Quanta $\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

$m=1\pi$

[1, 2, 3, 4, 5, 6, 7, 8, 9,10.....]

radiant 4π mass-energy geometries



in standing wave topologies are 3D MATTER quanta

[2D EM masses are planar energy momenta]

Photons

$2n\pi$ Photons $\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

$m=2\pi$

[2, 8,18, 32, 50, 72, 98,128.....]

The geometry of mass and Matter

[3D Matter has mass-energy momenta and volume]

[1, 3, 5, 7, 9, 11, 13,15, 17, 19.....]

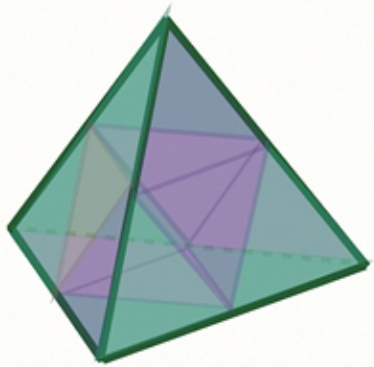
Charge Carriers

$m=3\pi$

$ODDn\pi$ Bosons $\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Bosons



3D Matter topologies are standing waves of 2D mass-energies propagating at c

[4, 8,12, 24, 36, 48, 72, 84, 168.....]

$m=4\pi$

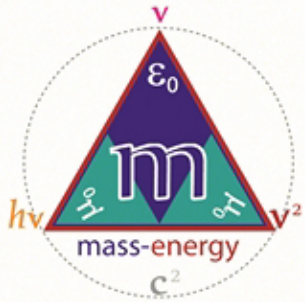
$4n\pi$ Matter $\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

mass-Matter

mass geometries & rest Matter topology

2D **m** mass **kg**



M Matter **KG** 3D

Quanta number

1e19 v

Compton frequency

Matter is a three dimensional charged mass-energy topology

$$M = 4n\pi \underset{\text{Matter}}{} \left[\underbrace{[\varepsilon_0 \mu_0]}_{\text{ElectroMagnetic}} . \underbrace{[m}_{\text{mass}} \underbrace{\Omega v^2]}_{\text{velocity}} \right]$$

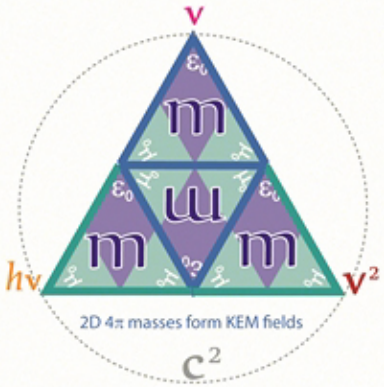
EM Field — Planck quanta

Energy density is mass - the term 'massless particle' is a misnomer

Quantum number

n

Nuclear Level

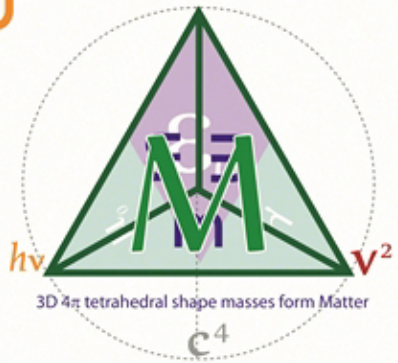


Kinetic Energies

RE = Matter + KE

Relativistic mass is the total EM energy content of a massive body (or system) in motion

The relativistic rest mass-energies of Matter are velocity invariant as 3D Matter is a EM standing wave with 2D mass- energy fascia whose velocity of propagation is the speed of Light

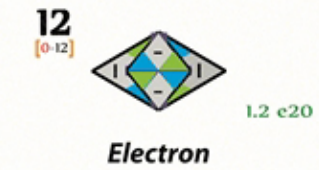


Matter

Charge topologies and rest mass-energies

mass-Matter topologies

mass-energy geometries



Electron

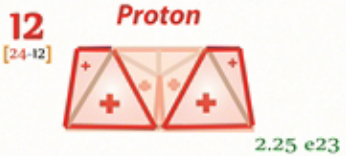
n=0

Q

0.00000053 g
molar mass

Tm Electron = 12n

electron Charge	$-1.602216081 \times 10^{-19}$ c
electron rest mass	$8.851486361 \times 10^{-31}$ kg
electron rest energy	$7.955319207 \times 10^{-14}$ J
	496,519.7 eV [.496519 Mev]



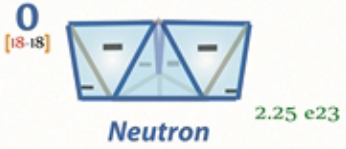
Q
n=25²

0.000999 g
molar mass

Tm Proton = 22,500n

Proton Charge	$+1.602216081 \times 10^{-19}$ c
Proton rest mass	$1.659653693 \times 10^{-27}$ kg
Proton rest energy	$1.491622351 \times 10^{-10}$ J
	930,974,522.8 eV [930.9Mev]

Protons and Neutrons have identical masses to each other
and equivalent topologies but differing charges



Neutron

Q
n=25²

0.000999 g
molar mass

Tm Neutron = 22,500n

Neutron Charge	0
Neutron rest mass	$1.659653693 \times 10^{-27}$ kg
Neutron rest energy	$1.491622351 \times 10^{-10}$ J
	930,974,522.8 eV [930.9 Mev]

Hydrogen

When Protons and electrons interact to form neutral Hydrogen the electron's KEM quantum field energies increase in direct proportion to the Proton's energy levels

n=0

Q
n=25²

1.000533 g
molar mass

Tm Hydrogen = 22,512n

Hydrogen = Proton + electron

H Charge	0
H rest mass	$1.660538841 \times 10^{-27}$ kg
H rest energy	$1.492417883 \times 10^{-10}$ J
	931,967,562.3 eV [931.9 MeV]

quantum synchronous conveters

n=0

Q
n=25²

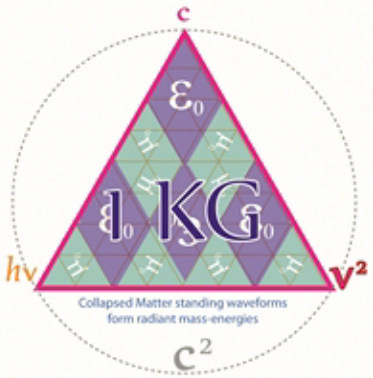
1.999466 g
molar mass

Tm Deuterium = 22,512n

Hydrogen = Proton + electron

H Charge	0
H rest mass	$3.320192534 \times 10^{-27}$ kg
H rest energy	$2.984040234 \times 10^{-10}$ J
	1,862,445,565 eV [1,962 MeV]

In order to make an exact 1kg reference mass-Matter topology



$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right]_{\text{mass}\ \text{velocity}}^{\text{mass}\ \text{Planck quanta}}$$

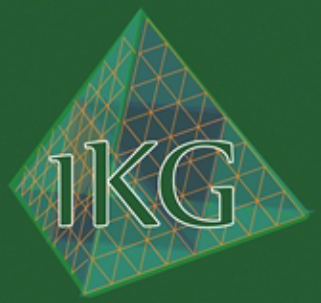
mass-energy

Energy per second

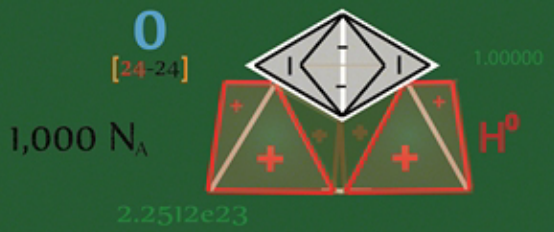
$$mc^2 = E = hv^2$$

$$m = E/c^2$$

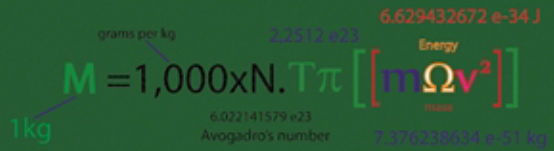
mass is the scalar integral surface area of Matter topologies



which is equivalent to exactly 1,000 molar Hydrogen masses



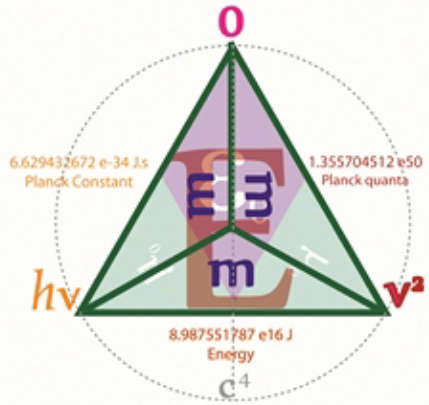
whose Tetryonic Matter topology can be modelled using charged Planck mass-energy geometries



revealing that there are exactly

1.355704512 e50

Planck quanta in standing wave Matter



$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]_{\text{mass}\ \text{velocity}}^{\text{Matter}\ \text{Planck quanta}}$$

Matter-energy

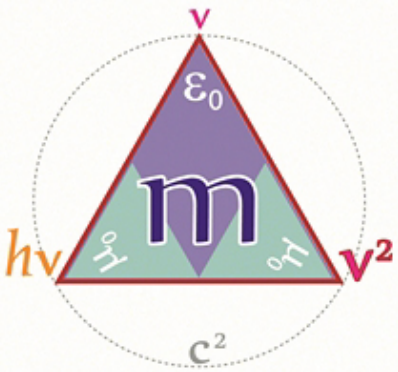
Energy per second squared

$$hv^2 = E = Mc^4$$

$$M = E/c^4$$

Matter topologies are standing-waves of mass-energy

you need to create a standing-EM wave with a specific compton frequency



$$m = \frac{E}{c^2}$$

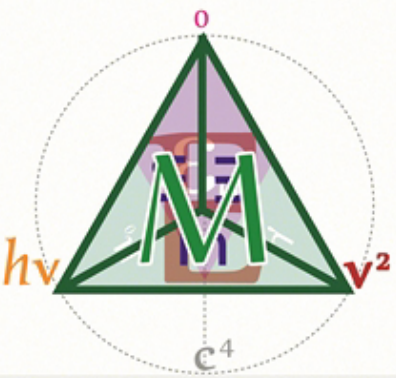
EM mass

3D Matter is comprised of 2D mass-energies

2D mass-energy cannot contain 3D Matter

Matter

$$M = \frac{4\pi E}{c^4}$$



EM mass and Matter defined

There remains a lot of confusion over the exact definition of EM mass and Matter resulting in the frequent interchanging of one term for the other in physical processes

This must be clarified and the two terms must be properly defined in a manner that explains their derivation and physical properties in detail.

$$n\pi_{mass}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

$$n\pi_{Energy}\left[\left[m\Omega v^2\right]\right]$$

Planck quanta · mass · velocity

2D mass-Energies

EM mass is a measure of equilateral scalar energy per unit of Time

$$\beta = \left[\frac{v}{c}\right]$$

mass is the Lorentzian velocity corrected energy content of Tetryonic geometries

All forms of EM mass-Energy are subject to Lorentz factor relationships

$$\beta^2 = \left[\frac{v}{c}\right]^2$$

Matter is Lorentz invariant as its mass-energies propagate in a 4π standing wave geometry

Bosons and Photons are not 'massless' they are 'Matterless' [2D waveforms]

Bosons

$$m_p = \frac{hv}{c^2}$$

Planck masses

Photons

$$m_\gamma = \frac{hf}{c^2}$$

Photon mass

$$ODD\pi_{Bosons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

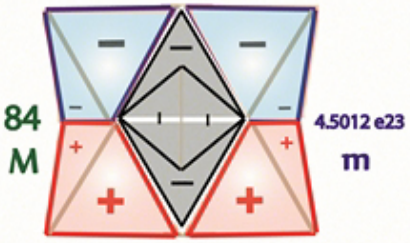
EM Field · Planck quanta · ElectroMagnetic · mass · velocity

$$EVEN\pi_{EM\ waves}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

$$4n\pi_{Matter}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

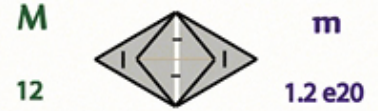
EM Field · Planck quanta · ElectroMagnetic · mass · velocity



$$84\pi_{Deuterium}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

EM Field · Planck quanta · ElectroMagnetic · mass · velocity

Matter is the 3D topology of standing wave 2D mass-energies



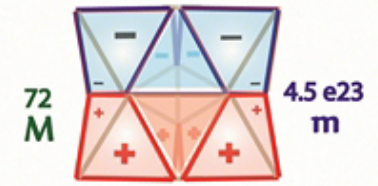
$$12\pi_{electrons}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]\ e^-$$

EM Field · Planck quanta

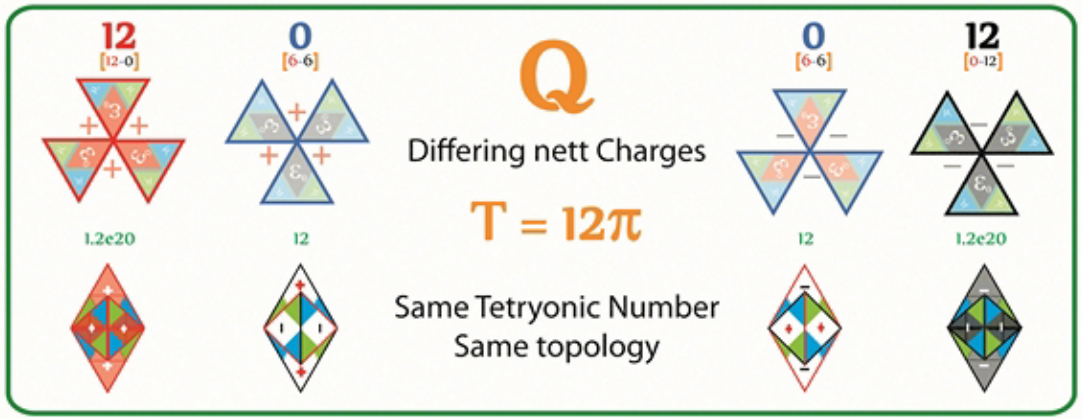
$$+$$

$$72\pi_{Nuclei}\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]\ Deuteron$$

ElectroMagnetic · mass · velocity



Charged mass-Matter geometries



Matter Topology is determined by the geometry of charged Planck T[q] quanta

Any measurement of a system's mass is subject to velocity corrections

mass = EM energy density

$$n\pi \left[m\Omega v^2 \right]_{\text{mass quanta}}^{\text{Planck quanta}} \Big/ \underset{\text{geometry}}{\text{Spatial}}\ c^2$$

n [7.376238634 e-51] kg

EM mass is a measure of 2D planar energies comprising the fascia of charged topologies

ENERGY

$$m \qquad n\pi \left[\left[m\Omega v^2 \right]_{\text{mass}}^{\text{velocity}} \right]^{\text{Planck quanta}} \qquad M$$

c^2 2D space

The mass - ENERGY - Matter contents of any physical system are all related through the spatial co-ordinate system used [which in turn is determined by the speed of light]

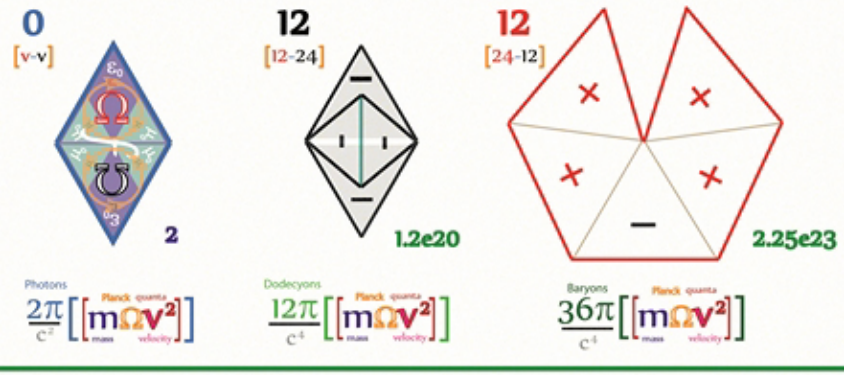
c^4 3D space

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2 \right]_{\text{mass}}^{\text{velocity}} \right]^{\text{Planck quanta}}_{\text{mass}} \qquad E \qquad \frac{T\pi}{c^4}\left[\left[m\Omega v^2 \right]_{\text{mass}}^{\text{velocity}} \right]^{\text{Planck quanta}}_{\text{Matter}}$$

The Energy content of any physical system remains the same irrespective of the spatial co-ordinates used

Matter and Charge are velocity invariant properties

Differing Tetryonic charge numbers produce differing particle topologies



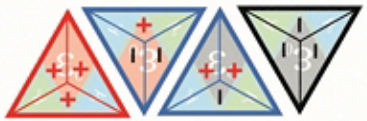
As the energy content [levels] of particles and fields increase their intrinsic Planck quanta and EM mass increases but their charge geometries remain the same

Charged mass-Energies

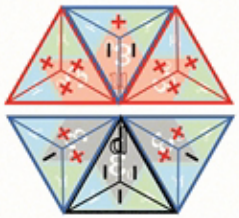
All 3D Matter particles are comprised of charged fascia whose energy content determines their 2D mass

1 ZPFs

4 Tetryons



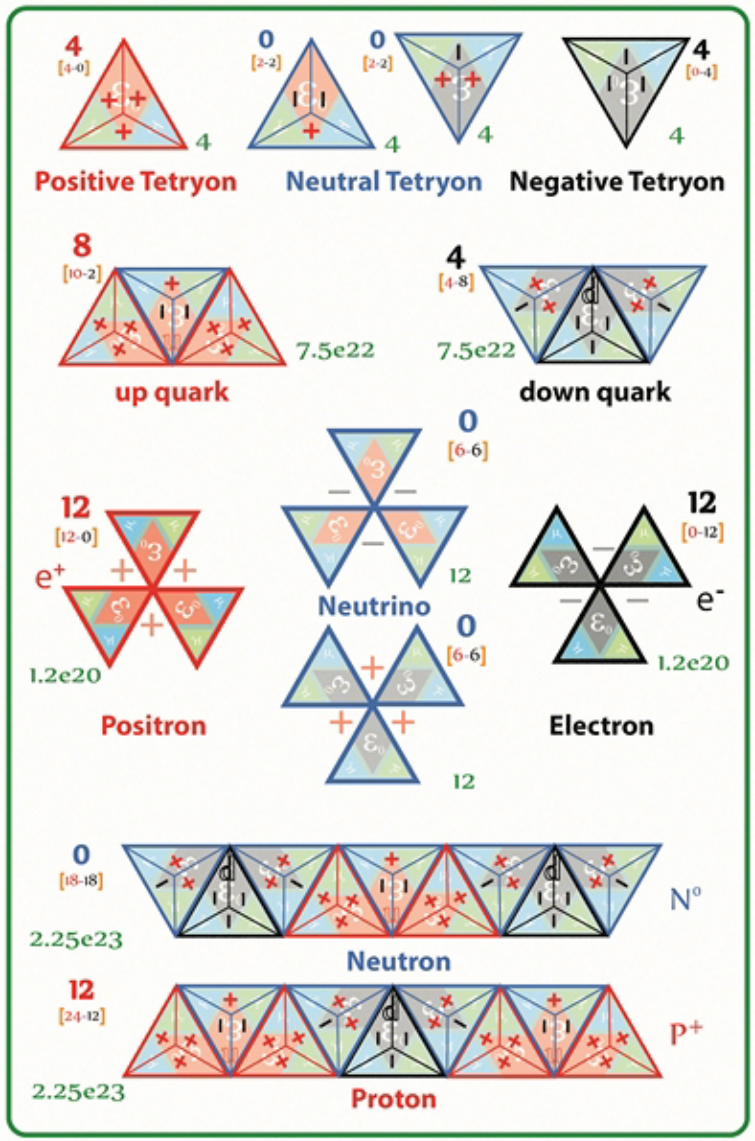
Quarks



12 Dodecadeltahedrons

Leptons

36 Baryons



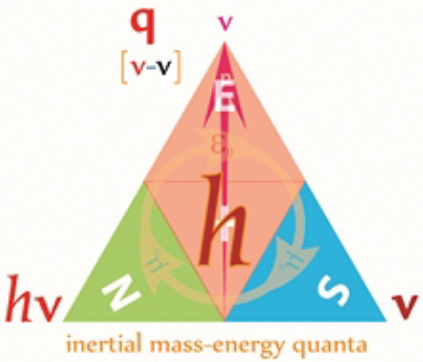
3D Matter geometries

Matter Planck quanta

$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$$

mass velocity

Tetryons	4 charge fascia	4π	$2.651773069 \times 10^{-33}$ J $2.950495454 \times 10^{-50}$ kg 4 quanta
Quarks	12 charge fascia	12π	$4.97207450 \times 10^{-11}$ J $5.532178976 \times 10^{-28}$ kg 7.5×10^{22} quanta
Neutrinos	12 charge fascia	12π	$7.955319207 \times 10^{-33}$ J $8.851486361 \times 10^{-50}$ kg 12 quanta
Leptons	12 charge fascia	12π	$7.955319207 \times 10^{-14}$ J $8.851486361 \times 10^{-31}$ kg 1.2×10^{20} quanta
Baryons	36 charge fascia	36π	$1.491622351 \times 10^{-10}$ J $1.659653693 \times 10^{-27}$ kg 2.250×10^{23} quanta
Deuterium ion	72 charge fascia	72π	$2.984040234 \times 10^{-10}$ J $3.320192534 \times 10^{-27}$ kg 4.5012×10^{23} quanta

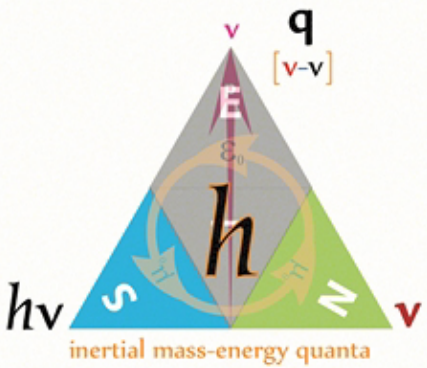


In physics there exists
2 forms of energy momenta
[linear momenta &
quantised angular]

MOMENTA

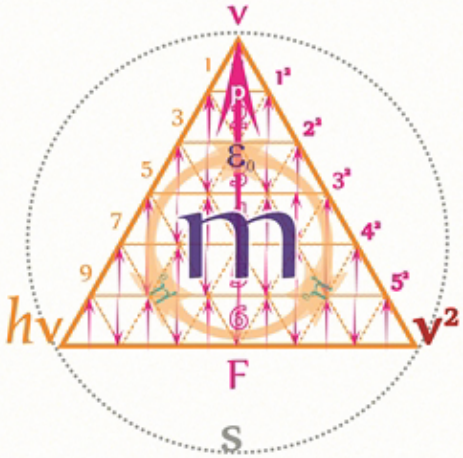
The nett scalar
energy momenta
required to effect
changes in velocity

ENERGY



Net Charge is reflective of the total energy momenta
of any EM field or Matter subjected to acceleration
[inertial mass]

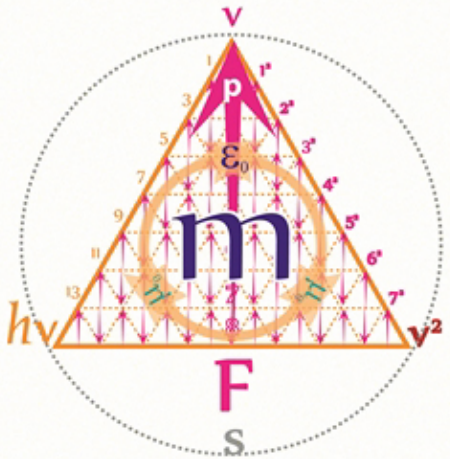
Inertial resistance to Force



Any change in motion results in changes to
the Charge geometries creating in turn proportional
changes to the nett KEM mass-energy momenta components

$$F=ma$$

The inductive resistance of quanta in charged EM fields
to any changes to their nett mass-energy geometry
is the source ofwhat we term inertial mass



**Inertia is the resistance of any physical object
to a change in its state of motion.**

Force does work when it results in movement

$$W = F.d = ma.d = E$$

$$kg\,\frac{m}{s^2}\,m$$

classical mechanics — scalar — quantum mechanics

$$\Delta mv = \Delta E = \Delta m\Omega v$$

energies

linear momenta — angular momenta

$$kg\,\frac{m^2}{s^2}$$

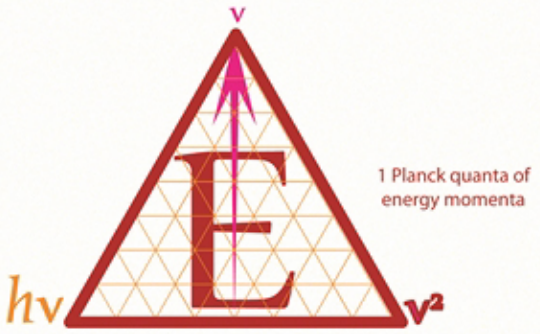
The Planck constant is the quantum of Action

$$E = m\Omega v^2 = hv^2$$

$$kg\,\frac{m^2}{s}\,\frac{1}{s}$$

Changing an object's velocity results in a corresponding energy momenta change which relate to each other through its inertial mass

EM field densities



1 Planck quanta of energy momenta

EM mass is a measure of the energy content of any spatial co-ordinate system

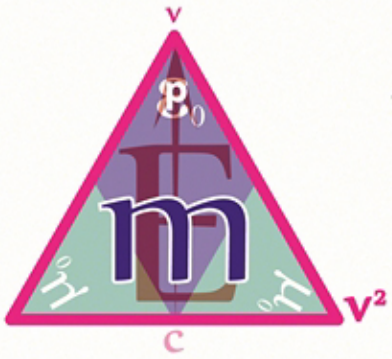
$$\beta^2 = \left[\frac{v}{c}\right]^2$$

and is subject to Lorentz velocity corrections in 2D EM fields

6.629432672 e-34 J
1 planck quantum has a EM mass-Energy of
7.376238634 e-51 kg
and
Quantised Angular Momentum which creates Charge
1.33518 e-20 C

mass-Energy equivalence

mass velocity



7.376238634 e-51 kg — 6.629432672e-34 j.s

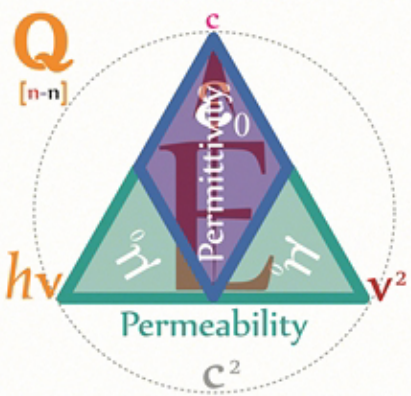
$$mv^2 = E = h\nu^2$$

8.987551787 e16 [m/s]² — 6.629432672 e-34 j — quanta/sec

Matter is only mass-energy in Tetrahedral topologies [T4π+]
[else it is nπ EM mass-energies that propagate away at c]

planck quanta

6.629432672 e-34 J



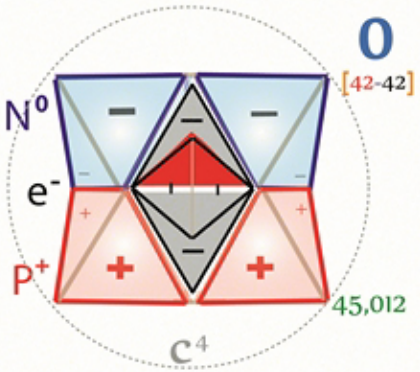
7.376238634 e-51 kg
radiant mass-energies

If reduced to a flat Euclidean space geometry
Matter topologies become radiant mass-energies

m	E	M
mass	ENERGY	Matter
$\left[\frac{n\pi}{c^2}\rho\right]$	$\left[m\Omega v^2\right]$ (Planck quanta; mass; velocity)	$\left[\frac{4n\pi}{c^4}\rho\right]$

The inertial properties of electromagnetic mass - ENERGY & Matter
[can all be differentiated as energy densities per unit of time]
in any spatial co-ordinate system

2.984040234 e-10 J



3.320192534 e-27 kg
rest mass-Matter

EM Field geometries & Matter topologies

m [oddπ]hv

Q [v-v]

$1\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ — 1π Charge; EM Field; Planck quanta; ElectroMagnetic mass velocity

Bosons

2D

Photons

m [evenπ]hv

0 [v-v]

$2\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ — 2π Photons; EM Field; Planck quanta; ElectroMagnetic mass velocity

M [4nπ]hv

12 [12-24]

$12\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ — 12π Dodecyon; EM Field; Planck quanta; ElectroMagnetic mass velocity

Leptons

3D

M [4nπ]hv

12 [24-12]

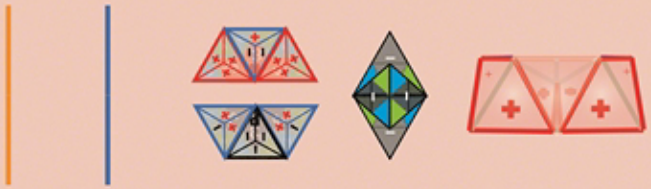
Baryons

$36\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ — 36π Baryons; EM Field; Planck quanta; ElectroMagnetic mass velocity

2D planar Euclidean electromagnetic mass-energies propagate through the vacuum energy aether without interaction

$n\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ — nπ mass; EM Field; Planck quanta; ElectroMagnetic mass velocity

2D Fields | **3D Matter**



Tetryonic charged geometries provides a clear mechanism for providing all particles with their distinct properties of 2D inertial EM mass-energy and 3D Matter.

$T\pi \left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$ — Tπ Matter; EM Field; Planck quanta; ElectroMagnetic mass velocity

3D standing wave topologies of electromagnetic mass-energies interact with the vacuum energy aether at various angles through their charged [inductive] fascia

Velocity invariant rest Matter

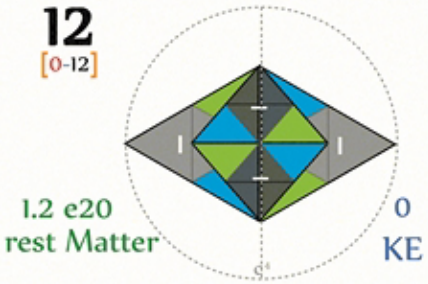
The Relativistic EM mass-energies of a system in motion is the sum of its invariant rest Matter and Kinetic Energies

Electron rest Matter Kinetic Energy field

$$RE = \underset{\text{Fermions}}{12\pi}\left[\frac{[m\Omega v^2]}{c^4}\right] + \underset{\text{Photons}}{2\pi}\left[\frac{[m\Omega v^2]}{c^2}\right]$$

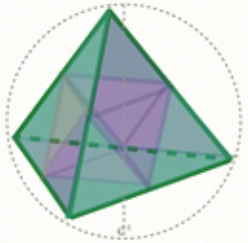
EM fields resulting from motion are subject to Lorentz correction

Electrostatic charges have no Magnetic Moments



All Matter are 3D standing wave topologies

$$M = \frac{E}{c^4}$$

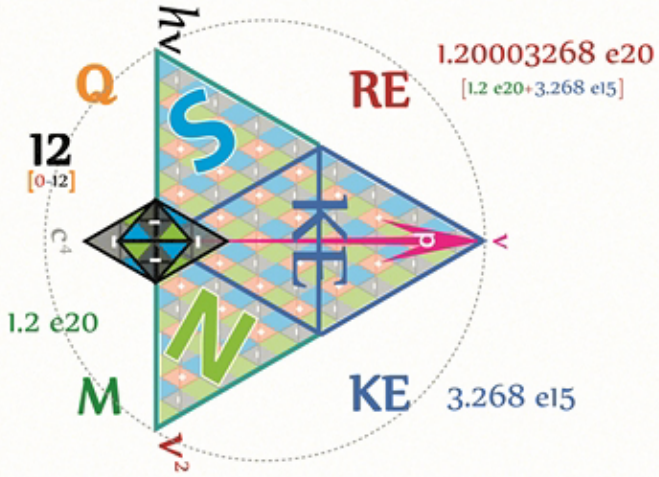


$$E = Mc^4$$

rest mass-Matter is composed of 4nπ standing wave topologies and is INVARIANT to velocity changes

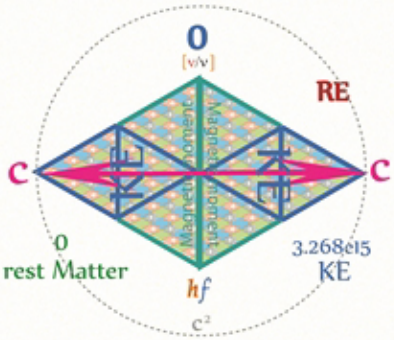
Kinetic mass-energies are divergent from invariant rest Matter topologies as a result of a particle's motion

At zero velocity the relativistic mass is equal to the invariant mass.



The energy which an object has due to its motion will not add mass into the invariant rest Matter of the particle in motion (it increases the total Planck quanta [EM mass-enegies] of its extended KEM field)

Wavelengths are proportional to EM energy content



Photons are bidirectional Kinetic EM Fields

$$\frac{E}{c^2} = m$$

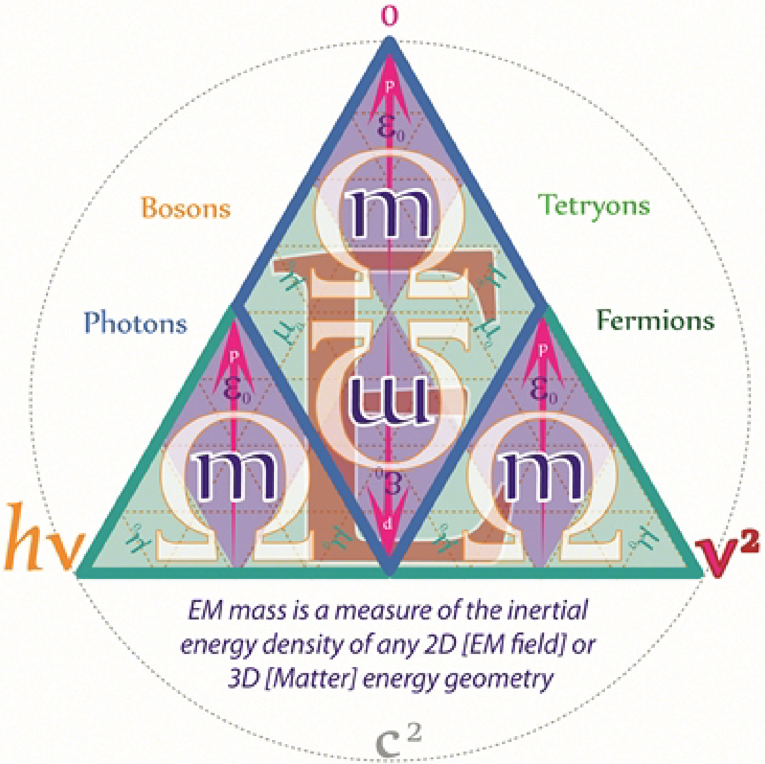
Matter in motion has a resultant velocity related Energy field that posseses the physical properties of Kinetic energy and Magnetic moments

$$KEM = Mv^2$$

KEM field Energy is directly related to the Velocity changes of massive particles

mass geometries and Matter Topologies

All 2D EM fields and 3D Matter particles have ElectroMagnetic fields, inertial mass-energies & momenta resulting from their constituent equilateral Planck quanta which possess the additional physical properties of Compton Frequency and De Broglie Wavelength



EM mass is a measure of the inertial energy density of any 2D [EM field] or 3D [Matter] energy geometry

$$m\Omega v^2 = E = mv^2$$

EM mass-energy momenta

The EM mass of an object is a fundamental property of the object; a numerical measure of its inertia; a fundamental measure of the energy density of an object.

All 3D Matter topologies contain 2D EM mass-energy geometries not all 2D EM mass-energy geometries form 3D Matter topologies

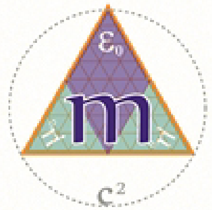
EM mass can be clearly defined as a measure of the energy density of any charged geometry

$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

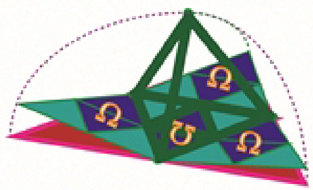
Matter — EM Field — ElectroMagnetic — Planck quanta — mass — velocity

3D Matter is any mass-energy geometry that creates a closed volume Topology (4nπ Tetryonic geometry)

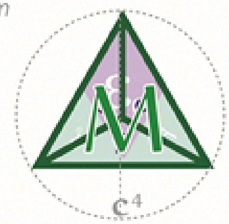
EM waves [FIELDS] are distinguishable from Material Particles [MATTER] through their non-Tetrahedral topologies



$$\frac{E}{c^2} = m$$

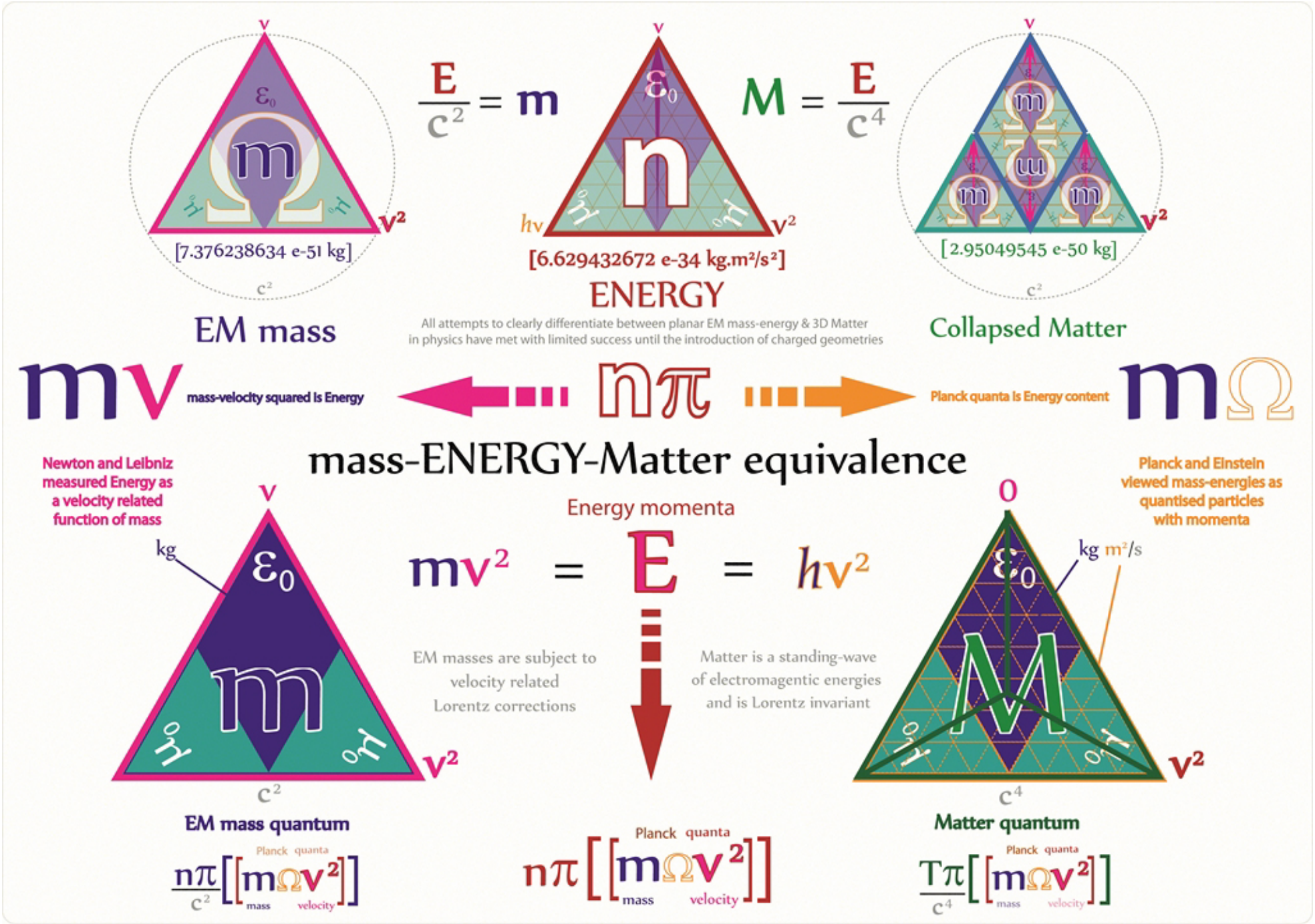


mass-energy is a conserved property
Matter is not conservative



$$M = \frac{E}{c^4}$$

The term 'massless' is a misnomer and should be discontinued in its use as all EM fields and Particles have EM mass [Energy quanta per second] geometries [other alternatives could be 2D, EM field, or Matterless]



m
mass geometries

All forms of mass-ENERGY-Matter
are defined by their charged geometries and
the spatial co-ordinate systems used to measure their physics

M
Matter topologies

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right]$$
mass Planck quanta
mass velocity

Unified Field Equation

for Tetryonic EM mass-Energy-Matter

$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$$
Matter Planck quanta
mass velocity

$$T\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Tetryonic — geometry
EM Field — ElectroMagnetic mass
Planck quanta — velocity

$$n\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
mass; EM Field; Planck quanta; ElectroMagnetic mass velocity

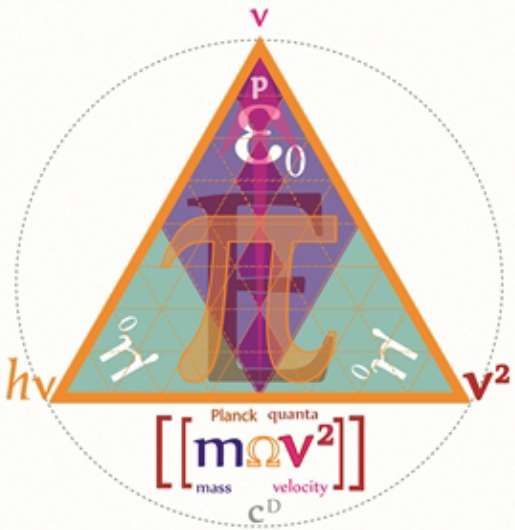
$$\text{ODD}\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Bosons; EM Field; Planck quanta; ElectroMagnetic mass velocity

$$2\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Photons; EM Field; Planck quanta; ElectroMagnetic mass velocity

$$\text{EVEN}\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
EM waves; EM Field; Planck quanta; ElectroMagnetic mass velocity

bosons & photons

$$n\pi$$
EM waveforms



spatial co-ordinate systems
are defined by the velocity of energy

Fermions

$$T\pi$$
Particles

$$4\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Tetryons; EM Field; Planck quanta; ElectroMagnetic mass velocity

$$12\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Dodecyons; EM Field; Planck quanta; ElectroMagnetic mass velocity

$$24\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Mesons; EM Field; Planck quanta; ElectroMagnetic mass velocity

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$
Baryons; EM Field; Planck quanta; ElectroMagnetic mass velocity

EM mass

Matter

$$m$$

$$M$$

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right] \quad \text{mass: } m,\ \Omega;\ \text{velocity: } v^2;\ \text{Planck quanta: } n\pi$$

$$n\pi\left[m\Omega v\right]^2 \quad \text{energy} \quad \text{mass: } m,\ \Omega;\ \text{velocity: } v;\ \text{Planck quanta: } n\pi$$

$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right] \quad \text{Matter} \quad \text{mass: } m,\ \Omega;\ \text{velocity: } v^2;\ \text{Planck quanta: } n\pi$$

Classical Mechanics

Quantum Mechanics

Tetryonic unified field Geometry

$$\mathbf{p}$$ *mass velocity*

7.376238634 e-51 kg

$$mv^2 = E = hv^2$$

6.629432672e-34 j.s

8.987551787 e16 $[m/s]^2$ 6.629432672 e-34 j quanta/sec

mass-Energy momenta equivalence

planck quanta h

The equilateral geometry of quantised angular momentum is the key to understanding Energy

$$kg\,\frac{m}{s} \qquad mv \qquad m\Omega \qquad kg\,\frac{m^2}{s}$$

linear momentum

charge

quantised angular momentum

EM mass

$$n\pi\left[m\Omega v\right]^2$$

(Planck quanta; energy; mass; velocity)

Matter

m

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right]$$

(mass; Planck quanta; mass; velocity)

M

$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$$

(Matter; Planck quanta; mass; velocity)

Classical Mechanics

Quantum Mechanics

Tetryonic unified field Geometry

p — mass velocity

7.376238634 e-51 kg

$$mv^2 = E = hv^2$$

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mass-Energy equivalence

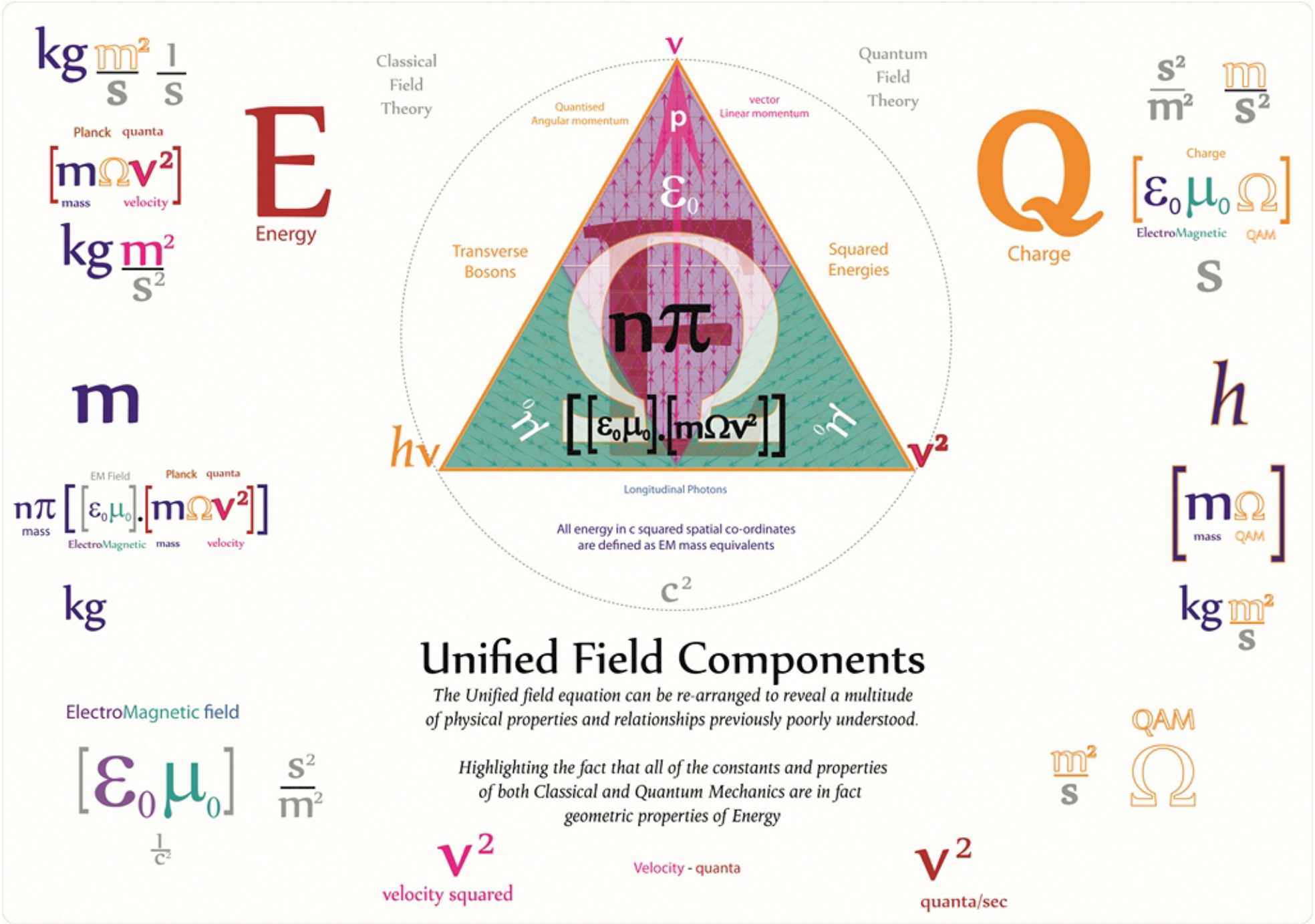
planck quanta — h

The equilateral geometry of quantised angular momentum is the key to understanding Energy

$kg\frac{m}{s}$ — mv — linear momentum

charge

$m\Omega$ — $kg\frac{m^2}{s}$ — quantised angular momentum



Unified Field Components

The Unified field equation can be re-arranged to reveal a multitude of physical properties and relationships previously poorly understood.

Highlighting the fact that all of the constants and properties of both Classical and Quantum Mechanics are in fact geometric properties of Energy

EM mass Relationships

v	Velocity	$\frac{m}{s}$
a	Acceleration	$\frac{m}{s^2}$
p	Momentum	$kg\frac{m}{s}$
F	Force	$kg\frac{m}{s^2}$

$kg\ \frac{m^2}{s}\ \frac{1}{s}$

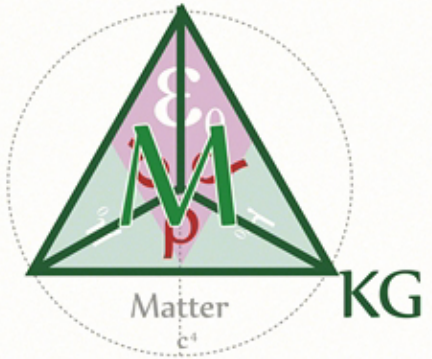
EM mass is revealed to be the scalar property of 2D Energy waveforms that is at the core of many important physical processes and measurements

Ω	Quantum Angular Momentum	$\frac{m^2}{s}$
v^2	Celeritas squared	$\frac{m^2}{s^2}$
h	Planck's Constant	$kg\frac{m^2}{s}$
E	Energy	$kg\frac{m^2}{s^2}$

f	Frequency	$\frac{1}{s}$
T	Period	s
I	Current	$\frac{kg}{s}$
C	Charge	$\frac{s}{kg}$

E/second

E/second²



2D mass geometries should never be confused with 3D Matter topoplogies; nor should the terms be used in exchange for each other

Relativistic mass-Matter

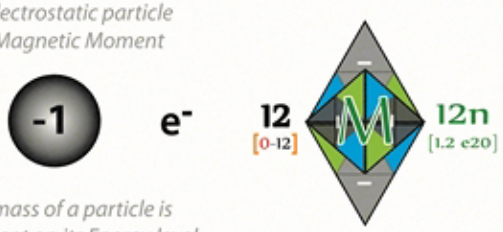
Rest Matter

$$T\pi \left[[\varepsilon_0 \mu_0].[m\Omega v^2] \right]$$

mass-Matter

3D rest mass-Matter topolgy =
closed volume of 2D mass-energies

3D Electrostatic particle
No Magnetic Moment



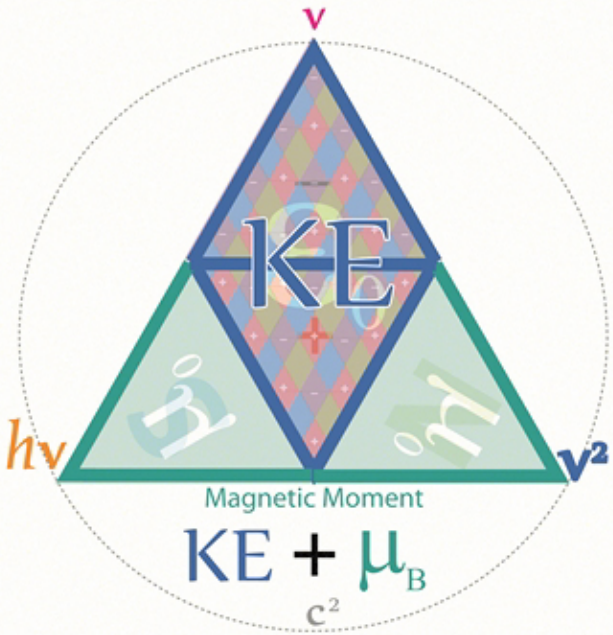
rest mass of a particle is dependent on its Energy level

All Matter is a Tetryonic standing-wave charged geometry occupying a volume in 3D spherical space

$$\left[\frac{T\pi}{c^4} \left[[m\Omega v^2]_{\text{mass velocity}} \right]_{\text{Planck quanta}} \right]_{\text{Matter}} \rightarrow \left[\frac{12\pi}{c^4} \left[[m\Omega v^2]_{\text{mass velocity}} \right]_{\text{Planck quanta}} \right]_{\text{Dodecyon}}$$

rest mass-Matter is velocity invariant
(not subject to Lorentz corrections)

The property of Matter cannot be measured using a planar [c squared] spatial co-ordinate system



$$KE + \mu_B \quad / \quad c^2$$

A KEM field has Electric and Magnetic quanta whose total energy quanta is directly related to the square of the particle's velocity

$$4\pi \left[\frac{m\Omega v^2}{c^2} \right]_{\text{mass velocity}}$$

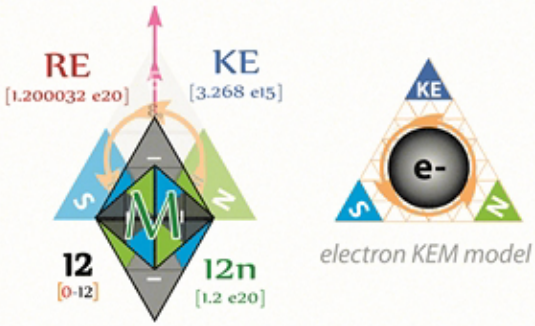
All KEM fields are subject to
Lorentz corrections

Kinetic Energies

$$4n\pi \left[[\varepsilon_0 \mu_0].[m\Omega v^2] \right]$$

KEM field

Matter-Energy



Relativistic mass Energy =
rest Matter + Kinetic EM Energies

Electron rest Matter

$$\left[\frac{12\pi}{c^4} \left[[m\Omega v^2]_{\text{mass velocity}} \right]_{\text{Planck quanta}} \right]_{\text{Lepton}} + \left[\frac{4\pi}{c^2} \left[[m\Omega v^2]_{\text{mass velocity}} \right]_{\text{Planck quanta}} \right]_{\text{KEM wave}}$$

Kinetic Energies

KEM mass-energies are velocity dependent
(subject to Lorentz corrections)

Tetryonic mass & Matter

m

M

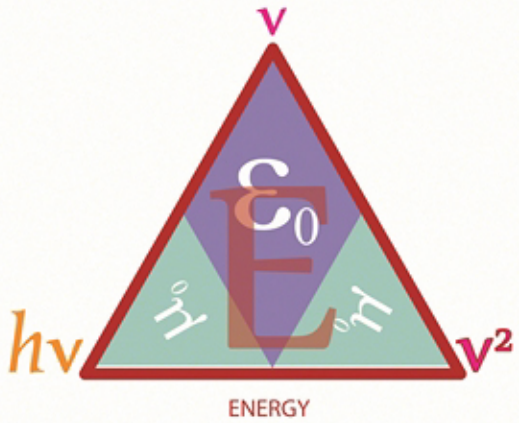
Historically interchanged due to the lack of proper definitions
the physical properties of EM mass & Matter can now be firmly defined
with respect to their energy equivalence and spatial geometries

mass is a measure of the 2D planar energy content of any physical system

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right]$$

mass Planck quanta

mass velocity

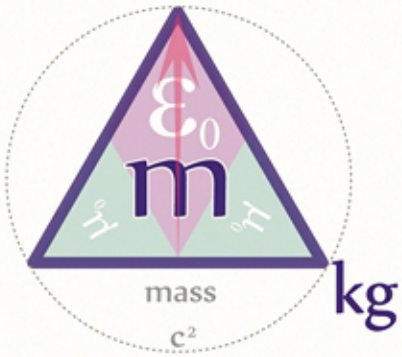


Matter is a measure of the 3D volumetric energy content of any physical system

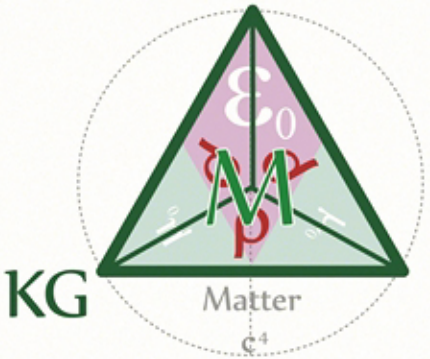
$$\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$$

Matter Planck quanta

mass velocity



EM mass should replace the generic term mass with reference to ElectroMagnetic energy densities



MATTER is a geometric 4nπ standing wave topology of EM mass-energy geometries

E/second

2D
radiant equilateral geometry
of EM mass-ENERGY momenta
EM mass

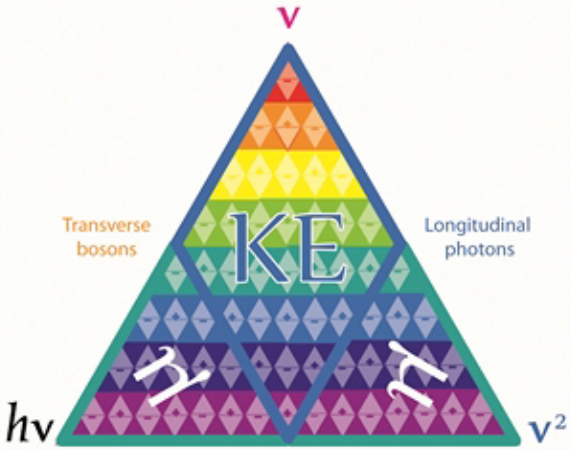
The electromagnetic energies of rest Matter is never 'at rest' as the electromagnetic field energies creating mass-Matter topologies alway propagate at c

E/second²

3D
standing-wave topology
of EM mass-ENERGY momenta
rest Matter

Photoelectron KEM fields

The linear momenta produced as a result of energy momenta in KEM fields is converted into angular momentum when leptons are bound to atomic nuclei

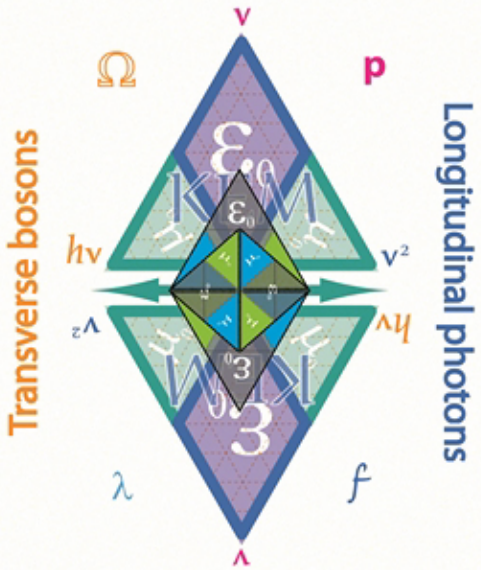


SPIN UP

The EM mass-energy content of Baryons directly influence the KEM field energy levels of bound Leptons

EM mass-energy-momenta

Changes in the momenta of bound Leptons [linear & quantised angular]



prouduces spectral lines of varying frequencies

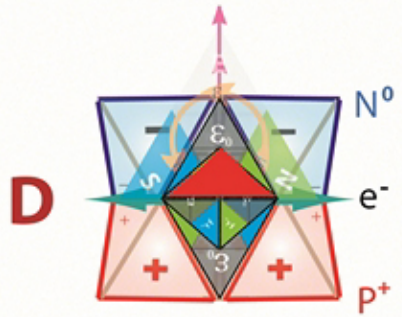
and Spin are always conserved

The motion of leptons within atomic nuclei produces Magnetic moments at various orientations to the nuclear magneton

SPIN DOWN

If an electron is 'ejected' from the Nuclei it will obey conservation of EM mass-energy momentum

ie Its ejected energy-momentum equals the absorbed photon's energy-momenta [minus the work energy required to free it]



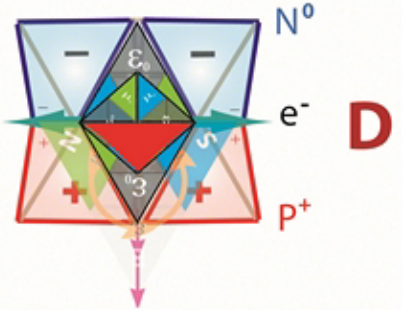
UP spin

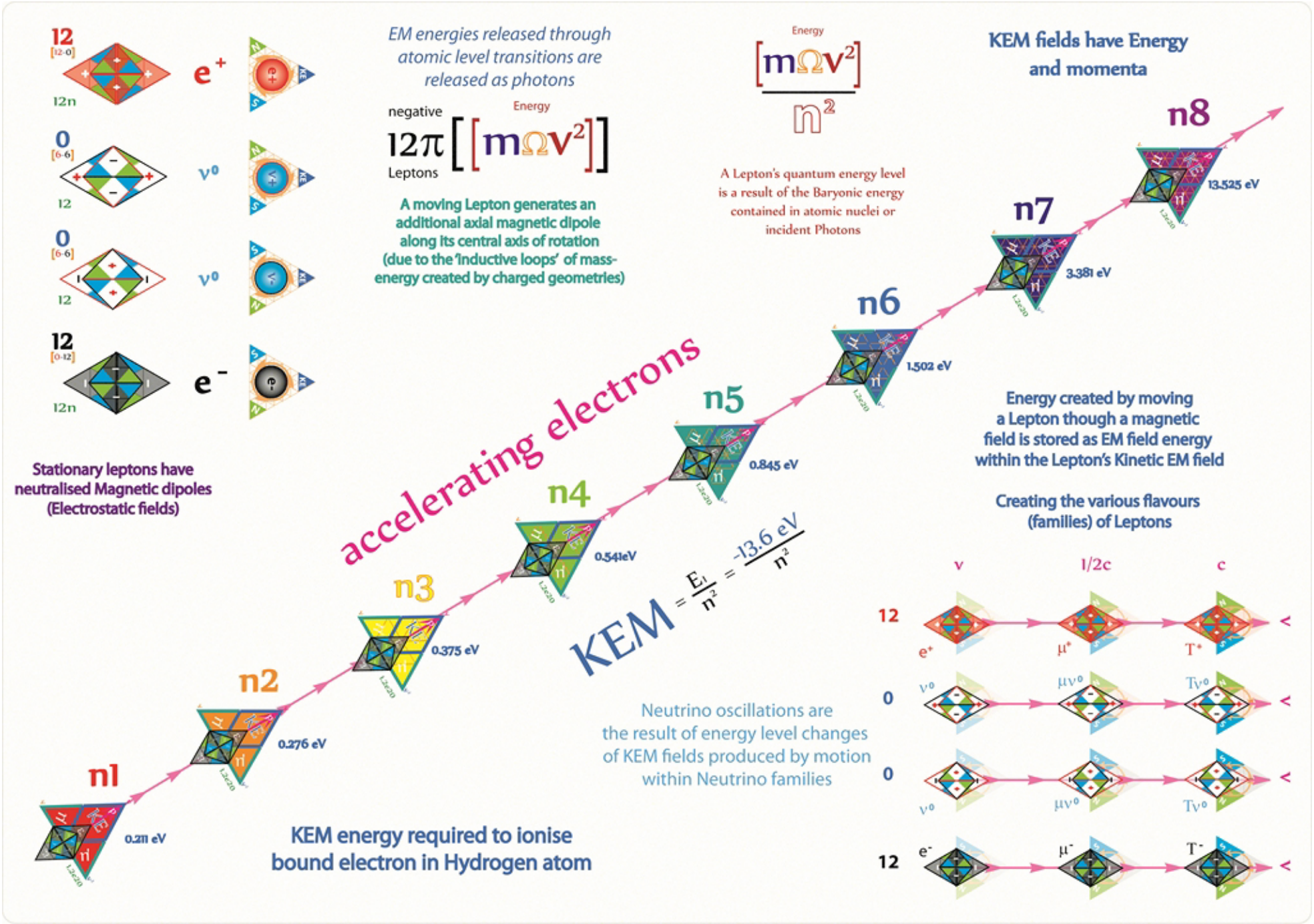
Parallel Magnetic Moments

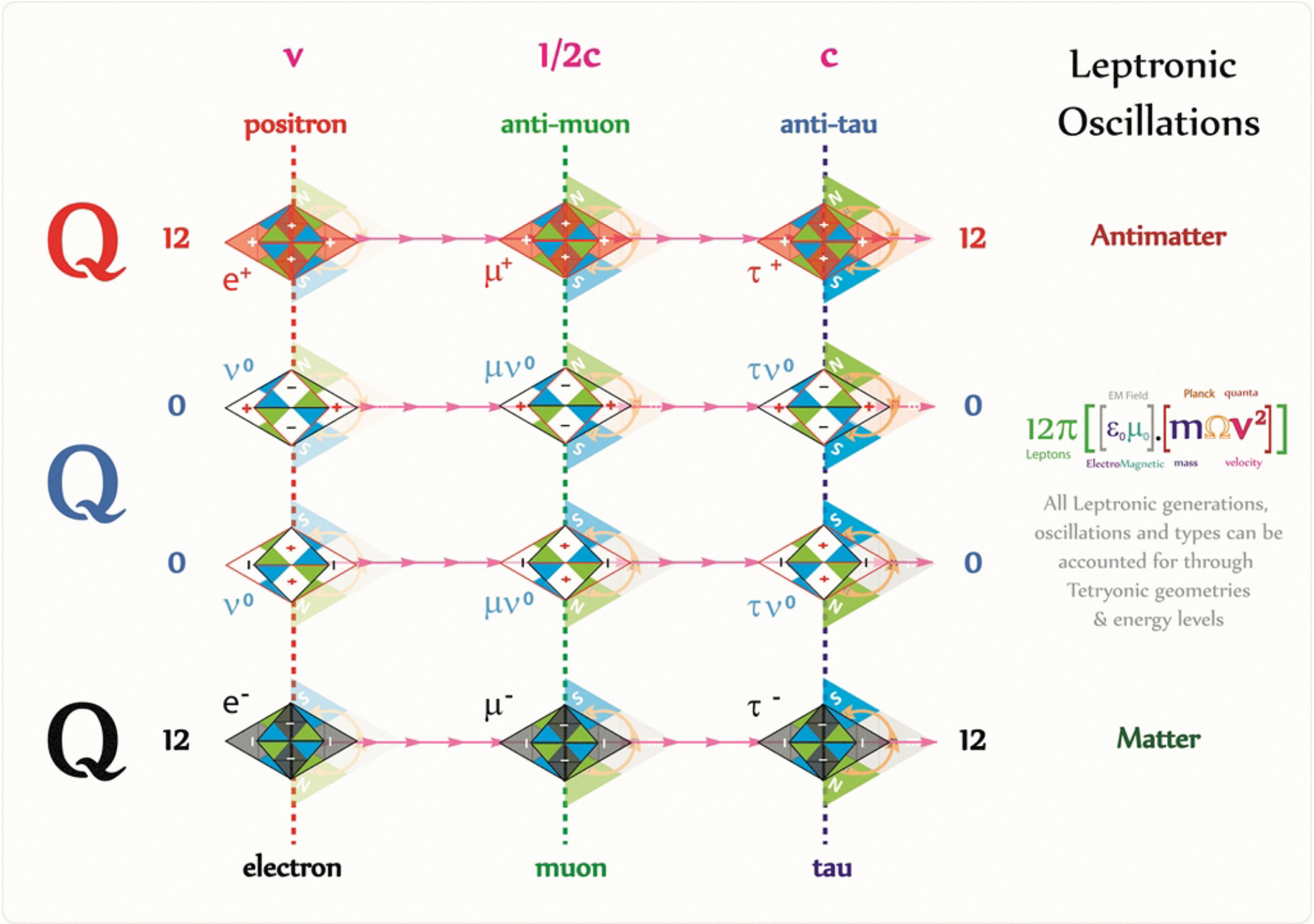
Nuclear magneton

DOWN spin

Antiparallel Magnetic moments







Leptronic Oscillations

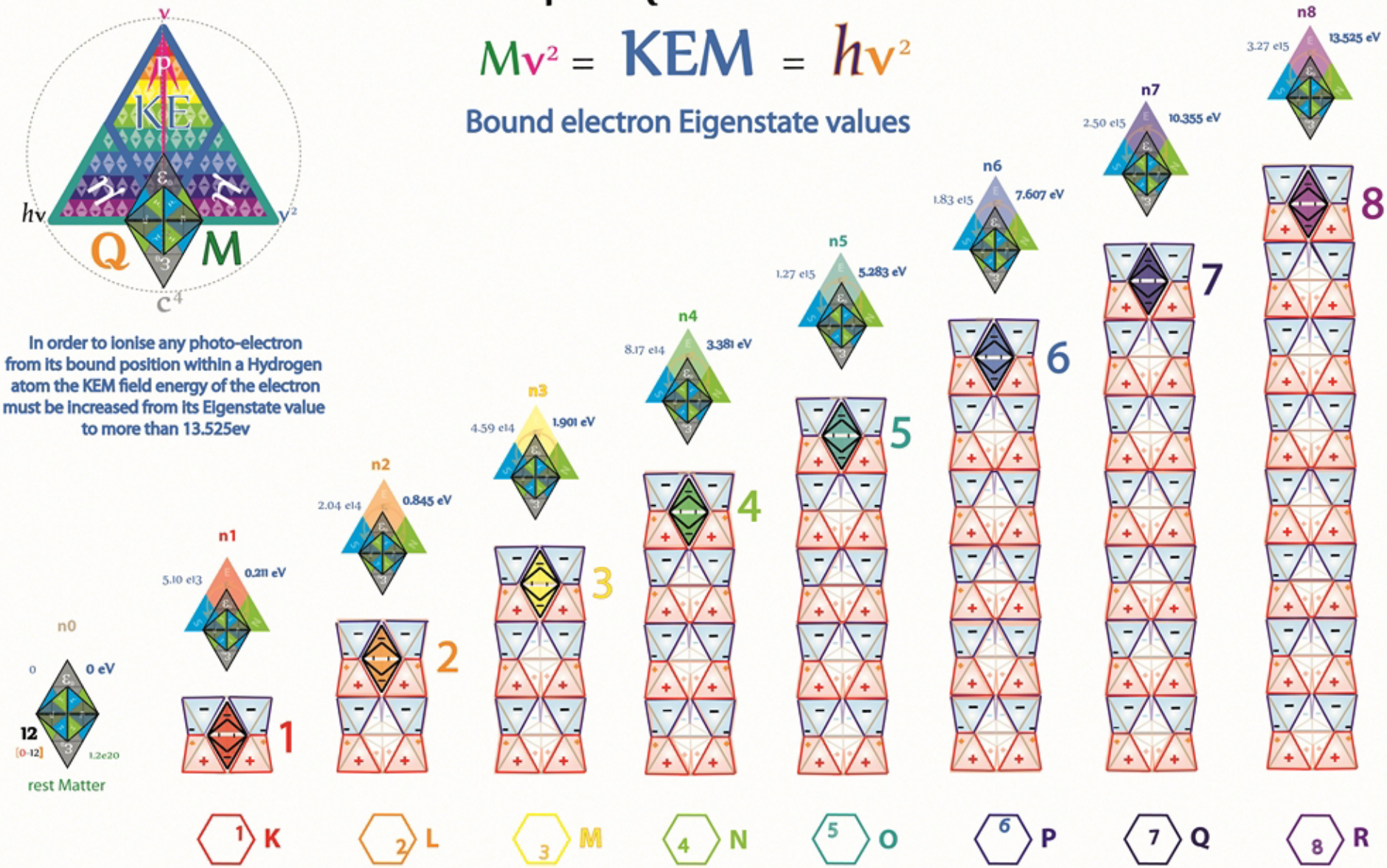
Eigenstate bound energy states

Principal Quantum levels

$$Mv^2 = KEM = hv^2$$

Bound electron Eigenstate values

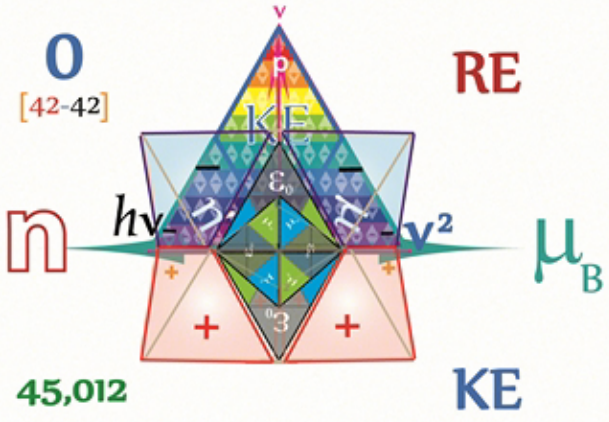
In order to ionise any photo-electron from its bound position within a Hydrogen atom the KEM field energy of the electron must be increased from its Eigenstate value to more than 13.525ev



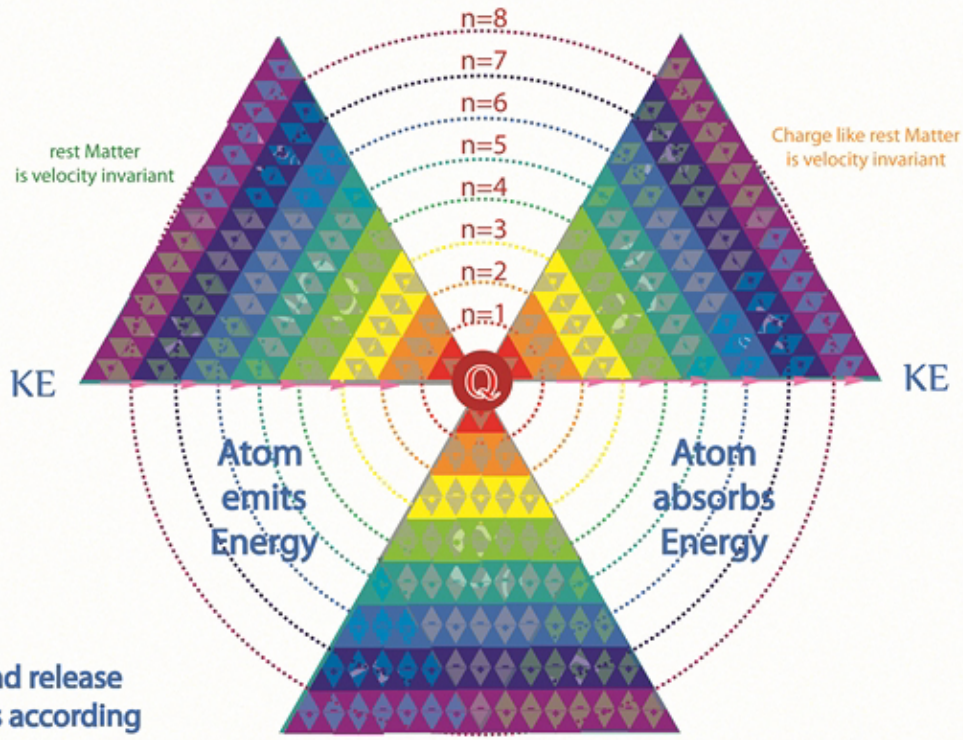
The mass-energy content of Baryons comprising atomic nuclei directly determines the Kinetic energy levels of bound Leptons [forming quantum synchronous convertors]
(Incident Bosons/Photons can increase these levels if they contain the exact quanta required to increase the level to the next square number)

Bohr radius

As the Electron's angular velocity increases the measureable Bohr magnetic moment strength increases and its associated KEM field Planck wavelengths decrease (due to the increased Planck quanta).

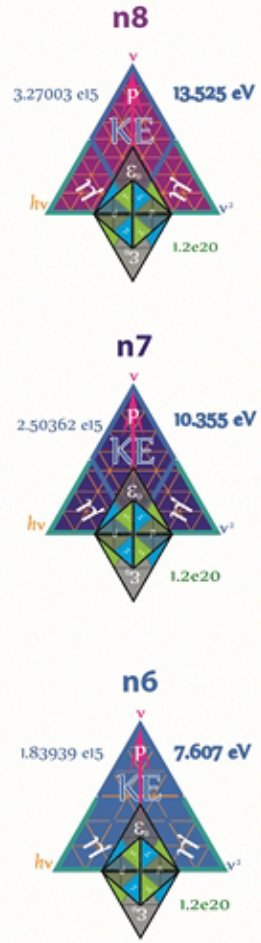


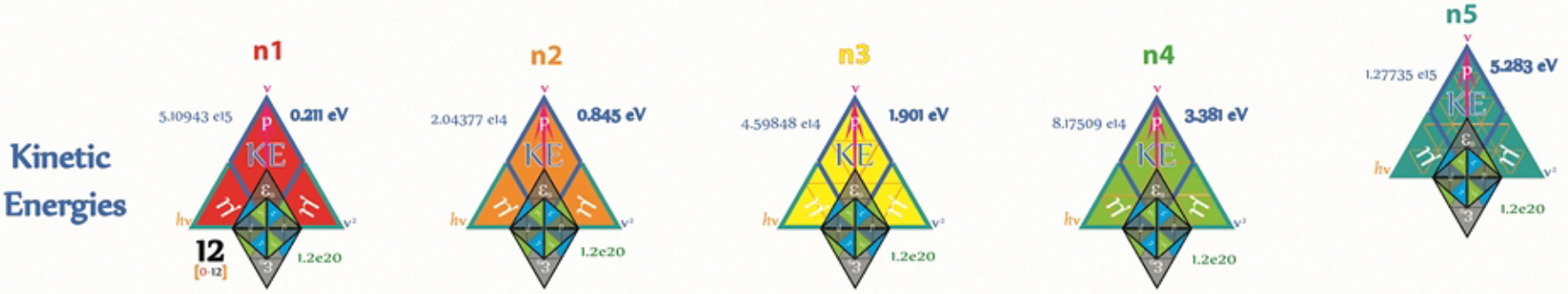
The highest quantum number level produces the strongest Magnetic Moment



Model is for illustrative purposes only - actual quanta illustrated are stored in radial KEM fields

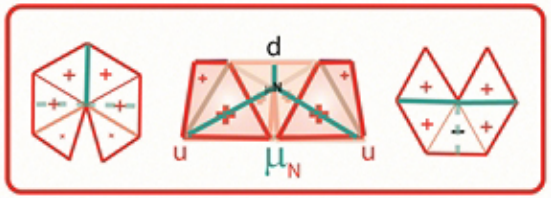
All massive particles asbsorb and release energy in discrete quantum steps according to their respective Tetryonic geometries and changes in velocities

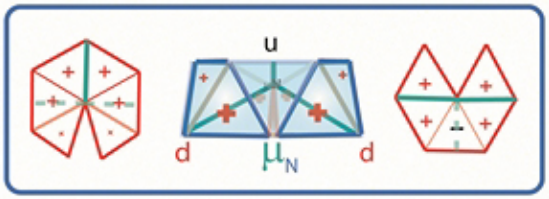


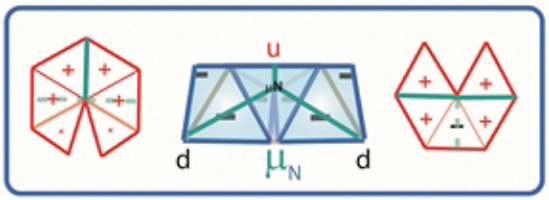


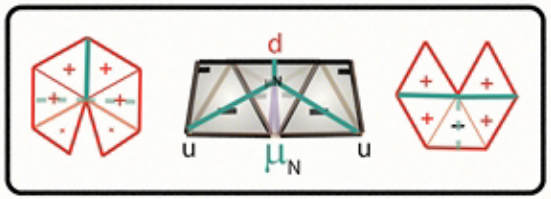
Nuclear Magnetons

are weaker than Bohr magnetons
due to differing mass-charge ratios
and non-parallel Quark magnetons









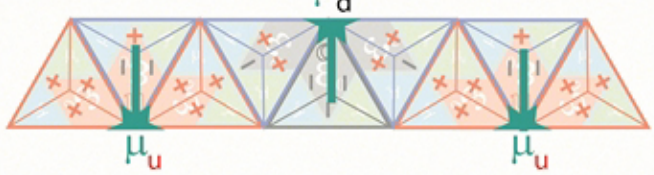
Baryons

are tri-Dodecyon geometries

$$36\pi\left[\left[\varepsilon_0\mu_0\right].\left[m\Omega v^2\right]\right]$$

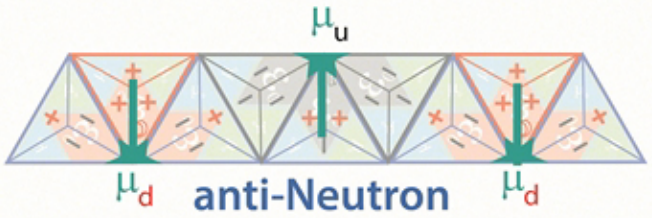
Baryons — EM Field: ElectroMagnetic — Planck quanta: mass, velocity

Proton



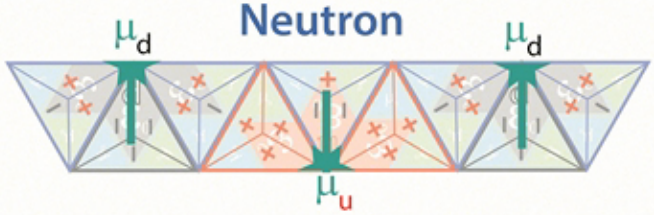
Tetryonic Charge

P^+ | 12 [24-12] Q 36 | Nuclear magneton: P, KE, S



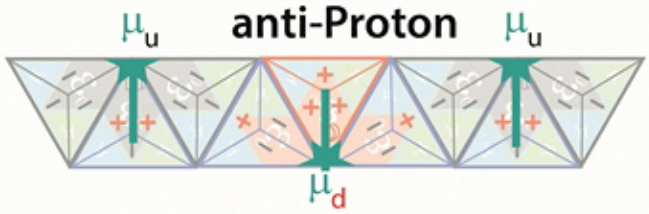
$\overline{N}^0$ | 0 [18-18] Q 36 | Nuclear magneton: N, KE, S

Neutron



N^0 | 0 [18-18] Q 36 | Nuclear magneton: N, KE, S

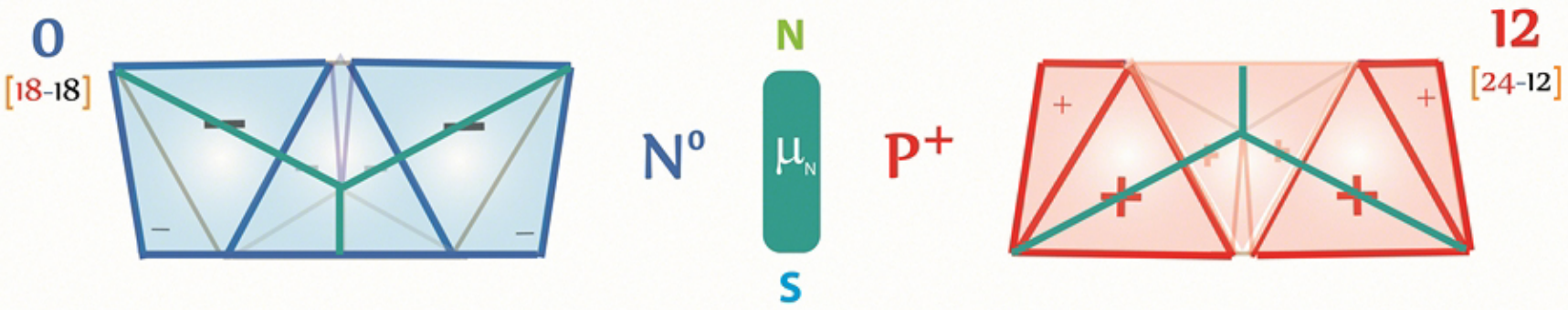
anti-Proton



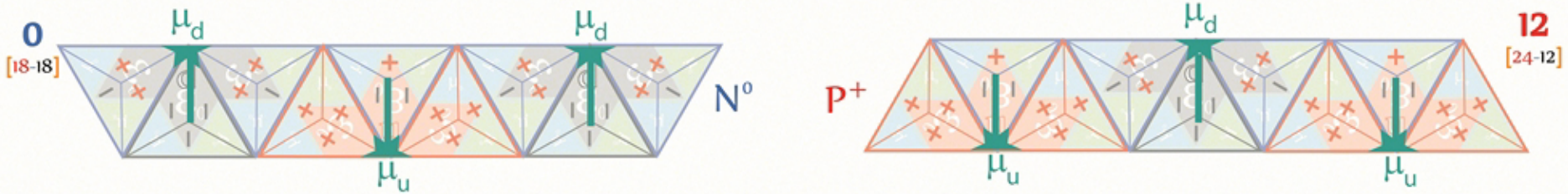
P^- | 12 [12-24] Q 36 | Nuclear magneton: P, KE, S

Matter geometry

Baryonic Magnetic Moments



A Baryon's Magnetic Moment is a result of the combined non-parallel Magnetic moments of its Quarks

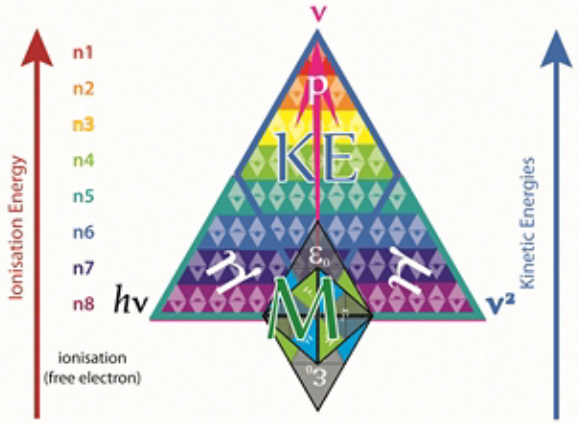


As a result of the 3 non-aligned Quark magnetic moments
resulting from their Tetryonic geometry,
the Nuclear Magneton is considerably weaker than the Bohr Magneton

Nuclear Quantum Energies

[Principal Quantum Numbers]

All electron energy levels are reflective of the
KEM field of a electron in a specific quantum level
(The rest Matter of each electron is invariant)



Higher Quantum Level electrons already have high Kinetic energies and thus require lower frequency photons (low additional KE) in order to be ejected from their bound nuclear positions

-13.6 eV Hydrogen ionisation Energy

An Electron's energy can only increase
in steps that reflect the Tetryonic Matter geometry
of Leptons and their square mass-energies

Energy required to ionise electron with an existing KEM field

n1 0.211 eV 5.10 e13 0 eV -13.389 eV

n2 0.845 eV 2.04 e14 -12.755 eV

n3 1.901 eV 4.59 e14 -11.699 eV

n4 3.381 eV 8.17 e14 -10.219 eV

n5 5.283 eV 1.27 e15 -8.317 eV

n6 7.607 eV 1.83 15 -5.993 eV

n7 10.355 eV 2.50 e15 -3.245 eV

n8 13.525 eV 3.27 e15 -0.075 eV

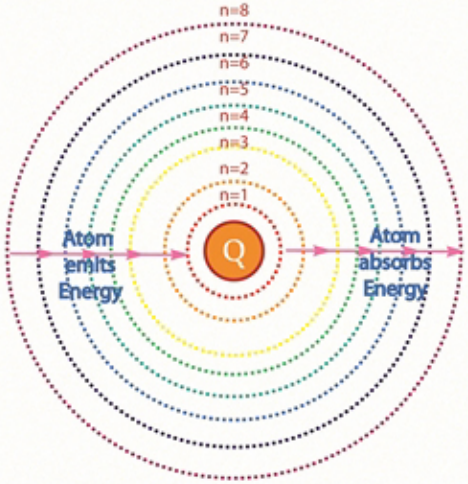
rest Matter

Principal Quantum numbers reflect an electron's energy level

Energy may be absorbed or released from any lepton in Quantum steps reflecting the energy difference between the electron 'orbitals'

$$\frac{1}{\lambda} = \frac{R_H}{hc}\left[\frac{1}{n_i^2} - \frac{1}{n_f^2}\right]$$

Transitions between electron energy levels is the basis for emission and absorption spectra



$$KEM = \frac{E_1}{n^2} = \frac{-13.525\ eV}{n^2}$$

Eigenstate energy levels

Any electron that has in excess of
13.525 eV of Kinetic Energy has
sufficent KE to escape the Nucleus

Leptons are historically classified as Spin 1/2 particles
(by the spin-statistics theorem and the Pauli exclusion principle)
as determined by their magnetic moments

Quantum Spin Numbers

(rotations about an axis)

Spin 1/2

720°

Rotating a spin-1/2 particle by 360 degrees does not bring it back to the same quantum state it needs a 720 degree rotation

Planck bar relates to the electric field content of KEM fields resulting from Matter in motion
(as reference to the Nuclear magneton or external Magnetic field)

Spin 0

any°

A spin-zero particle can only have a single quantum state, even after torque is applied.

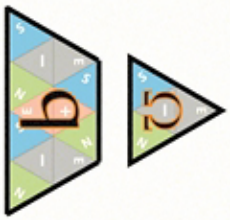
+1 Spherical 'point particles' of charge do not exist -1

Spin 1

360°

Rotating a spin-1 particle 360 degrees can bring it back to the same quantum state

SPIN
must not to be confused with
Chirality (reflections)



Spin 2

180°

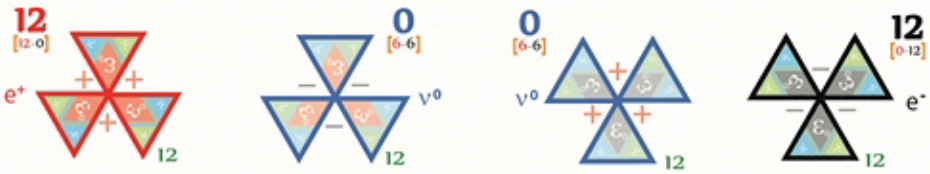
Rotating a spin-2 particle 180 degrees can bring it back to the same quantum state

Photons are their own anti-particle

Spin 3

120°

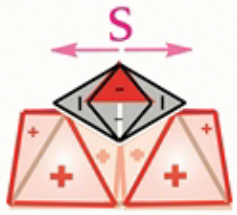
Rotating a spin-3 particle 120 degrees can bring it back to the same quantum state



On a geometric basis all Leptons are in fact spin 3 particles

Magnetic moments are determined by the KEM fields created by vector linear momentum

Nuclear Magnetic moments are complicated by the tri-quark magnetons within all Matter topologies



The KEM field of any charged particle in motion is reflective of the particle's nett charge topology

720°

Rotating a spin-1/2 particle by 360 degrees does not bring it back to the same quantum state it needs a 720 degree rotation

Spin 1/2

μB Parallel μN anti-Parallel μB

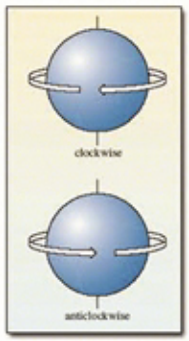
electron spins

μB anti-Parallel μN Parallel μB

120°

Rotating a spin-3 particle 120 degrees can bring it back to the same quantum state

Spin 3



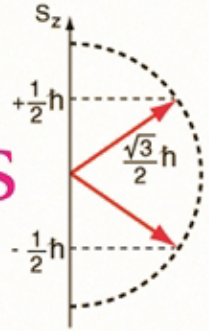
All atomic particles have a particular "spin" analogous to the Earth's rotation on its axis.

$$\mu_B = \left[\frac{Q}{2mv}\right]/\ell$$

An isolated electron has an angular momentum and a magnetic moment resulting from its spin. While an electron's spin is sometimes visualized as a literal rotation about an axis, it is in fact a fundamentally different, quantum-mechanical phenomenon with no true analogue in classical physics.

The quantum mechanical reality underlying spin is complex and still poorly understood Consequently, there is no reason to expect the above classical relation to hold.

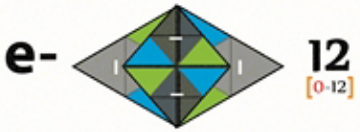
$$\mu_B = g\left[\frac{e^-}{2mv}\right]S$$



Tetryonic KEM field geometries reveals the source and orientation of all atomic magnetic moments

Generating Magnetons

A static Electron has a negative Tetryonic charge [0-12] topology with neutralised magnetic dipoles



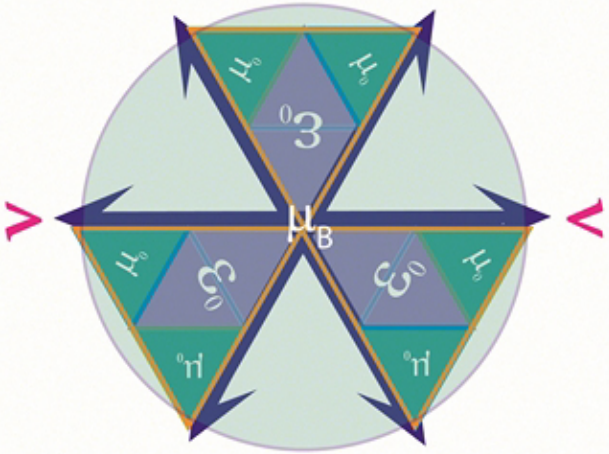
Leptons are
12 loop inductive
charge rotors

Tetryonic geometry
fully explains Leptronic 'spins'

Einstein's Special Relativity model of distorted moving charges producing magnetic moments is incorrect

BOHR Magneton produced by Lorentzian distortion of charges due to relativitistic velocities

$$\mu_B = \frac{e\hbar}{2m_e}$$



The term "electron spin" can now be taken literally (when modelled with Tetryonic geometries) as an accurate description of the origin of Magnetic moments for all Leptonic [BOHR] magnetons.

The previously held model of the electron as a spinning sphere of charge must be abandoned in favour of the true Tetryonic charge geometries of EM mass-Energy-Matter

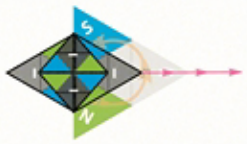
Ampere Force

$$\mathbf{B} = \frac{\mu_0 I}{4\pi} \int \frac{d\boldsymbol{\ell} \times \hat{\mathbf{r}}}{r^2},$$

$$F = 2k_A \frac{I_1 I_2}{r}$$

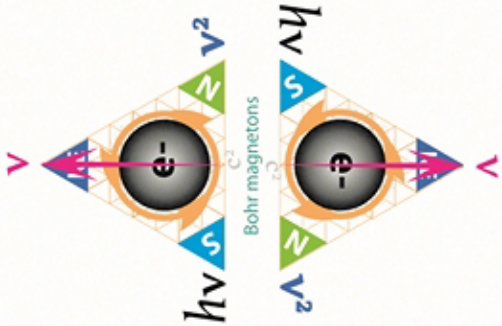
$$\mathbf{F} = q[\mathbf{E} + (\mathbf{v} \times \mathbf{B})].$$

Lorentz Force



A moving Electron has a KEM field with an Electric field and a Magnetic Moment

The gyromagnetic ratio of a particle or system is the ratio of its magnetic dipole moment to its angular momentum



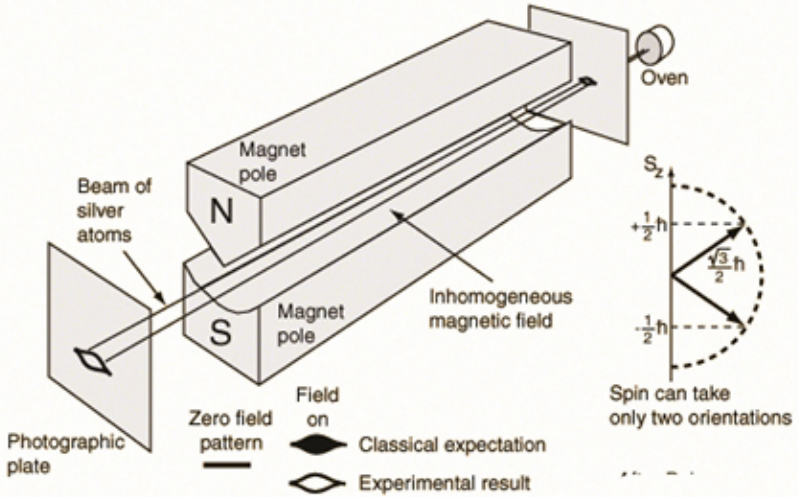
The KEM field energy of an Electron in motion is subject to relativistic corrections due to energy changes resulting from its acceleration

$$\lambda = L'\sqrt{1 - \frac{v^2}{c^2}}$$

WAVE-length contraction
of mass-energy quanta of KEM field

Stern Gerlach Experiment

In 1922 O. Stern and W. Gerlach measured the intrinsic spin angular momentum of silver atoms and found it to take only two discrete values, + h / 2 and - h / 2 commonly called "spin up" and "spin down



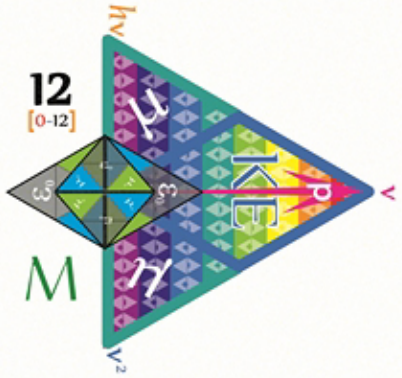
The Stern-Gerlach experiment to determine electron SPIN

The results were interpreted to show that particles possess an intrinsic angular momentum that is most closely analogous to the angular momentum of a classically spinning charged sphere, that takes on only certain quantized values of angular momentum

Tetryonics shows the results are a product of the KEM field produced by charge particles in motion, with all charged particles being able to produce 2 distinct magneton orientations as a result of the real motion of their intrinsic quantum inductive loop [Matter]geometries through external E fields & as referenced to external M moments.

This along with the Lorentz force produced by an external Magnetic field acting on the KEM magnetons produces the two results obtained

Any increase in electron energies results in an increase in quantised angular momenta and its vector linear momentum

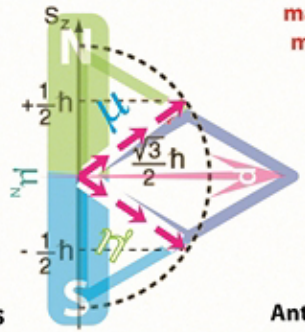


Any change in the KEM energy level of an electron results in Photon emission or absorption

Electron Spins based on the measured Bohr Magnetons of moving electrons are reflected with KEM field geometries

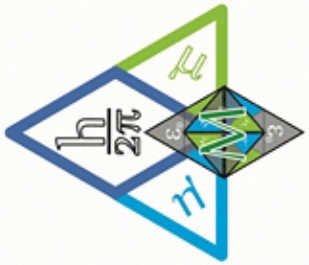
Electrons bound in atomic nuclei increase of decrease their energy levels dependent on the energy level of the nuclei in which they are bound

Bound and unbound electrons can rotate in one of two directions influenced only by external magnetic and electric fields or incident Photons



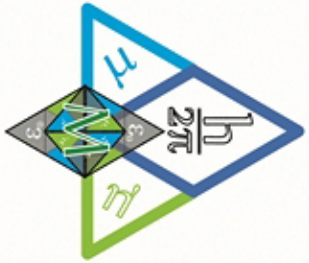
N
Parallel magnetic moment
S

μ_B

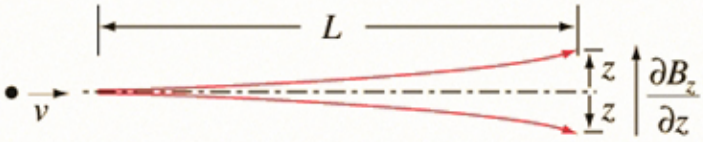


THe BOHR magneton dipole is measured against either the Nuclear Magneton or external magnetic fields

S
Antiparallel magnetic moment
N



The two separated beams of electrons produced are defined as having differing SPINS [**UP** or **DOWN**]



$$z = \frac{1}{2}at^2 = \frac{1}{2}\frac{F}{m}\left[\frac{L}{v}\right]^2 = \pm\frac{\mu_B L^2}{4KE}\frac{\partial B_z}{\partial z}$$

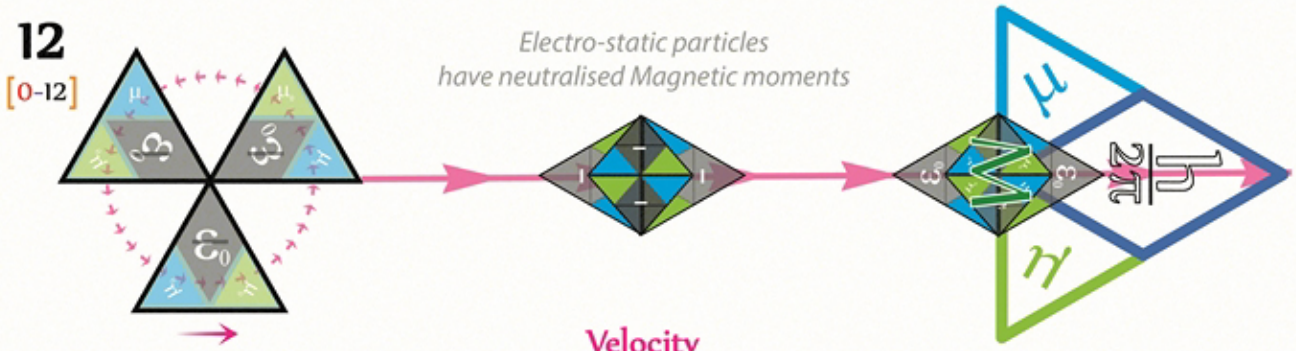
The orientation of the BOHR magneton wrt the NUCLEAR magneton determines the 'direction' of electron SPIN

Bohr Magnetons

A moving electron is a 12 loop rotating inductor

Energy created by moving a Lepton though an external EM field is stored as Planck quanta within the Lepton's extended KEM field

Leptronic 'spin' is always determined by the Leptronic Magnetic moment as referenced against the Nuclear Magnetic Moment

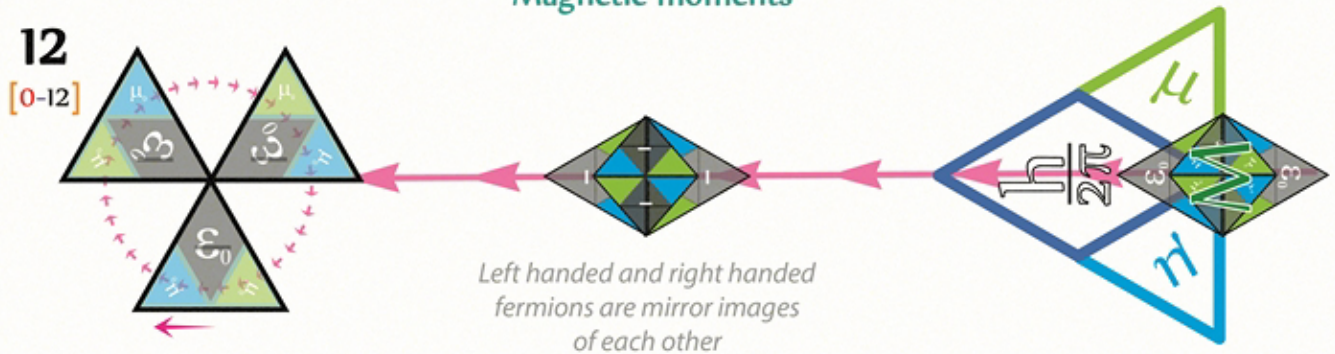


Electro-static particles have neutralised Magnetic moments

A moving Lepton creates a secondary stronger intrinsic magnetic dipole moment within its KEM field which interacts with external magnetic fields

Velocity
creates
Kinetic Energy
and
Magnetic moments

Reversing the vector direction of the particle's linear momentum creates a reversed dipole Magnetic moment



Left handed and right handed fermions are mirror images of each other

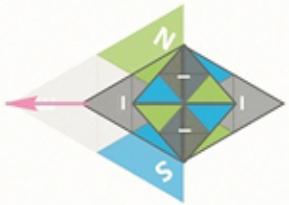
Leptons are not point particles

All Leptronic macro-KEM fields and interactions with external fields can be modelled using Tetryonic geometries

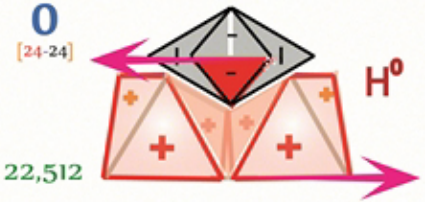
Magnetic moment 'spin orientations' are reversed for opposite charge particles

Electron Spin orientation

The Bohr magneton dipole produced by Kinetic Energies is located axially about the centre of rotation

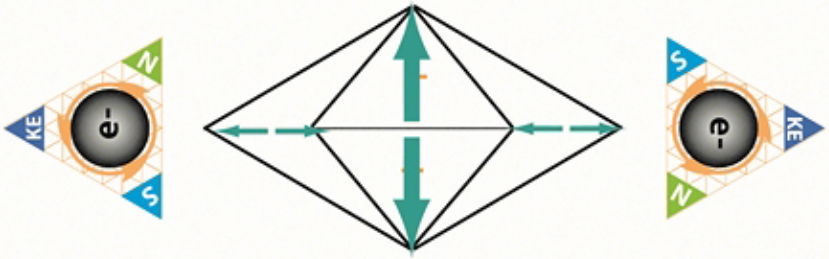


Spin UP

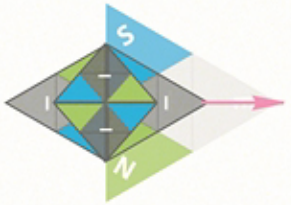


Higher energy

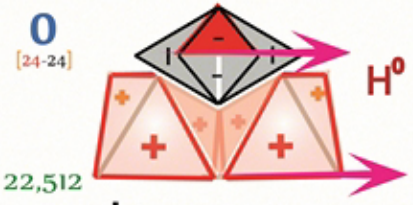
Parallel spin



All Leptons have 12 intrinsic neutralised dipole moments and a polarised KEM field Magnetic moment created by the energies of its motion

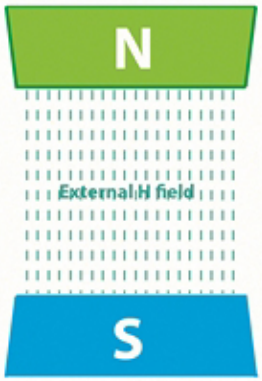


Spin DOWN

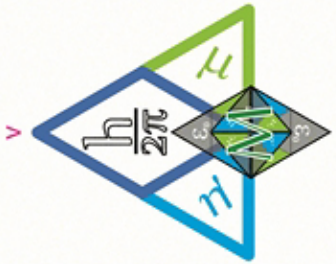


Lower energy

Anti-parallel spin



Spin UP



Magnetic field is Parallel to Nuclear Magnetic moment or external Magentic H field

Lepton Magnetic moment

[Bohr Magneton]

$$\mu_B = \frac{e\hbar}{2m_e}$$

Spin DOWN

Magnetic field is Antiparallel to Nuclear Magnetic moment or external Magnetic H field

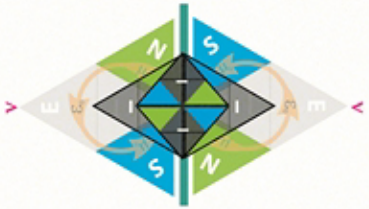
Nuclear magnetons are weaker than Bohr magnetons

All Leptronic spin directions are referenced to external Magnetic fields [either Nuclear Magnetons or H fields]

Nuclear Spins

are determined by the orientation of Bohr Magneton
with respect to the Nuclear Magneton
[or an external Magnetic field]

electron Matter geoemtries are negative charged fascia which create neutral intrinsic magnetic dipole configurations



MAGNETIC MOMENT

In a moving electron Kinetic energy produces an axial Magnetic moment

In a static electron all intrinsic dipoles are neutralised through their orientations

Quantum Inductive Loops in motion produce Kinetic Energies in turn creating Magnetic Moments

Electron

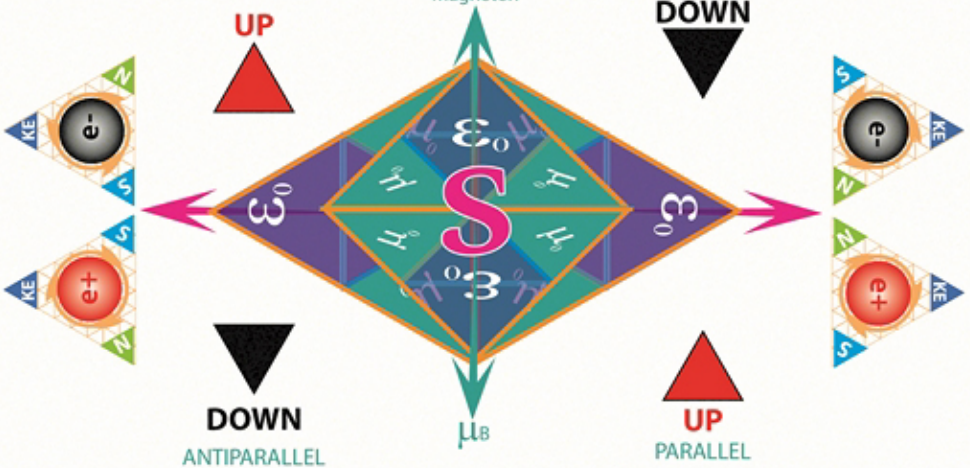
PARALLEL
Magnetic moments

UP

BOHR
Magneton

ANTIPARALLEL
Magnetic moments

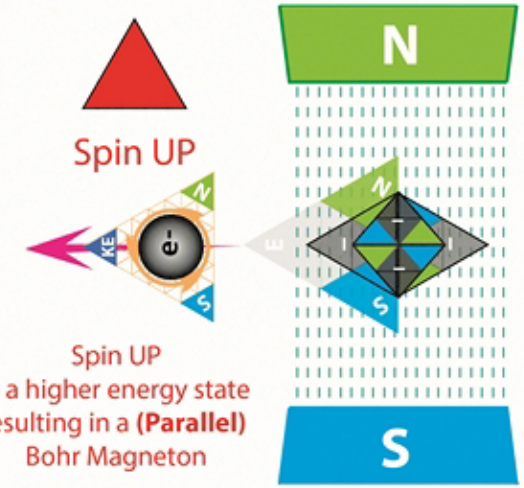
DOWN



DOWN
ANTIPARALLEL
Magnetic moments

UP
PARALLEL
Magnetic moments

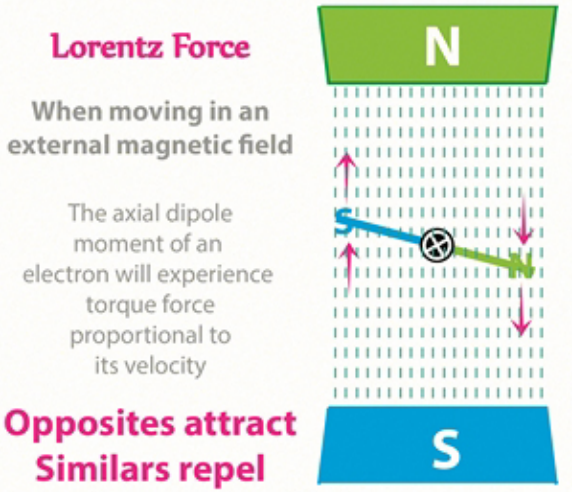
Positron



Spin UP
is a higher energy state
resulting in a **(Parallel)**
Bohr Magneton

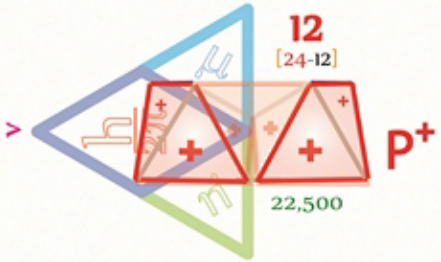
Spin DOWN
is a lower energy state
resulting in a **(antiParallel)**
Bohr Magneton

Spin DOWN

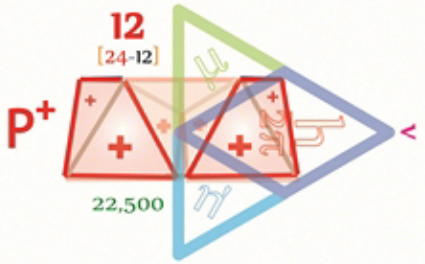


Nuclear magnetic Moment

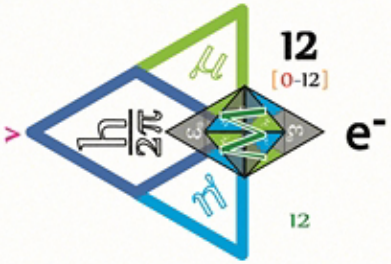
[Nuclear magneton]



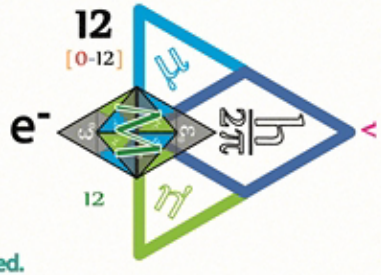
NUCLEAR magnetons are much weaker than BOHR magnetons due to the higher charge to mass ratio of electrons



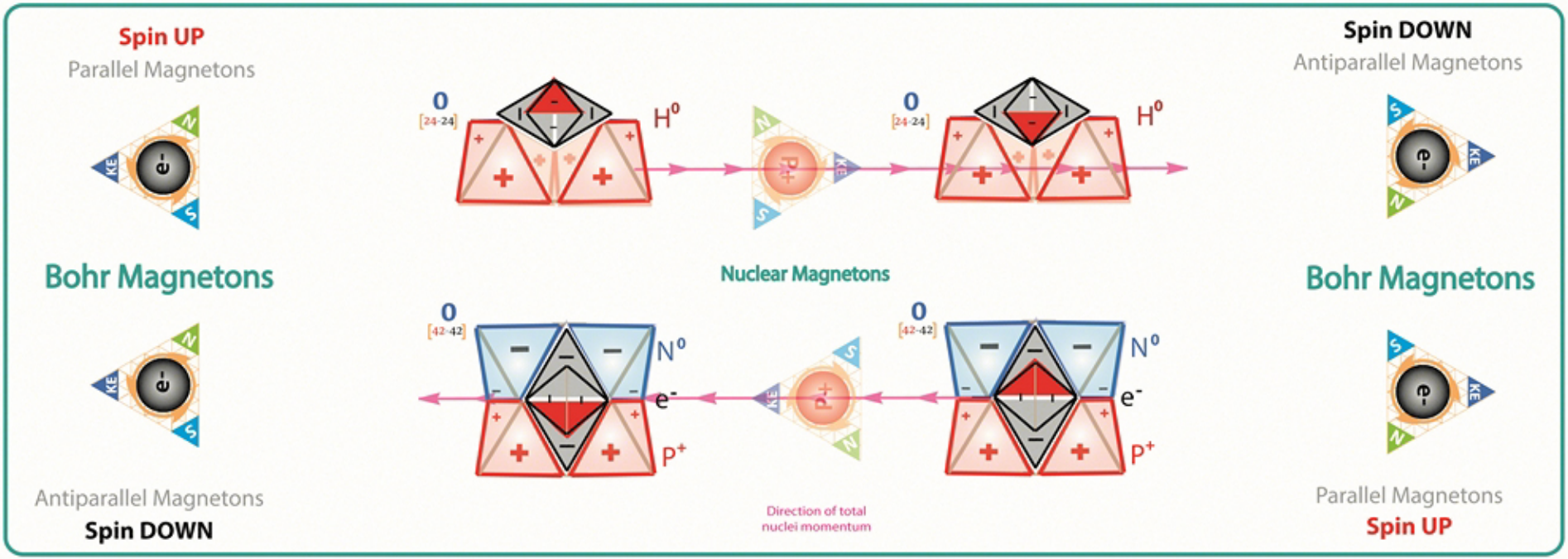
$$\frac{M_p}{M_e} = \frac{1}{1875}$$



The nuclear spins for individual protons and neutrons parallels the treatment of electron spin, with spin 1/2 and an associated magnetic moment.



For the combination of electron, neutrons and protons in periodic elements, the situation is even more complicated.

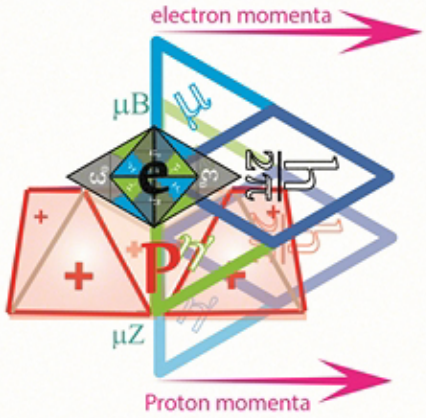


Spin orbital coupling mechanics

The induced magnetic moment of electrons in atomic nuclei combine vectorally with the magnetic moment of the nuclei

anti-parallel moments

Spin DOWN

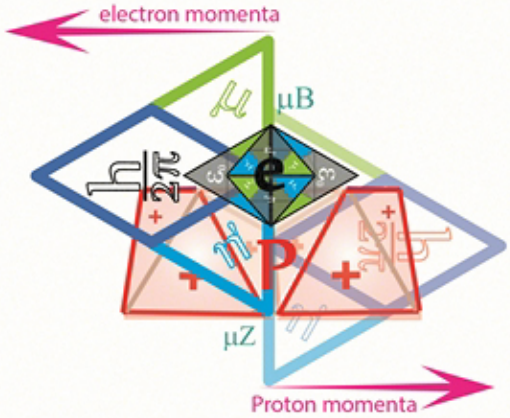


μB

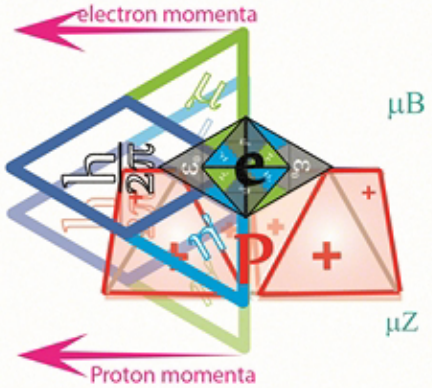
Bohr magnetons

parallel moments

Spin UP



The energy level differences created are manifested in Hyperfine-line splitting Zeeman effects etc.

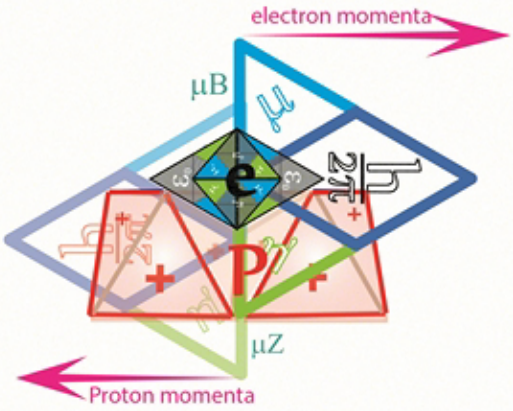


Spin DOWN

anti-parallel moments

Nuclear magnetons

μZ



Spin UP

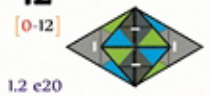
parallel moments

The alignment of electron spins in nuclei results in diamagnetic, para-magnetic Matter

Gyromagnetic Ratio

The electron is a 12 charge quantum rotor with a uniform charge to mass density ratio, the ratio of its magnetic moment to its orbital angular momentum, also known as gyromagnetic ratio

This implies that a more massive assembly of charges spinning with the same angular momentum will have a proportionately weaker magnetic moment, compared to its lighter counterpart.

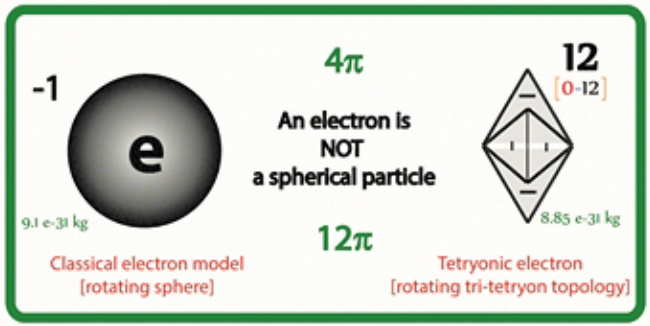


1 electron 12π

The Bohr Magneton is determined by the charged KEM field geometry of Leptons

1875 charged mass-Matter differential

The combined Kinetic energy of Motion [KEM field] and Electron Spin coupling with Nuclear Magnetons will effect any measured Gyromagnetic ratios



In physics, the gyromagnetic ratio (also sometimes known as the magnetogyric ratio in other disciplines) of a particle or system is the ratio of its magnetic dipole moment to its angular momentum, and it is often denoted by the symbol γ, gamma.

An isolated electron has an angular momentum and a magnetic moment resulting from its spin.

Its SI units are radian per second per tesla (s−1·T -1) or, equivalently, coulomb per kilogram (C·kg−1).

Tetryonic quantum mass to Charge ratio

$1.810109642 \times 10^{11}$

The 2006 CODATA
– e / me = -1.758 820 150(44) x 10[11]

Nuclear Magnetons

e- Tetryonic elementary charge 1.602216081 e-19 coulombs / e_m Tetryonic electron mass 8.851486361 e-31

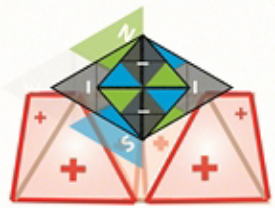
12q

1.2 e20

[q/m]

181,010,964,200 C/kg

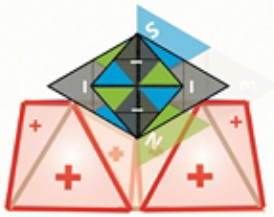
Spin UP K.E. — Electron Spin [Orbital Angular Momentum] — Spin DOWN K.E.



N

Nuclear Magneton

S



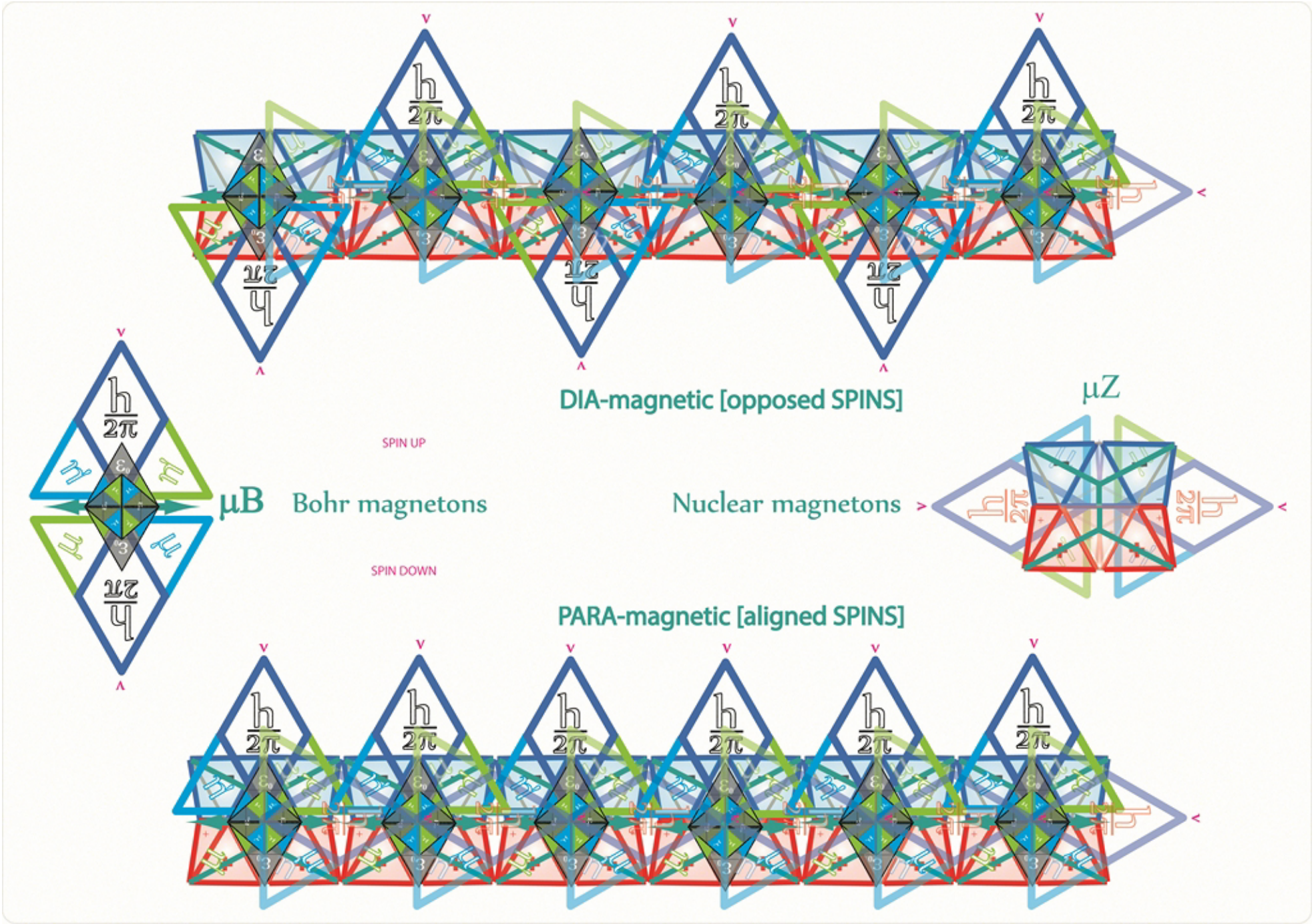
12q

2.25 e23

Tetryonic elementary charge 1.602216081 e-19 coulombs / Tetryonic Proton mass 1.659653693 e-27 e+ P_m

[q/m]

96,539,180.9 C/kg



mass-charge ratios

1.335180067 e-20 C

1.810109642 e11 $\left[\frac{q}{m}\right]\hat{n}$ 1e19 V

7.376238634 e-51 kg

are the basis for mass spectroscopy

Leptons

181,010,964,200 C/kg

12 [12-0] 1.2e20 — e^+ Positron

12 [0-12] 1.2e20 — e^- Electron

Baryons

96,539,180.9 C/kg

12 [24-12] 2.25e23 — P^+ Proton

0 [18-18] 2.25e23 — N^0 Neutron

Elements

96,487,720.78 C/kg

0 [24-24] 2.2512e23 — Hydrogen

48,256,721.99 C/kg

Deuterium 0 [42-42] 4.5012e23

All mass-Matter have distinct charge geometries and once in motion are subject to EM forces as a result of their geometries & KEM field

Lorentz force Law

$$\vec{F} = q\vec{E} + q\vec{v} \times \vec{B}$$

LORENTZ force — Electric force — charge velocity — Magnetic force

all Matter in motion is subject to NEWTON'S SECOND LAW OF MOTION

$$F = ma$$

Combining Lorentz's force law & Newton's Third Law we obtain a EM mass-charge quotient for any particle of mass-Matter in motion

$$(M/Q)a = E + v \times B$$

$F = ma$

a — axb — b — bxa = -axb — LORENTZ FORCE

$\hat{n}$ — θ — M $a \times b$ — E_a — b — L

$a \times b = ab \sin\theta\, \hat{n}$

For every action there is an equal and opposite reaction (NEWTON'S THIRD LAW OF MOTION)

Q *Any two particles with the same EM mass-to-charge ratio follow the same path in a vacuum when subjected to the same external electric field* **M**

Dependent on their generations

Charge/mass

$\left(\frac{q_t}{m_t}\right)$ 181,010,964,200 C/kg $\left(\frac{q_e}{m_e}\right)$

4:4 — 12:12

Tetryons and Leptons can have identical mass-charge ratios

Tetryonic theory shows mass-charge ratios are a measure of mass-energy geometries in Matter topologies

Collider particle track physics

A collider is a type of a particle accelerator involving directed beams of particles.

Colliders may either be ring accelerators or linear accelerators,
and may collide a single beam of elementary particles against a stationary target or two beams head-on.

E

t 4 [0-4]

4 [4-0] t

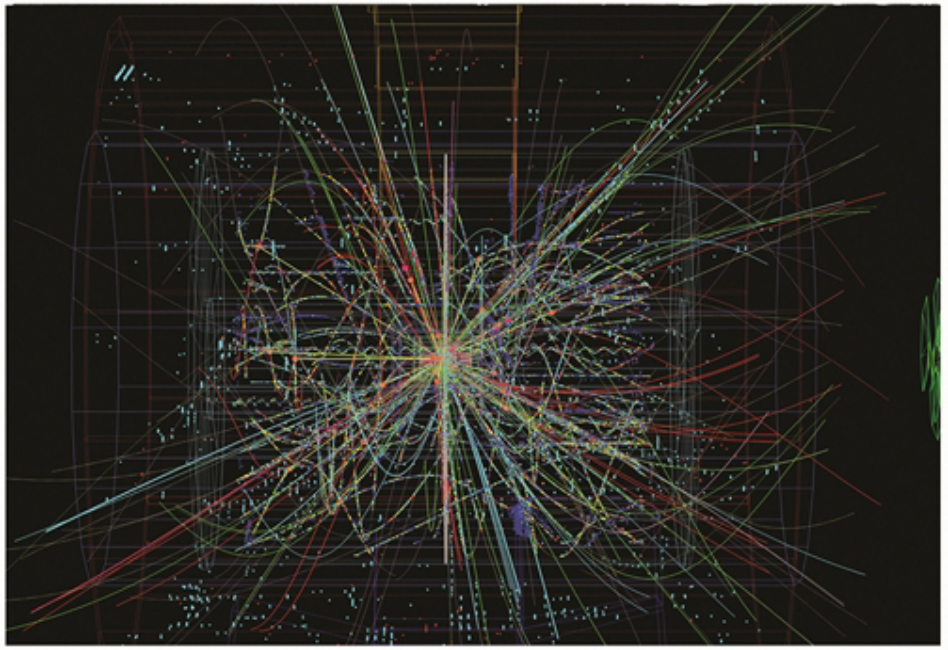
Tetryons have the same 1/3 elementary charge as some Quarks

d 4 [4-8]

4 [8-4] d

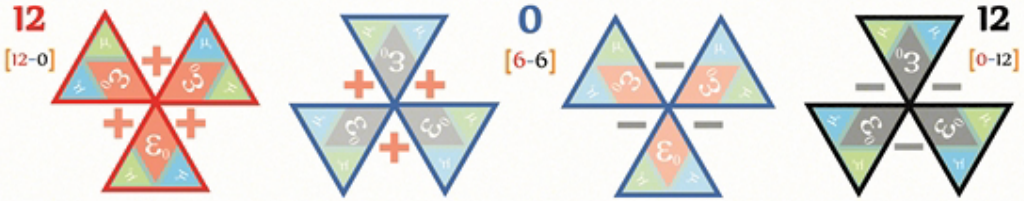
m

2D bosons & photons are radiant mass-enery geometries

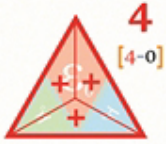


3D Matter Fermions are standing wave mass-energy topologies

Analysis of the by-products of these collisions without a clear definition of, and distinction between, EM mass-energy geometries & Matter topologies through the charged geometrics of Tetryonics ceates a misleading and erroneous picture of the particles created in high energy collisions within particle physics accelerator experiments



Q



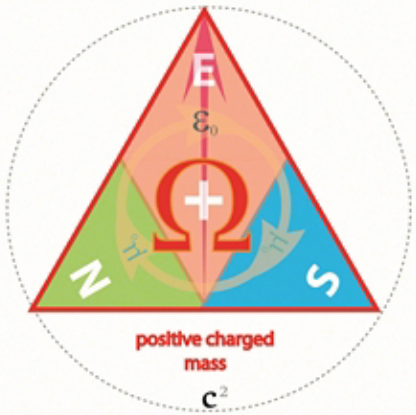
181,010,964,200 C/Kg

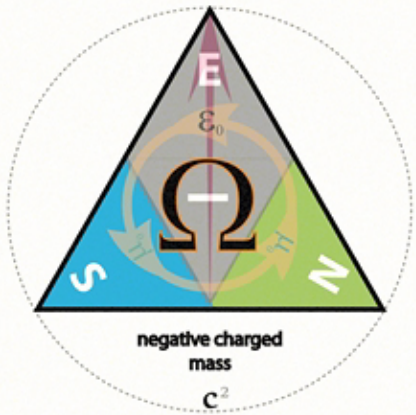
Tetryons can have the same mass-charge ratios as Leptons

181,010,964,200 C/Kg

M

Radiant EM mass-energy geometries





mass Planck quanta

$$\frac{n\pi}{c^2}\left[\left[m\Omega v^2\right]\right]_{\text{mass velocity}}$$

Charge

$$\frac{1\pi}{c^2}\left[\left[m\Omega v^2\right]\right]_{\text{mass velocity}}$$

Bosons

$$\frac{\text{ODD}\pi}{c^2}\left[\left[m\Omega v^2\right]\right]_{\text{mass velocity}}$$

Photons

$$\frac{2\pi}{c^2}\left[\left[m\Omega v^2\right]\right]_{\text{mass velocity}}$$

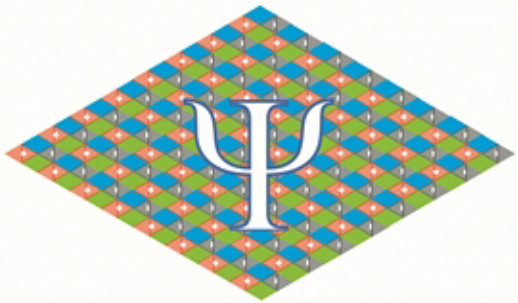
EM waves

$$\frac{\text{EVEN}\pi}{c^2}\left[\left[m\Omega v^2\right]\right]_{\text{mass velocity}}$$

2D space-time measurements of equilateral energies form the geometric basis for electromagnetic mass

2D Planar divergent EM mass-energies form radiant Electromagnetic waves

ElectroMagnetic mass is a property of Matter
[being the energy content of its charged geometry per unit time]



ENERGY

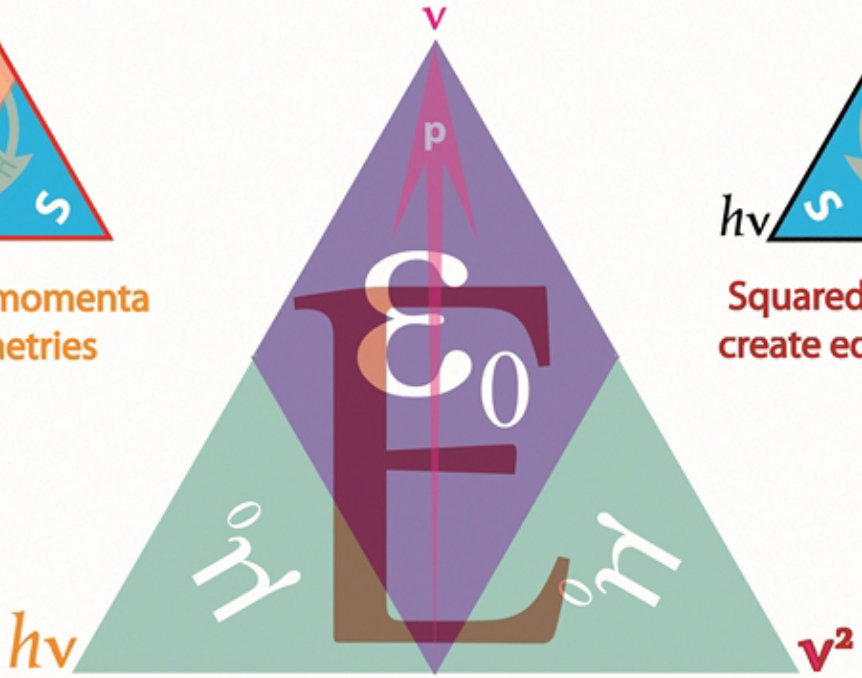
2D Equilateral scalar energy-momenta

Q
charge

E
energy

Quantised angular momenta are energy geometries

Squared numbers in physics create equilateral geometries



Planck's constant of mass-energy momenta is the source of all physical constants and force relationships

Separated fields of charge create electromotive forces accelerating Material bodies within them

ENERGY

$$n\pi\left[\left[m\Omega v^2\right]\right]$$

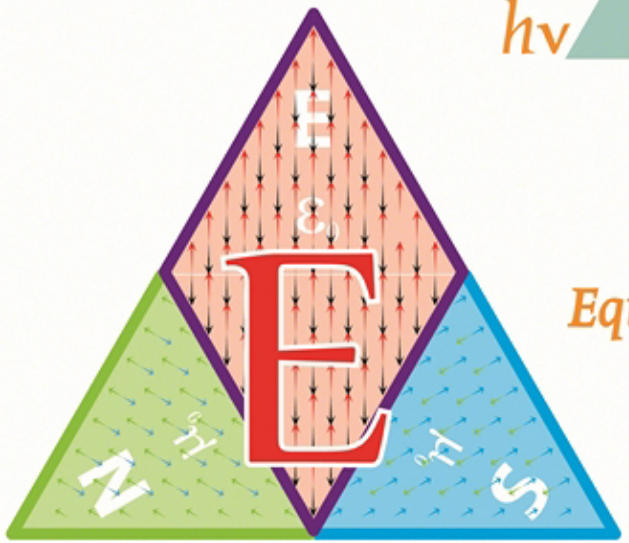
Planck quanta

mass

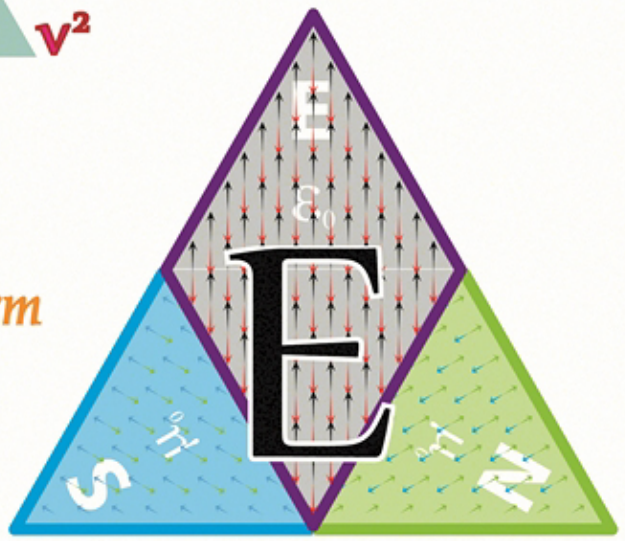
velocity

Equilateral energy-momenta form the foundation of all Forces, EM masses & Matter

All energy seeks equilibrium



Positive charge energy momenta fields

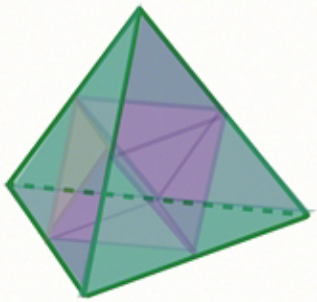


Negative charge energy momenta fields

3D Matter topology is NOT a property of 2D ElectroMagnetic mass-energies

it is a measure of the closed 3D standing-wave spatial topology of all fermionic particles created by their charged equilateral mass-energy momenta geometries

Matter displaces vacuum energies to create convergent gravity fields around it

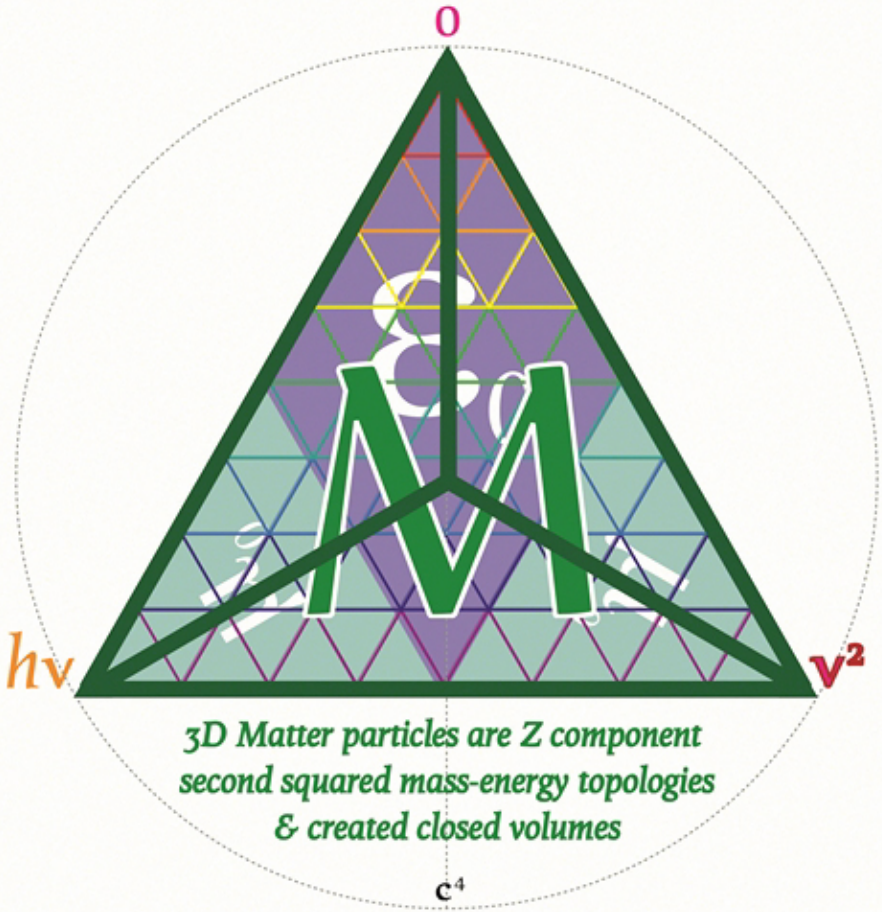


Tetryons are the quantum of Matter

Tetryons $\frac{4\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)

Fermions $\frac{12\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)

Mesons $\frac{24\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)

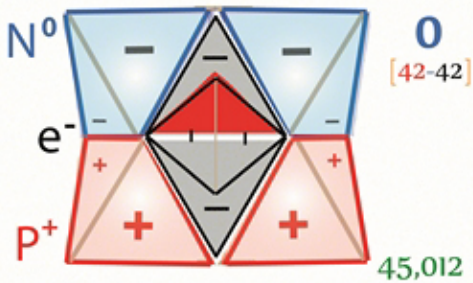


3D Matter particles are Z component second squared mass-energy topologies & created closed volumes

Matter $\frac{T\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)

The mass-energies of Matter are Lorentz invariant to velocity changes

All Matter is comprised of [and radiates divergent] kEM mass-energies



Deuterium is the quantum of all Elements

Baryons $\frac{36\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)

Nuclei $\frac{72\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)

Deuterons $\frac{84\pi}{c^4}\left[\left[m\Omega v^2\right]\right]$ (Planck quanta; mass, velocity)